ECONOMIC THEMES (2017) 55(3): 421-436

http://www.economic-themes.com/

TRANSFORMATION OF COORDINATION MECHANISMS IN COMPANIES DUE TO NEW TECHNOLOGIES: EVIDENCE FROM EMPIRICAL RESEARCH

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UDC 004.6
Original scientific paper

Abstract: Throughout the history, technology was the key factor in the organisation of working processes and designing organisations. Today, many new forms of information and communication technologies lead to many benefits in designing organisations and impact on all parameters of organisational structure. The aim of this paper is to examine how new development forms of modern ICT technologies – Big Data impact on coordination mechanisms, one of the most important parameter of organisational structure. For the purpose of the paper, empirical research was conducted with specially designed questionnaire which was filled by 214 companies worldwide that use Big Data technologies. Results conducted from empirical research showed that companies that use those technologies have implemented many changes in coordination mechanisms in companies. The most important research results are that all available data were integrated in companies, while working processes, activities and decisions were automated. Due to the application of Big Data technologies coordination mechanisms in companies obtained completely new characteristics. Consequently, with improved coordination mechanisms companies were able to improve their strategic and operational activities.

Received: 28.07.2017.
Accepted: 31.08.2017.

Keywords: Big Data, Information and Communication Technologies, Organisational Design, Organisational Structure, Integration, Coordination Mechanisms, Automatization, Data.

JEL classification: 033, L21

1. Introduction

In the last decade of the 20th century, and especially in the first two decades of the 21st century, data and information penetrated into all spheres of our life and work and became resource without which it would be very hard to imagine the functioning of companies (Castells, 2003; McGuire et al., 2012). Social networks, smart phones, tablets and intelligent devices connected with sensors have lead to

enormous increase of volume and variety of data which has become available for processing and analysis in real time (Heisterberg & Verma, 2014). All that data were named as „Big Data" and caused the development of new technologies and techniques that have the possibility to acquire, process, analyse and store them. From the very beginning of studies of organisational problems and their solving by using scientific methods, technology was the key factor in the organisation of working processes (Petković & Lukić, 2013). Many authors had shown that Big Data technologies have significant impact on dimensions of organisational design and parameters of organisational structure (Galbraith, 2014; Grossman & Siegel, 2014; Korhonen, 2014). For a long time, organisational design, as an important theoretical and practical theme, occupied the attention of numerous authors and managers and had been very important factor of company success. The aim of this paper is to examine the impact of Big Data technologies on integration as the process of achieving unity of efforts of different organisational units or subsystems through various coordination mechanisms in companies. Having in mind that there are no previous researches regarding this topic, in this paper are imposed two main research questions: Do Big Data technologies impact on coordination mechanisms in companies? If the answer on previous question is positive, how that impact is manifested? Consequently, the paper will deal with three related issues: coordination mechanisms, integration and Big Data technologies.

The paper is structured as following. The second title of the paper deals with the theoretical background regarding the detailed analysis of referent literature which examines the impact of Big Data technologies on coordination mechanisms in companies. The third title of the paper is focused on empirical research: design of empirical research, questionnaire, methods of data collection, sample description, while fourth title of the paper is focused on research results and discussion of research findings and is followed with conclusions.

2. Literature review: the impact of Big Data Technologies on coordination mechanisms

By reviewing the literature, many definitions regarding Big Data can be found. One of the most accepted and cited is McKinsey's definition, according to which Big Data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyse data (Manyika et al., 2011, p. 1). In this definition, size is determined as the main attribute of Big Data, and truly the term Big Data was coined under the explosive increase of global data and used to describe enormous datasets (Chen et al., 2014). But, Big Data is not just matter of size, it is also, and even more, about other attributes that makes data on the one hand complicated or impossible to work with traditional technologies and tools, and on the other hand useful for value creation (Lukić, 2015). Key attributes that describe Big Data are: Volume, Variety and Velocity, popularly known as „3 Vs".

Volume is the huge amount of data that companies are trying to use in order to improve decision making process across the enterprise. Nowadays, companies measure their collected data in terabytes, petabytes and zettabytes, and there are estimations that people create 2.5 quintillion bytes of data on a daily basis (Walker, 2015). Variety, as the second attribute of Big Data, refers to different types of data because data are available from numerous sources: data can be collected from social networks, digital TV, credit cards, medical devices, sensors, bar codes, smart phones, tablets, etc. Those data can be structured, semi-structured and unstructured, and are very important for successful functioning of modern companies (Minelli et al., 2013; Kudyba & Kwatinetz, 2014). The third attribute of Big Data, Velocity, is the speed at which data are created, processed and analysed and reflects the need for real-time decision making on the basis of collected data (McAfee & Brynjolfsson, 2012; Minelli et al., 2013). Companies are seeking to process collected data from various sources in real time or near real time and to make decisions on their basis. Application of the Internet, sensors, different social networks have influenced the increase in speed and volume of data to unprecedented proportions and have caused appearance of new business principles according to which everything must be done *here and now* (Mintzberg, 2015). Key benefits of collecting, processing and analysing data in real time are that: (1) companies can instantly get information about problems and take corrective actions; (2) companies can immediately find out what new strategies are taken by competitors and adapt their activities and actions; (3) companies can gain knowledge about reactions of customers, their opinions, views, comments and attitudes about products and services and can react accordingly (Van Rijmenam, 2014). Beside these three characteristics of Big Data, some authors propose Volume as the fourth „V" in the sense that through analysis of data there can be revealed significant values for companies (Liao et al., 2015).

One of the most important parameter in organisational structure is coordination of different organisational activities. Coordination is management of dependence among different activities in organisation (Malone & Crowston, 1994) and represents synchronisation of organisational activities (Mintzberg, 1979). The need for coordination is the result of the fact that always when processes are grouped, no matter which logic and manner of grouping is applied, there are silos which represent mechanical barriers that have negative impact on interaction among different processes (Kates & Galbraith, 2007). The key challenge for companies is how to overcome established boundaries and integrate their activities through various coordination mechanisms. Henry Mintzberg had shown the existence of five coordination mechanisms: mutual adjustment, direct control, standardisation of work processes, results, knowledge and skills (Mintzberg, 1979). Mutual adjustment is coordination of employees due to informal communication among them, while coordination with direct control ecompasses control of working tasks and activities which are assigned to employees. Standardisation is very important

coordination mechanism and can be observed as: standardisation of work (working tasks are defined and programmed in advance), standardisation of results (results are defined in advance) and standardisation of knowledge and skills which are necessary for specific jobs. Jay Galbraith pointed out the impact of lateral processes for coordination of different parts of the company (Galbraith, 2014). Informal and voluntary groups of employees, electronic coordination, formal groups and teams, managers with integrating role and matrix organisational structure represent very important coordination mechanisms. Besides that, in the last few decades, companies are intensively using social networks and various software for collaboration of employees which work together on specific projects. Employees, if certain conditions are meet, can be very important resourse for achieving competitive advantage of company (Đorđević, Ivanović-Đukić & Lepojević, 2017). For that reason, managers have become aware of the importance of coordination mechanisms in companies, and that besides coordination of resources and processes, they should be focused on coordination of data and information in organisation. Many authors state that one of the most significant effects of Big Data technologies is their potential to improve coordination, communication and collaboration in company (Daft, 2015). There are several ways on which companies may improve their coordination by using Big Data technologies: implicit coordination by one single database, system-supported control, programmed routines, hyperautomation and system-supported skills. All of these possibilities for coordination supported with information and communication technologies were examined by Lars Groth from the point of view of available information and communication technologies in the last decade of the 20th century (Groth, 1999). In the last couple of years, Big Data technologies are found to be the great support for all coordination mechanisms. Each of the abovementioned coordination mechanisms supported with Big Data technologies has its counterpart regarding classification by Henry Mintzberg (see Table 1).

Table 1. Traditional coordination mechanisms versus coordination mechanisms supported with Big Data technologies

Traditional coordination mechanisms according to Mintzberg	**Coordination mechanisms supported with Big Data**
Mutual adjustment	Implicit coordination by one single database
Direct control	System-supported control
Standardisation of explicit routines	Programmed routines
Standardisation of work - automation	Hyperautomation
Standardisation of skills	System-supported skills

Source: Adapted from Groth, L. (1999). *Future organizational design – the scope for the IT based enterprise*. New York: Wiley&Sons.

First of all, Big Data technologies do not exist in vacuum, and for that reason managers must pay attention how to integrate these technologies with other technologies that already exist in companies (Morabito, 2015). In the last few years, companies collect various data which must be integrated with internal data in company and available in one place (Patil, 2011). Therefore, data which are generated from traditional services, such as customer care or call centers, must be integrated with new data from web, e-mail, social networks, blogs and mobile applications (Markle & Feilbelman, 2015). Due to the availability of all data in one place, managers can easily discover problems or potential issues, coordinate activities and make better decisions about future activities (Westerman et al., 2014). Meanwhile, the possibilities of system-supported control are much larger due to availability and visibility of all information in company.

The great role in achieving coordination of activities has hyperautomation as intensive use of various technologies, techniques and tools for automatisation of processes. Hyperautomation offers the possibilities for integration of much larger scope of organisational activities in one coordinated process (Groth, 1999). By using the Big Data technologies, many administrative activities and reports in organisations can be automated in large extent or completely (Daft, 2015). Furthermore, many complex tasks and activities can be automated and supported with Big Data technologies.

There are many examples in practice which show how companies that use Big Data technologies improve their coordination. For example, with installation of different sensors in offices, managers can see how employees behave on their work and find out a way how to improve their behaviour and align it with the overall business goals. Cubist Pharmaceutical has discovered, by using sensors, that there are too much coffee machines on some floors. By reducing the number of coffee machines and their placement on specific part on the floor, managers improved informal communication among employees from different parts of the company and consequently transfer of different knowledge, skills and experiences (Van Rijmenam, 2015). These trends go in hand with the replacement of centralised and hierarhical organisational structures by decentralised and flat organisational structures where informal networks are more and more important (Mayrhofer et al., 2004).

3. Research design and sample description

The aim of the research was to identify the impact of Big Data technologies on coordination mechanisms in companies. Empirical research was conducted in order to answer on imposed research questions: Do Big Data technologies impact on coordination mechanisms in companies? If the answer on previous question is positive, how that impact is manifested? For data collection one of the most

frequently applied techniques in social sciences was used, that is a survey (Brewerton & Millward, 2001). The survey was created online by using Google Forms option in Google Drive and is a part of the research done for PhD thesis „The impact of Big Data technologies on organisational design of the company" at Faculty of Economics, University of Belgrade. Regarding the structure, the part of the survey that examines coordination mechanisms in companies consists of questions regarding:

- General information about companies (size, age, industry, location);
- General information about participants (age, gender, education, experience with Big Data, managerial level);
- Six statements regarding the impact of Big Data technologies on coordination mechanisms in companies: integration of all available data, automatisation of routine tasks and activities, automatisation of complex tasks and activities, system-supported control. All these statements were formed as a seven-point Likert-type scale named Coordination;
- Seven statements regarding the impact of Big Data technologies on strategic and operational activities in companies: improvement of existing products/services, decisions about new products/services, decisions about more precise segmentation of customers, better adjustment of supply of products and services, dynamically adaptation of prices according to market conditions, reduction of time needed for completing business processes. All these statements were formed as a seven-point Likert-type scale named Strategic and operational activities.

The target population for empirical research were companies that use Big Data technologies in their business, while the target respondents were employees who work with Big Data technologies and belong to some of the managerial positions (top, middle or operational level). The pilot research had two phases. The first phase of the pilot research was consisted of semi-structured interviews with professionals who are in some of the managerial position in companies that use Big Data technologies. Through these interviews imposed questions and possible answers in survey were discussed. After that, the second phase of the pilot research had the goal to verify the reliability of statements in all formed Likert-type scales. For that purpose, answers in the questionnaire were collected from 30 participants, and results showed reliability of both scales: Coordination scale and Strategic and operational activities scale, with values of Cronbach's alpha coefficient 0.833 and 0.726, respectively.

After that, accompanying letter and link to the survey were sent to the e-mail addresses of the companies for which existed public available information that use Big Data technologies. Beside on that, kind request was sent to companies which are engaged in the implemenation of Big Data technology to forward the survey to

their clients (companies in which they implemented Big Data technologies). Furthermore, the sample was formed by using the Snowball technique whose key characteristic is that the process of collecting answers begins with a pre-defined list of subjects that meet the necessary criteria, and then each of the participants gave the proposal of other subjects which also meet the required criteria (Black, 1999).

The process of collecting answers on the survey lasted from the 3rd of March until the 3rd of May 2016. After two months, the relevant answers were collected from 214 companies. For statistical analysis of data were used Statistical Package for Social Sciences, known as SPSS, version 21.0 (IBM, Armonk, NY) and Microsoft Office Excel 2007 (Microsoft Corporation, Redmond, WA, USA). The level of statistical significance was set on $p \leq 0.01$. In the final sample, both scales (Coordination scale and Strategic and operational activities scale) had the value of Cronbach's alpha coefficient between 0.8 and 0.9 which respresents great reliability (Field, 2009).

The frequency and percentage of responses were calculated for all variables. Spearman's rank correlation coefficient ρ (*rho*) was used in order to examine the correlation among the statements. Correlations between 0.10 and 0.29 were considered to be low, from 0.30 to 0.49 moderate, and over 0.50 high (Cohen, 1988).

General information about companies that participated in research is presented in Table 2.

Table 2. General information about companies: age, size, industry and location

Variable	**Answer**	**Frequency**	**Percentage**
Age of the companies	To 5 years	41	19.2
	From 6 to 15 years	43	20.1
	Above 15 years	**126**	**58.9**
	Total valid responses	210	98.1
	Missing responses	4	1.9
	Total	214	100.0
Size (regarding the number of employees)	Micro and small companies	41	19.2
	Middle companies	43	20.1
	Large companies	**126**	**58.9**
	Total valid responses	210	98.1
	Missing responses	4	1.9
	Total	214	100.0
Industry	Banking and Finance; Insurance	59	27.6
	Production; Transport and Logistics; Wholesale and Retail	39	18.2

	ICT; Telecommunications	80	37.4
	Consulting	35	16.4
	Total valid responses	213	99.5
	Missing responses	1	0.5
	Total	214	100.0
Location	Europe	**74**	**34.6**
	Asia	24	11.2
	North and South America	33	15.4
	Australia and Oceania	7	3.3
	Africa	3	1.4
	More continents	**69**	**32.2**
	Total valid responses	210	98.1
	Missing responses	4	1.9
	Total	214	100.0

Source: Author's calculation from conducted research

The largest number of companies exist more than 15 years (126), while among them are 29 companies which exist more than one century. The average age of companies, which participated in research, is 44 years. Measured with the number of employees, the largest number of companies (126) belongs to category of large companies, while among them 74 companies have above 10.000 employees. The results showed that Big Data technologies are used in companies from different industries. The largest number of companies are engaged in information and communication technology and telecommunication industry (80), followed by banking, finance and insurance industry (59). Companies are from almost all continents, but the largest number of companies come from Europe (74) or they operate on more than one continent (69).

General information about participants is presented in Table 3.

Table 3. General information about participant: age, gender, education, experience with Big Data technologies and managerial level

Variable	**Answer**	**Frequency**	**Percentage**
Age	Less than 26 years	18	8.4
	From 26 to 35 years	**93**	**43.5**
	From 36 to 45 years	60	28.0
	From 46 to 55 years	21	9.8
	Above 55 years	6	2.8
	Total valid responses	198	92.5
	Missing responses	16	7.5
	Total	214	100.0

Gender	Male	**187**	**87.4**
	Female	24	11.2
	Total valid responses	211	98.6
	Missing responses	3	1.4
	Total	214	100.0
Education	Primary School	0	0.0
	Secondary School	5	2.4
	Bachelor or master degree	**166**	**77.6**
	PhD degree	43	20.1
	Total valid responses	214	100.0
	Missing responses	0	0.0
	Total	214	100.0
Experience with Big Data technologies	To 3 years	**107**	**50.0**
	From 4 to 6 years	66	30.8
	Above 6 years	39	18.2
	Total valid responses	212	99.1
	Missing responses	2	0.9
	Total	214	100.0
Managerial level	Top level	29	13.6
	Middle level	51	23.8
	Operational level	**132**	**61.7**
	Total valid responses	212	99.1
	Missing responses	2	0.9
	Total	214	100.0

Source: Author's calculation from conducted research

The average age of participants is 36 years, covering variation interval from 23 years (as the youngest) and 64 years (as the oldest). The largest number of participants are those who are between 26 and 35 years (43.5%), followed by participants who are from 36 to 45 years (28%). Regarding the gender, the most of participants are male (87.4%) which is not surprising having in mind the research topic and the fact that males are still dominant in the field of Big Data. Also, it is not surprising that regarding education, the largest number of participants have bachelor or master's degree (77.6%) while 20,1% of participants have PhD degree. Average working experience with Big Data technologies is almost 5 years, 50% of participants have less than 4 years of experience, while the smallest number of participants have more than 6 years of experience with Big Data (18.2%). Regarding managerial position, the largest number of participants are on operational managerial positions (61.7%).

4. Research results and discussion of research findings

In order to discover and analyse the impact of Big Data technologies on coordination mechanisms in companies, Likert scale with six statements was developed for which participants had to select one of the seven provided values (1 – Completely Disagree; 2 – Mostly Disagree; 3 – Somewhat Disagree; 4 – Neither Agree nor Disagree; 5 – Somewhat Agree; 6 – Mostly Agree; 7 – Completely Agree). Results regarding answers about Coordination scale are presented in Table 4.

Table 4. Responses to the statements in the Coordination scale

Statements	Responses	Frequency	Percentage
By using Big Data technologies, all the data in the company was integrated.	Completely Disagree	11	5.1
	Mostly Disagree	15	7.0
	Somewhat Disagree	14	6.5
	Neither Agree nor Disagree	34	15.9
	Somewhat Agree	**61**	**28.5**
	Mostly Agree	40	18.7
	Completely Agree	39	18.2
	Total	**214**	**100.0**
By using Big Data technologies, routine workflow processes are automated.	Completely Disagree	6	2.8
	Mostly Disagree	8	3.7
	Somewhat Disagree	13	6.1
	Neither Agree nor Disagree	38	17.8
	Somewhat Agree	**63**	**29.4**
	Mostly Agree	44	20.6
	Completely Agree	42	19.6
	Total	**214**	**100.0**
By using Big Data technologies, complex workflow processes and activities are automated.	Completely Disagree	6	2.8
	Mostly Disagree	11	5.1
	Somewhat Disagree	14	6.5
	Neither Agree nor Disagree	35	16.4
	Somewhat Agree	**78**	**36.4**
	Mostly Agree	30	14.0
	Completely Agree	40	18.7
	Total	**214**	**100.0**
By using Big Data technologies, routine decisions were automated.	Completely Disagree	6	2.8
	Mostly Disagree	15	7.0
	Somewhat Disagree	14	6.5
	Neither Agree nor Disagree	35	16.4
	Somewhat Agree	50	**23.4**

	Mostly Agree	43	20.1
	Completely Agree	51	23.8
	Total	**214**	**100.0**
By using Big Data technologies, the control of realising work and activities has increased.	Completely Disagree	8	3.7
	Mostly Disagree	12	5.6
	Somewhat Disagree	12	5.6
	Neither Agree nor Disagree	44	20.6
	Somewhat Agree	56	**26.2**
	Mostly Agree	42	19.6
	Completely Agree	40	18.7
	Total	**214**	**100.0**
By using Big Data technologies, the activities of knowledge acquisition and transfer are improved.	Completely Disagree	6	2.8
	Mostly Disagree	15	7.0
	Somewhat Disagree	15	7.0
	Neither Agree nor Disagree	34	15.9
	Somewhat Agree	59	**27.6**
	Mostly Agree	56	26.2
	Completely Agree	29	13.6
	Total	**214**	**100.0**

Source: Author's calculation from conducted research

The answers of participants are positively oriented for all statements. Participants agree that, by using Big Data technologies all data were integrated in the company (65.4%), routine work processes were automated (69.6%), complex work processes and activities were automated (69.1%) and routine decisions as wll (67.3%). Also, participants agree with the statements that, by using Big Data technologies, control of realisation of tasks and activities increased (64.5%), as well as that the activities of management and transfer of knowledge improved (67.4%).

The results confirmed that traditional coordination mechanisms acquired completely new characteristics due to application of Big Data technologies. Mutual adjustment of employees is replaced with implicit coordination due to integration of all data in the company. Furthermore, standardisation of processes, results, knowledge and skills turn into a programmed routines, hyperautomation and system-supported skills, while direct control is replaced with a system-supported control. Companies that implement Big Data technologies are able to integrate data from different sources and establish *one version of the truth* (Van Rijmenam, 2014; Evans, 2015). The data from new sources are integrated with all the other data that exist in the company. Binding data from different sources together can have a major impact on business operations and on the quality of decisions because many data become meaningful and worthy only when are combined with other databases

(O'Dwyer, 2014). Before Big Data technologies, data in companies were historical, available mostly on strategic level, while managers were focused to use their experience in decision making process. With the development and application of Big Data technologies, data in companies are available on both - strategic and operational levels in large amount and in real-time, while managers are focused on data-driven decision making (Berner et al., 2014).

As previous results showed positive impact of Big Data technologies on coordination mechanisms in companies, the authors wanted to examine the correlation between statement that due to use of Big Data technologies all data were integrated with statements in scale Strategic and operational activities (see Table 5).

Table 5. Correlation Coefficient (ρ) between statement that due to use of Big Data technologies all data were integrated with all statements in scale Strategic and operational activities

Statements in scale Strategic and operational activities	By using Big Data technologies, all the data in the company were integrated.
By using Big Data technologies, existing products/services were improved.	0.468**
By using Big Data technologies, decisions about introducing new products/services were made.	0.511**
By using Big Data technologies, a more precise segmentation of customers was carried out.	0.379**
By using Big Data technologies, the supply of products/services was better adjusted to market segments.	0.371**
By using Big Data technologies the prices of products/services were dynamically adapted according to market conditions.	0.430**
By using Big Data technologies, the company collected and sold data to other interested companies.	0.313**
By using Big Data technologies, the time for completing business processes was reduced.	0.433**

** $p < 0.01$

Source: Author's calculation from conducted research

The results of Spearman's rank correlation coefficient show the existence of a moderate correlation for the most statements (values from 0.3 to 0.49) and one high correlation (correlation coefficient above 0.5). All correlations were statistically significant at $p < 0.01$. There is a connection among the statement that due to the

use of Big Data technologies all data were integrated and statements that the application of these technologies lead to improvement of existing and introduction of new products/services, more precise customer segmentation, better adapted offers to market segments, dynamically changed prices depending on market conditions and decrease of time needed for realisation of business processes. It is clear that companies that use Big Data technologies are able to significantly improve and facilitate their coordination mechanisms and consequently their strategic and operational activities.

5. Conclusion

The aim of the paper was to examine the impact of Big Data technologies on coordination mechanisms in companies. After analysis of referent literature regarding Big Data technologies and coordination mechanisms, empirical research with specially designed online survey was conducted. After two months of collecting answers, 214 companies wordwide that use Big Data technologies participated in research. Collected data were analysed by using Statistical Package for Social Sciences, known as SPSS, version 21.0 (IBM, Armonk, NY) and Microsoft Office Excel 2007 (Microsoft Corporation, Redmond, WA, USA).

Results from empirical research showed that by using Big Data technologies all data were integrated in the company, routine work processes were automated, complex work processes and activities were automated, and also routine decisions. Besides that, participants agreed with the statements that by using Big Data technologies the control of realisation of tasks and activities increased, and that the activities of management and transfer of knowledge improved. Traditional coordination mechanisms acquired completely new characteristics due to application of Big Data technologies. Mutual adjustment of employees is replaced with implicit coordination thanks to integration of all data and *one version of the truth* in the company. Also, standardisation of processes, results, knowledge and skills turn into a programmed routines, hyperautomation and system-supported skills, while direct control is replaced with a system-supported control.

The results of Spearman's rank correlation coefficient indicate that there is a correlation among the statement that due to the use od Big Data technologies all data were integrated and statements that the application of these technologies lead to improvement of existing and introduction of new products/services, more precise customer segmentation, offers which are better adapted to market segments, dynamically changed prices depending on market conditions, and decrease in time for realisation of business processes.

Results from empirical research clearly show that Big Data technologies have positive impacts on coordination mechanisms in companies and consequently on their strategic and operational activities.

Empirical research was accompanied by some limitations that should be considered. The first limitation of the research is that the population was not known in advance - there is no one single list of all companies that use Big Data technologies. Therefore, the question of representativeness of the sample is opened and consequently the possibility of generalisation of conclusions. Also, the possibility to conduct a longitudinal study on the level of the whole sample over time is limited.

During analysis of results from conducted empirical research, some proposals for future research appeared. It would be very interesting to examine and analyse the impact of Big Data technologies on integration in companies with larger number of statements in Likert-type scale and through different time frames.

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TRANSFORMACIJA MEHANIZAMA KOORDINACIJE U KOMPANIJAMA PRIMENOM SAVREMENIH TEHNOLOGIJA: EMPIRIJSKO ISTRAŽIVANJE

Apstrakt: Posmatrano kroz istoriju, tehnologija je oduvek bila faktor koji je uticao na organizaciju radnih procesa i dizajniranje organizacija. Danas, mnoge nove pojavne forme informaciono-komunikacionih tehnologija donose brojne koristi prilikom dizajniranja organizacija i utiču na sve parametre organizacione strukture. Cilj rada jeste da identifikuje na koji način primena novih tehnologija, poznatih pod nazivom Big Data, utiče na mehanizme koordinacije u kompanijama. U radu je sprovedeno empirijsko istraživanje primenom posebno koncipiranog upitnika koji je popunilo 214 kompanija širom sveta koje primenjuju Big Data tehnologije. Rezultati sprovedenog istraživanja pokazuju da je u kompanijama koje primenjuju Big Data tehnologije došlo do promene mehanizama koordinacije. Najznačajnije promene proističu iz činjenice da je primenom ovih tehnologija došlo do integrisanja svih podataka i da su oni postali dostupni na jednom mestu, a da su radni procesi, aktivnosti i odluke automatizovani. Zahvaljujući primeni Big Data tehnologija, mehanizmi koordinacije su poprimili potpuno nova svojstva i karakteristike. Poboljšanje mehanizama koordinacije dovelo je do bolje integrisanosti na nivou cele kompanije, a samim tim i do poboljšanja strategijskih i operativnih aktivnosti kompanija.

Ključne reči: Big Data, informaciono-komunikacione tehnologije, organizacioni dizajn, organizaciona struktura, integracija, mehanizmi koordinacije, podaci.

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Jelena Lukić is Assistant Professor at Modern Business School in Belgrade. She graduated from the Faculty of Economics at the University of Belgrade (2011), completed Master course in Business Administration (2012) and acquired Ph.D. Title at the same faculty (with Ph.D. thesis entitled The Impact of Big Data Technologies on Organizational Design of the Company). She is the author or co-author of several scientific research papers published in relevant national journals of international importance in the field of information and communication technologies and organisational design. Her main research areas are: organisational design, soft skills, Information and Communication Technologies and Big Data.