

Company information resource management as a corporate risk management tool

PRASOLOV, Valeriy I.; HAJIYEV, Seymour O.; STOVOLOS, Nadiya B.; GUROVA, Tatyana I.; BOZHKO, Lesya M.; SULTANOVA, Naila I.

ABSTRACT:

The article discusses the evolution of social relations which leads to the formation of an information economy. The essence of the concept of information resources has been investigated using the economic approach. The economic kernel of the concept of information resources has been singled out. This made it possible to characterize its content as an information product, item of goods, source of knowledge, cultural item, public good and production factor. The prospects of the artificial intelligence application for making optimal management decisions in the process of corporate risk management have been noted.

Keywords: information resources, information resource management, information quality, risk management, situational approach.

1. Introduction

Nowadays, the theory and practice of corporate risk management are not adaptive enough to a dynamic market. Thus, the global nature of the information changes in the global economy is of particular interest. Taking into account the development of information technologies, these days, continuous corporate improvement is a must (Schaltegger et al., 2017). Theoretical foundations of the company's information resources management in a turbulent environment demonstrate immaturity in many ways (Martin, 2017). It is mainly driven by the absence of systematic research on the application of the managing of information within corporate risk management. Companies require not only the principles of establishing but also specific actions applicable to various markets and types of companies to improve the effectiveness of the information resources and corporate risk management (Krivtsov et al., 2016). The theoretical unification of corporate strategies based on these actions leads to managerial interaction with information resources, information products, the information field, etc. (Sucha, 2016). However, in today's theoretical context, there is no single position on the functional boundaries and universal definitions of the objects mentioned above.

The recognition of information as a resource is a topic of scientific debates in the economic literature. According to Connell (1981), information is not a resource; its value is subjective and does not depend on external factors. In contrast to this view, Gupta, Tan, Ee & Phang (2018) concluded that information should be treated as a resource that must be managed: it has value, cost and properties that can be managed to improve its quality.

The second topic of scientific debates is the scope of information when classifying it as information resources. Bowen (2009) and Berestova (2016) reduce the nature of information resources to the concept of documents. The documentary approach is based on the fact that information becomes a resource only when it is materialized and circulates in the information space independently of its primary source. Therefore, the transfer of intangible information requires a tangible medium. We agree with the authors that a document is an important information resource. At the same time, documents can be material and digital. However, we believe that this approach limits the understanding of information resources, since it narrows the sources of information. The researchers Gurdev (2013) and Ganaie & Rather (2015) propose a broader approach to the interpretation of "information resources". The concept includes all forms information (documented

and undocumented information). In fact, information resources are extremely diverse. Therefore, a generalized approach allows consideration of a wide range of tangible mediums (video content, oral expert advice, etc.) as a source of information.

Despite the fact that the concept of information resources was considered by different authors, we believe that its internal content has not been properly studied: there are not enough scientific papers providing a comprehensive description of information resources as a product, item of goods, public good, knowledge transfer tool, cultural item and production factor. The formation of a comprehensive concept will reflect the nature of information resources.

Since the quantity, quality and utilization of information have become the factors that determine the level of company's development, information resources should be classified as strategic resources that can be managed. This viewpoint was expressed by Mithas, Ramasubbu & Sambamurthy (2011) in their work. Therefore, the scientists were focused on the problems of management of information resources.

Alternatively, the essence of information resource management can be understood as the development, maintenance and improvement of information systems that are designed to improve the quality of information (Namani, 2010), to manage information technologies used to collect, process, store and select data from various sources (Khanam et al., 2013). However, we suppose that the management of information systems and information technologies does not always refer to the management of information resources. Therefore, the identification of these concepts is unjustified.

Unfortunately, the nature of the company information resources and the possibility of their active management have not been discussed by scientists. The area of practical application of information resource management tools to increase the effectiveness of corporate risk management is also of scientific interest. The development of measures to improve the effectiveness of corporate risk management is the underlying rationale for the present paper.

The purpose of our research is to study the applicability of the company information resource management in corporate risk management.

The following tasks have been set:

- to determine the nature of information resources as a basic concept in the theory of information resource management of a company;
- to determine the place and role of information resources in the company information management; to determine the content of the company information resource management as a corporate risk management tool;
- to determine the conditions for increasing the effectiveness of corporate risk management through the company information resource management; to develop measures to improve the information resource management in order to increase company's performance.

2. Methods and materials

The theoretical framework of the study is fundamental and applied economic research devoted to the problems of managing information resources and corporate risk management.

The object of the study is the information resource management of the company; the subject of the study is the theoretical and methodological approaches to using the information resource management of the company as a corporate risk management tool.

Furthermore, current research is conducted basing on the theoretical assumption, that «***There is a causal relationship between the information resource management of the company and the effectiveness of corporate risk management***» by the following structure.

The economic approach of the concept of information resources will be considered at the first stage: the economic kernel will be singled out and a comprehensive definition of the concept will be synthesized. The economic approach is based on the works by Tonta & Darvish (2010), Evangelopoulos, Zhang & Prybutok (2012). It will help us to determine the words (economic kernel) that most accurately characterize the concept of information resources.

The second stage involves determining the place and role of information resources in the company information management. At this stage, the Ishikawa diagram method is used (Best & Neuhauser, 2008; Ciocoiu & Ilie, 2010). This is a graphical method for analyzing causal relationships of the problem being studied.

The third stage of the study includes the identification of quality attributes and the selection of methods for improving the quality of information resources, which are the basis for managerial decision-making.

At the fourth stage, the applicability of the company information resource management in corporate risk management will be evaluated. The emphasis is placed on the importance of using a situational approach to improve the risk management system. The methodological basis of the situational approach has been borrowed from the works by Kim & Grunig (2011), Clarke, Friese & Washburn (2015), Aldrich & Rudman (2016). The essence of the situational approach is to study a set of circumstances determining the likelihood of a particular situation at a given time.

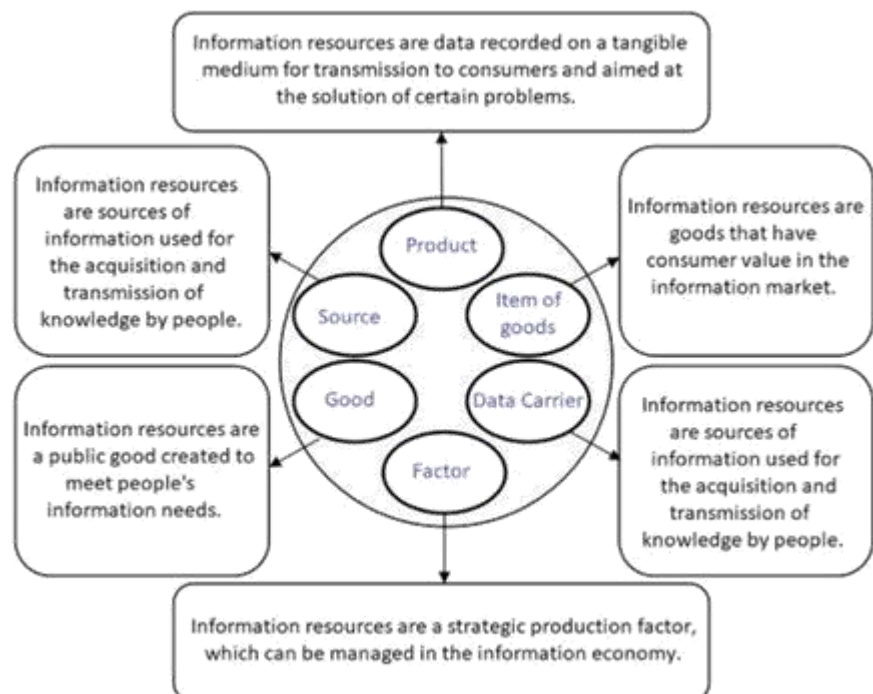
At the fifth stage, the measures to improve the information resource management and the corporate risk management system will be identified. It is expected that the implementation of these measures will help the company to achieve its development goals.

3. Results and discussion

In order to provide a more accurate description of the nature of information resources, it is necessary to identify their specific properties that distinguish them from other types of resources. These properties include consumer value, purposeful creation, use in a certain type of activity, capacity for unlimited replication, transmission in time and space, multiple use. The combination of properties of information resources makes it possible to use them extensively. This is confirmed by the results of the research based on the economic approach (Figure 1). Thus, information resources play the role of an investment product, item of goods, source of knowledge, cultural item, public good and production factor. In the view of this, we singled out the economic kernel of the concept of information resources and synthesized a comprehensive definition that more fully describes its internal content. Information resources are materialized data designed to solve a wide range of tasks, including knowledge transfer in time and space, the development of culture, the satisfaction of the information needs of citizens, social production intensification, etc.

Figure 1

The economic kernel of the concept of information resources (developed by the authors)

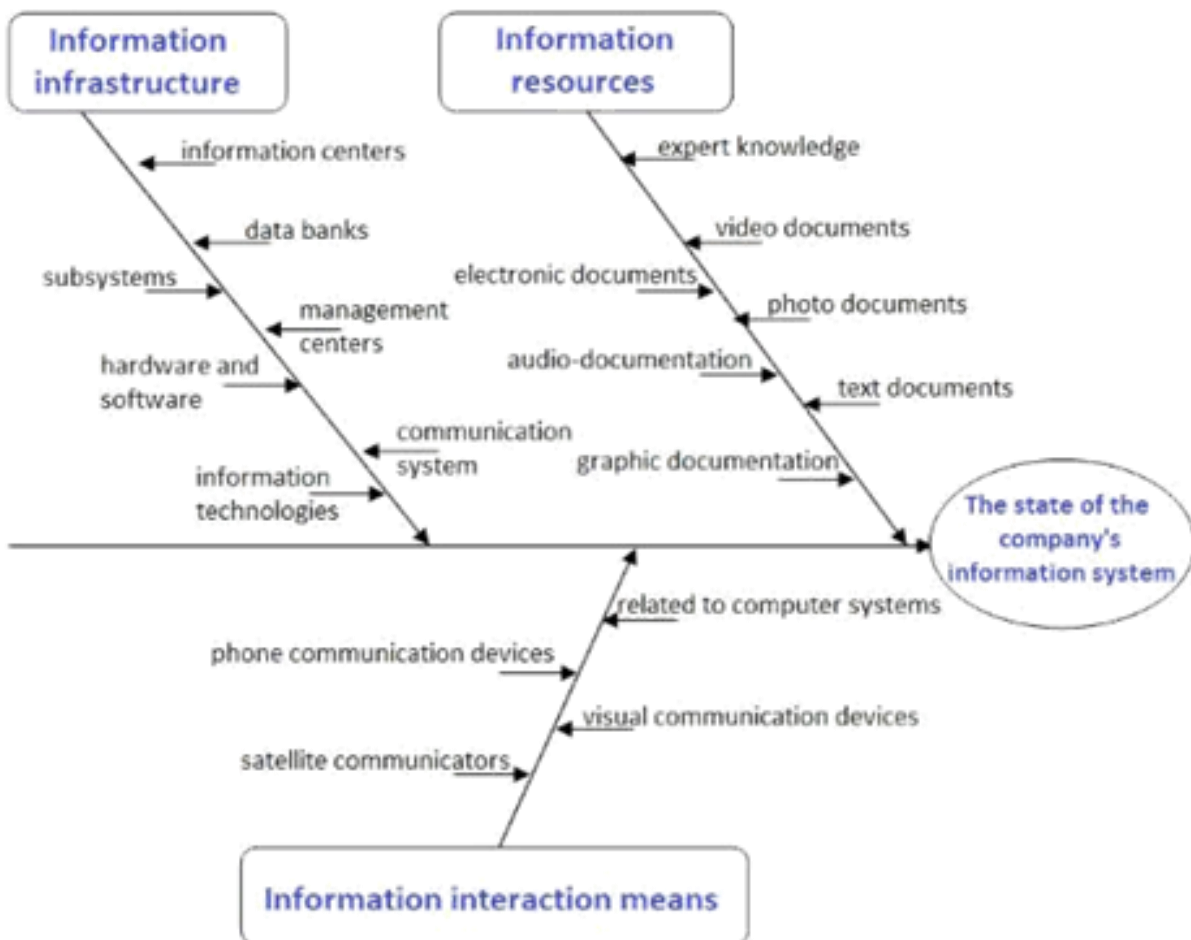


Information resources are an integral part of the company's information system, which is a part of the information space limited by certain criteria (Ettish et al., 2017). In a strict sense, the concept of the information system is interpreted as pooled data concentrated in a certain part of the information space. In the course of this approach, the information system management of a company is reduced to managing the information contained in it. At the same time, a company takes on two roles: an information generator and an information consumer (Wang, 2016). As a generator of information, the company develops its own information resources intended to cover the activities of the company; it interacts with organizations interested in such resources, expanding the geographical boundaries of its information system. As a consumer of information, the company uses information resources for management purposes.

Broadly, the concept of the information system is represented as a combination of information resources, means of information interaction and information infrastructure (Figure 2). Unlike the information environment that surrounds the company and interacts with it, the information system is relatively independent of the company (Petrov et al., 2018).

Figure 2

Company information system components
(developed by the authors)



It should be noted that the quality of information for making effective management decisions is very important. In our opinion, the quality of information resources should be characterized based on the following list of attributes that determine the ability of information resources to satisfy the information needs of information users.

Authenticity – no distortion of facts, correspondence to reality.

Relevance – integrity of the value of information at the time of its use.

Completeness – sufficient amount of data for the objective perception of reality.

Security – information security ensuring the safety of its quality attributes.

Thoroughness – meaningfulness of information, concise presentation.

Timeliness – conformity between the moment of receiving information necessary for making a decision and the moment of making the decision.

Utility – applicability to meet the needs of the user.

Consistency – logical data submission.

In the context of information uncertainty, it is important to improve the quality of information resources for identifying risks and developing measures to minimize their possible consequences. In this regard, it is necessary to eliminate information noise (everything that introduces distortion into the information in the process of its transmission) and to exclude information that does not have consumer value (Tseng, 2017). The following measures to improve the quality of information resources should be mentioned:

1. Data cleansing – the identification and correction of erroneous, duplicated, contradictory and similar data.
2. Data preprocessing – data reduction to set requirements for their subsequent application.
3. Data enrichment – the expansion of existing information by adding data from additional sources to increase the value of information.

Due to the fact that the external environment is being rapidly changed in modern market conditions, the influence of risk factors on the activities of companies is increasing. In this regard, there is a need for continuous monitoring of internal and external environment changes in order to immediately respond to a risk situation - to conduct an in-depth analysis of the deviations that have occurred and to bring in measures to eliminate them. These measures can be implemented practically provided that corporate risk management is improved based on a situational approach. Table 1 demonstrates the differences between the traditional and situational approaches to risk management.

To increase the effectiveness of corporate risk management, it is necessary to implement a set of measures to improve the company information management:

1. Optimization of the information architecture of a company – construction of information model that describes in detail the information flows of the company, the processes of information processing, database generation and information storage.
2. Implementation of information logistics to optimize data flows.
3. Timely updating of information technologies, which allows generating of high-quality information for making management decisions.
4. Regular information audit of the company aimed at identifying problems related to information management.
5. Ensuring the information security of the company; this will prevent unauthorized access to information and protect it from intentional distortion or destruction.
6. Corporate information culture improvement, which will help all employees to easily use the company's information resources in their professional activities.

Table1

The differences between the traditional and situational approaches to risk management (based on the data retrieved from Colicchia et al. (2019), Tupa et al. (2017)).

Traditional risk management	Situational risk management
is based on a systematic approach	is based on situational and process approaches
involves the formation of a centralized risk management system	involves the integration of risk management procedures in company's business processes
the object of risk management is a combination of risks	the object of risk management is a risk situation
the subjects of risk management are specially trained specialists	the subjects of risk management are all employees of the company; risk management is part of the corporate culture
risk management includes some risks that can be quantified	risk management includes all risks of the company
risk management is aimed at risk prevention	risk management is aimed at risk prevention

The implementation of the above-mentioned measures will help the company ensure the information transparency of customers and competitors, deepen the interaction with contractors and stakeholders, develop branches, conquer additional market segments, as well as make sound management decisions that minimize company risks and contribute to the achievement of its development goals.

Discussing the results of the study, the following should be highlighted.

Firstly, our definition of the concept of information resources was developed based on the economic approach and the economic core of the concept by contrast with other approaches (Connell, 1981; Bowen, 2009; Berestova, 2016; Gupta et al., 2018). This made it possible to synthesize a comprehensive definition and gain a better understanding of the internal nature and purpose of information resources.

Secondly, while studying the nature and structure of the information system, it was revealed that it is also affected by the information infrastructure and means of information interaction in addition to information resources. This made it possible to conclude that the interpretation of the information system as a collection of information in a specific place and time is not complete (Tsvetkov, 2014; Fomina et al., 2019), as well as to propose an expanded understanding of the concept as a combination of information resources, information infrastructure and means of information interaction.

Thirdly, we have presented both objective and subjective information quality properties. In contrast to the approaches of other authors (Khanam et al., 2013), we included the logic and security of information, which make it possible to increase the requirements for the quality of information resources as the basis for making managerial decisions.

Fourthly, we focused on the need to change the approach to corporate risk management in the context of highly dynamic changes in the environment of companies. The new approach should be based on a situational approach in order to identify a risk situation and bring in measures to prevent risks. Our perspective is similar to that of Pritchard (2014).

Fifthly, we have developed a set of measures to improve the company information management. In departure from the approaches presented by Abdulsalami & Omosigho (2017), the proposed list of

measures includes the introduction of information logistics in the company and the formation of a corporate information culture.

In general, the obtained research results suggest a fresh angle on corporate risk management processes. The study confirmed the hypothesis that there is a causal relationship between the company information management and the effectiveness of corporate risk management.

Unfortunately, the scope of the study did not allow us to find solutions to another problem related to the information management of the study — the development of a methodology for quantitative information processing that provides analytical data for dynamic risk management. However, the search for the solutions to this problem will be the topic of our further research. Directions for future research on the company information management include finding solutions to the problems of protecting property rights to information resources as intellectual property, establishing responsibility for information offenses, determining the labor force that should be involved in the production and distribution of information resources in the information society.

4. Conclusion

The rapid development of information technologies changes the technological structure of the economy: information resources become a production factor. The purpose of information resources is also being changed: they are considered as a set of documented data for subsequent transmission to users, an information product, an item of goods, a source of knowledge and culture, a public good and a strategic production factor.

Information resources are an integral part of the company information system. In a strict sense, the concept of the information system is interpreted as pooled data concentrated in a certain part of the information space. Broadly, the concept of the information system is represented as a combination of information resources, means of information interaction and information infrastructure. The information management of the company involves generation of information flows that reflect the activities of the company, as well as the improvement of the quality of information by eliminating information noise, processing and enrichment of the information to form the information basis for managerial decision-making.

The set of quality characteristics of the company information resources includes both objective and subjective attributes. The objective quality attributes of the information resources include: authenticity, relevance, completeness and security; the subjective attributes are thoroughness, timeliness, utility and consistency of information. High-quality information flows based on the company information system reduce information uncertainty. Therefore, company information management is the basis for increasing the effectiveness of corporate risk management.

In the context of the information economy, the traditional approach to risk management becomes ineffective and requires improvement. This is explained by the increased company costs for continuous monitoring of risks and significant risk factors. The introduction of a situational approach to risk management involves the integration of risk management in the business processes of the company to timely identify the risk situation. This allows taking measures to prevent the occurrence of risks. The development of corporate culture will involve all company employees in the risk management processes based on their professional competencies.

The study proposes to conduct a number of measures to improve company information management, including information architecture optimization, implementation of information logistics, updating of information technologies, conducting an information audit, ensuring information security and enhancing the corporate information culture. The actions proposed will create conditions for the efficiency increase of the company's information resources management, as well as for the corporate risk management system. Besides, the approach suggested offers greater clarity to the concept of information resources, determining their place in the information system, identifying changes in company management processes due to increased information flows and information uncertainty, justifying the need for a situational approach to corporate risk management.

Bibliographic references

Abdulsalami, T., & Omosigho, A. (2017). Information Resource Management and Use by Marketers of Business Organisation. *Asian Journal of Economics, Business and Accounting*, 3(4), 1-10.

- Aldrich, R., & Rudman, D.L. (2016). Situational Analysis: A Visual Analytic Approach that Unpacks the Complexity of Occupation. *Journal of Occupational Science*, **23**(1), 51-66.
- Berestova, T.F. (2016). The concept of information resources and other components of the theory of information-resource science. *Scientific and Technical Information Processing*, **43**(2), 83-87.
- Best, M., & Neuhauser, D. (2008). Kaoru Ishikawa: from fishbones to world peace. *BMJ Quality & Safety*, **17**(2), 150-152.
- Bowen, G.A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, **9**(2), 27-40.
- Ciocoiu, C.N., & Ilie, G. (2010). Application Of Fishbone Diagram To Determine The Risk Of An Event With Multiple Causes. *Knowledge Management Research & Practice*, **2**(1), 1-20.
- Colicchia, C., Creazza, A., & Menachof, D. A. (2019). Managing cyber and information risks in supply chains: insights from an exploratory analysis. *Supply Chain Management*, **24**(2), 215-240.
- Clarke, A.E., Friese, C., & Washburn, R. (Eds.). (2015). *Situational Analysis in Practice. Mapping Research with Grounded Theory (1th ed.)*. New York: Routledge.
- Connell, J.J. (1981). The Fallacy of Information Resource Management. *Infosystems*, **18**(5), 78-84.
- Ettish, A. A., El-Gazzar, S. M., & Jacob, R. A. (2017). Integrating internal control frameworks for effective corporate information technology governance. *JISTEM-Journal of Information Systems and Technology Management*, **14**(3), 361-370.
- Evangelopoulos, N., Zhang, X. & Prybutok, V. (2012). Latent Semantic Analysis: Five Methodological Recommendations. *European Journal of Information Systems*, **21**(1), 70-86.
- Fomina S.N., Sizikova V.V., Shimanovskaya Ya.V., Kozlovskaya S.N., & Karpunina A.V. (2019). The Effect of Teaching and Supply Chain Management on Employees Skills in Small and Medium Sized Enterprises of Russia. *International Journal of Supply Chain Management*, **8**(4), 930-938.
- Ganaie, Sh.A., & Rather, M. (2015). Diversity of Information Sources in the Digital Age: An Overview. *Journal of Advancements in Library Sciences*, **2**, 53-61.
- Gupta, G., Tan, K.T.L., Ee, Y.S., & Phang, C.S.C. (2018). Resource-Based View of Information Systems: Sustainable and Transient Competitive Advantage Perspectives. *Australasian Journal of Information Systems*, **22**.
- Gurdev, S. (2013). *Information sources, services and systems*. New Delfi: PHI Learning Pvt. Ltd.
- Khanam, S., Siddiqui, J., & Talib, F. (2013). Role of Information Technology in Total Quality Management: A Literature Review. *International Journal of Advanced Research in Computer Engineering & Technology (IJARCET)*, **2**(8), 2433-2445.
- Kim, J.-N., & Grunig, J.E. (2011). Problem Solving and Communicative Action: A Situational Theory of Problem Solving. *Journal of Communication*, **61**(1), 120-149.
- Krivtsov, A. I., Polinova, L. V., Ivankina, M. S., Chubarkova, E. V., & Prokubovskaya, A. O. (2016). Corporate Information Management System and Its Influence on Increase of Changes Productivity. *International Journal of Environmental and Science Education*, **11**(15), 7627-7636.
- Martin, W. J. (2017). *The global information society*. Taylor & Francis.
- Mithas, S., Ramasubbu N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly*, **35**(1), 237-256.
- Namani, M.B. (2010). The role of information systems in management decision making-an theoretical approach. *Manager*, **12**(1), 109-116.
- Petrov, A. A., Karpinski, M., & Petrov, O. S. (2018). Development of methodological basis of management of information protection in the segment of corporate information systems. *International Multidisciplinary Scientific GeoConference: SGEM: Surveying Geology & mining Ecology Management*, **18**, 317-324.
- Pritchard, C.L. (2014). *Risk Management Concepts and Guidance, (5th ed.)*. New York: Auerbach Publications.
- Schaltegger, S., Burritt, R., & Petersen, H. (2017). *An introduction to corporate environmental management: Striving for sustainability*. Routledge.

- Stonecash, J.G. (1981). The IRM Show. *Infosystems*, **10**, 42-48.
- Sucha, M. (2016). A primer for corporate librarianship and information management. *Information Management*, **50**(4), 43.
- Tonta, Y., & Darvish, H. (2010). Diffusion of latent semantic analysis as a research tool: A social network analysis approach. *Journal of Informetrics*, **4**, 166-174.
- Tseng, S. M. (2017). How information quality leads to operational capabilities and corporate performance. *International Journal of Innovative Science, engineering and Technology*, **4**, 26-34.
- Tsvetkov, V.Ya. (2014). Information Space, Information Field, Information Environment. *European Researcher*, **80**(8-1), 1416-1422.
- Tupa, J., Simota, J., & Steiner, F. (2017). Aspects of risk management implementation for Industry 4.0. *Procedia Manufacturing*, **11**, 1223-1230.
- Wang, J. (2016). Literature review on the impression management in corporate information disclosure. *Modern Economy*, **7**(6), 725-731.