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**IMPORTANCE AND SECURITY OF INFORMATION PROVIDED BY THE
INTERNET IN THE CONTEXT OF THE DEVELOPMENT OF ECONOMIC
ENTITIES IN POLAND**

**ZNACZENIE I BEZPIECZEŃSTWO UDOSTĘPNIANEJ PRZEZ INTERNET
INFORMACJI W KONTEKŚCIE ROZWOJU PODMIOTÓW
GOSPODARCZYCH W POLSCE**

**ВАЖНОСТЬ И БЕЗОПАСНОСТЬ, ПРЕДОСТАВЛЯЕМЫЕ ИНТЕРНЕТОМ
ИНФОРМАЦИИ В КОНТЕКСТЕ РАЗВИТИЯ ЭКОНОМИЧЕСКИХ ЛИЦ В
ПОЛЬШЕ**

Abstract

With the development of information-sharing techniques via the Internet, there are many benefits for beneficiaries, customers and users of public sector information services. On the other hand, entities providing electronic information via the Internet appear to be able to significantly reduce transaction costs of conducted financial transactions and electronic data transfer. On the other hand, the process of making information available via the Internet generates a number of risks associated with identity theft, hacker hacking of classified data, and money scams in electronic banking systems. In response to these threats, individual entities including public sector bodies are developing security systems for remote access to information and transactions made via the Internet. Companies operating in Poland in pursuit of market and business success try to build their competitive advantage by implementing new IT solutions to their business. More and more companies and financial institutions use business intelligence on their IT platforms for Business Intelligence solutions. Business

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Intelligence analysis makes it easy for managers to perform real-time analysis of large collections of business-related data. Consequently, there is the dominating opinion that Business Intelligence solutions are becoming more and more useful in organizational management processes.

Keywords: *Internet, cybersecurity, information services, business information, website, information infrastructure, information service, data processing, internet services security, internet banking, classified information protection.*

Streszczenie

Z rozwojem technik udostępniania informacji poprzez Internet wiąże się wiele udogodnień dla beneficjentów, klientów i osób korzystających z usług informacyjnych instytucji sektora publicznego. Natomiast dla podmiotów udostępniających elektronicznie informacje poprzez Internet pojawia się możliwość znaczącej redukcji kosztów transakcyjnych przeprowadzanych operacji finansowych oraz elektronicznego transferu danych. Z drugiej strony proces udostępniania informacji poprzez Internet generuje wiele zagrożeń związanych z przestępstwami kradzieży tożsamości, przechwytywania przez hakerów danych niejawnych oraz dokonywania malwersacji środków pieniężnych w systemach elektronicznej bankowości. W odpowiedzi na te zagrożenia poszczególne podmioty w tym instytucje sektora publicznego rozbudowują systemy bezpieczeństwa zdalnego udostępniania informacji oraz dokonywanych transakcji realizowanych za pośrednictwem Internetu. Działające w Polsce przedsiębiorstwa w dążeniu do sukcesu rynkowego i biznesowego starają się budować swą przewagę konkurencyjną implementując do prowadzonej działalności nowe rozwiązania informatyczne. Coraz więcej firm i instytucji finansowych wykorzystuje w tym celu analizy biznesowe przeprowadzanych na platformach informatycznych oferujących rozwiązania Business Intelligence. Analizy przeprowadzane z zastosowaniem rozwiązań Business Intelligence ułatwiają menadżerom przeprowadzanie w czasie rzeczywistym analiz dużych zbiorów danych dotyczących prowadzonej w przedsiębiorstwie działalności. W związku z tym dominuje opinia, że rozwiązania Business Intelligence stają się coraz bardziej przydatne w procesach zarządzania organizacją.

Słowa kluczowe: *Internet, bezpieczeństwo w cyberprzestrzeni, udostępnianie informacji, informacja biznesowa, witryna internetowa, infrastruktura informacyjna, serwis informacyjny, przetwarzanie danych, bezpieczeństwo usług internetowych, bankowość internetowa, ochrona danych niejawnych.*

Аннотация

Существует множество возможностей для бенефициаров, клиентов и людей, использующих информационные услуги государственных учреждений с разработкой методов предоставления информации через Интернет. Однако для организаций, которые электронным образом предоставляют информацию через Интернет, существует возможность значительного сокращения транзакционных издержек финансовых операций и электронной передачи данных. С другой стороны, процесс предоставления информации через Интернет создает множество угроз, связанных с кражей личных данных, взломом

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секретных данных и созданием денежных растрат в электронных банковских системах. В ответ на эти угрозы отдельные организации, включая учреждения государственного сектора, разрабатывают системы безопасности для удаленного обмена информацией и транзакциями, осуществляемыми через Интернет. Компании, работающие в Польше в стремлении к успеху на рынке и в бизнесе, пытаются создать свое конкурентное преимущество, внедряя новые ИТ-решения для своей деятельности. Все больше и больше компаний и финансовых учреждений используют для этого бизнес-анализы, проводимые на ИТ-платформах, предлагающих решения Business Intelligence. Анализы, выполненные с использованием решений Business Intelligence, облегчают менеджерам проведение анализов больших объемов данных в реальном времени, связанных с операциями компании. Поэтому доминирующее мнение заключается в том, что решения Business Intelligence становятся все более и более полезными в процессах организационного управления.

Ключевые слова: Интернет, безопасность в киберпространстве, обмен информацией, бизнес-информация, веб-сайт, информационная инфраструктура, информационная служба, обработка данных, безопасность интернет-услуг, интернет-банкинг, защита секретных данных.

Introduction

The Polish economy in the last quarter of the century went a thorough economic transformation which was connected with the process of system transformation, adaptation of economic processes to the standards of Western European countries, increase in the importance of the economic globalization process of the Polish economy, joining the European Union market structures and continuing influences of economic globalization. These processes, shaping many aspects of the economic functioning of the Polish economy, simultaneously affect social conditions and model the development of modern societies [B. Domańska-Szaruga 2013, p. 267]. At present, opinions prevail that the process of reconstruction and stabilization of the market economy started in 1989 and implemented mainly in the 1990s was essentially effective. During this period, the income of business entities grew, enterprises grew, and the share of the private sector from the mid-1990s onwards gradually increased in the aggregate [D. Prokopowicz 2016a, pp. 21-22]. However, on-

ly positive aspects did not appear in this process. The development of new business strategies was also influenced by factors interpreted by entrepreneurs as negative, such as a decline in consumption in the downturn periods on the domestic economy markets, especially in 2001-2003 and 2009-2012, i.e. during periods of production and income decline, and significant increase in the unemployment rate. A significant decline in consumption in periods of economic slowdown in the domestic economy, relatively low remuneration for performed work and increasing inflation contributed to a fall in revenues and profits of many companies operating in Poland during periods of a significant decline in the Gross Domestic Product. These social and economically unfavorable processes intensified during periods of more pronounced decreases in output and real income receivable that followed the global financial crisis [D. Prokopowicz 2010, p. 148] and in some other countries also economic crises. These unfavorable economic processes were to a larger extent carried

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out in small towns in regions characterized by a low degree of industrialization. In such periods of economic downturn, many companies achieving lower revenue from the sale of products and services were forced to change their business strategies and undertake restructuring their finances, mainly cutting costs, including reducing employment, limiting the volume of production [S. Gwoździewicz, D. Prokopowicz, 2015, p. 49].

In view of the above, for 27 years of development in Poland, the market economy has already experienced at least 4 periods of cyclical fluctuation of the domestic economy. From the point of view of business management, research processes are of particular importance, the aim of which is to try to forecast the next economic fluctuations [J. Kos-Łabędowicz 2015, p. 92]. In order to effectively carry

out this type of research processes, current information on the current development of domestic and foreign markets, especially those on which the given entity operates, is indispensable. Currently, the importance of information in the context of the functioning of business entities in Poland is interpreted and researched in many different aspects. On the other hand, the importance of information for the effective operation of companies is directly or indirectly related to the Internet. It results from the growing share of Internet information, i.e. from the Internet in the overall information processes carried out in contemporary enterprises. Currently operating entities are increasingly looking for data on markets, advertise their product or service offer, look for business contacts, make electronic payments via the Internet [J. Sarnowski, D. Prokopowicz 2015, p. 135].

1. Economic and civilization conditions of technological progress in the field of data transfer and sharing on the Internet

The Polish economy in the last quarter of the century went a thorough, multifaceted system transformation. During this period significant changes took place in the Polish economy, including enterprises and public-sector entities, i.e. local government units. On the other hand, integration processes of economic structures of individual countries, especially in the area of the European Union, are successively implemented. The basis of these processes was the liberalization of cross-border capital flows supported by the harmonization of legal regulations. On the other hand, the development of modern technologies generates the improvement, innovations and facilities of electronic data transfer and information sharing, and simplifies the distribution channels of products and services, which contributes to the improvement of economic growth [M. Dutko, M. Karciarz 2011, p. 31]. In business entities,

however, there is an increase in the standardization of applied procedures, developed sales techniques and business operations. This indirectly influences the implementation of techniques for collecting, processing data and providing information by public sector institutions. The processes of homogenization and unification of market structures- as well as grassroot - dissemination of IT standards are the basis for the transnational phenomenon of market integration, globalization of economic processes and electronic information sharing techniques in the global Internet network [M. Łakomy 2015, p. 78]. Development and globalization have brought new challenges for the protection, electronic transmission and processing of data, including classified information [D. Prokopowicz, 2016b, pp. 9-10]. Pursuant to the guidelines of the European Union Directive of 1995, in view of the continua-

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tion of the development of the Internet and digital society, the IT infrastructure of individual entities should be modernized and adapted to guarantee the right to protection of electronically provided information. The increase in technological innovations of electronic access to information in the enterprise sector and public-sector institutions significantly influences the development of entrepreneurship in market economies. Unfortunately, in terms of broadly defined innovations in production and the economy, enterprises and public-sector entities operating in Poland belong to the least active in the European Union [A. Żolnierski 2012, p. 36].

A particularly important issue that should be taken into account in shaping the Polish economic policy in the coming years is the activation of public sector institutions to improve the standards of information sharing so that the technological level and security of data transfer on the Internet is up to the standards of developed countries of Western Europe. A significant convenience in the process of improving the techniques of electronic provision of information by public sector entities and improvement of the operation of security instruments is the possibility of implementing these processes in investment projects co-financed with the participation of financial resources and subsidies of the European Union [D. Prokopowicz 2012, pp. 25-26]. It is now widely accepted that in the next, already started financial perspective foreseen for 2015-2020, key aspects that are exchanged when defining system goals to be achieved, i.e. those that should be activated and developed in the Polish economy are also techno innovations -logical, development of electronic economy, digitization of public sector institutions and improvement of data transfer security on the Internet. A positive derivation of these processes should be in the following years significant activation of

economic growth, including improvement of the situation on the labor market as a result of generating new employment places for specialists in the security of IT systems, Internet and other IT areas [M. Dutko, M. Karciarz p. 58]. In the long-term perspective, also after 2020, the derivation of these processes should also be an improvement in the state of state public finances. The basis for the above strategic goals of development of electronic economy and information society in Poland is an experience in financing technological investment projects implemented under the previous financial perspective with the participation of EU financial resources in 2007 - 2013. Well, based on these experiences, it was noticed that the effective use of available EU funds from the previous financial perspective was determined by innovation and entrepreneurship already operating effectively in the market conditions of economic entities in Poland [M. Matosek, 2014, p. 75].

As far as the economic process of globalization is concerned, for some time there have been significant globally acting changes in modern economies, including in national and self-government institutions of public sectors. Public-sector institutions, including local government units, improve their functioning also in the scope of collecting, processing and sharing data with other entities, including citizens and enterprises. The processes of improving the security of data transfer in the Internet are successfully implemented. These processes are implemented to activate the development of the electronic economy and the information society, and to adapt the procedures and techniques for ensuring security to the standards of developed Western European countries, including the existing regulations of the European Union [M. Wiśniewska 2013, p. 78]. These processes also apply to institutions and economic entities operating interna-

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tionally whose dynamic development is determined by other issues of effective implementation of technological innovations in individual corporations, SME sector entities and public-sector institutions. The basis of these processes is the liberalization of capital flows supported by the harmonization of legal provisions. On the other hand, the development of modern technologies is correlated with the issue of activating technological progress also in the field of electronic data processing and storage as well as sharing information on the Internet. This development provokes rapid distribution of products and services of enterprises and information services of public sector entities and contributes to the growth of innovation, standardization of applied procedures, developed techniques of product distribution and implemented information services. The processes of merging and unifying market structures, as well as the grassroots process of technological innovation, dissemination of information technology standards is the basis of the phenomenon of globalization of financial systems, including these in the public sector [S. Bukowski ed. 2010, p. 54].

The predominance of positive aspects of these processes demonstrated in recent years suggests their continuation in the near future [T. T. Kaczmarek 2009, p. 38]. In the area of the main determinants conducive to improve the techniques of electronic data transfer and sharing information with interested beneficiaries via the Internet, [G. Szpor, W. Wiewiórowski 2012, p. 163]:

improvement of techniques and emerging innovations in the distribution of products, financial services of the financial sector and information services of the public sector institution, reduction of procedural barriers, technological facilities for clients of business en-

ties and beneficiaries of public-sector institutions, including in the scope of conducted business activity, concluding financial transactions with the participation of electronic banking [D. Prokopowicz 2009, p. 63], electronic settlement of business operations with offices, deliberate activities inscribed in the socio-economic policy of the country, e.g. through governmental programs to support national development and the local electronic economy in order to increase the level of digitization of the activities of public sector institutions, activated by pro-development socio-economic policy, technological progress in the field of computer science and electronic data transfer techniques, it generates improvement of standards of cooperation and information exchange between enterprises and public-sector institutions, including self-government units [P. Wróbel 2014, p. 63].

A derivative of these processes should also be the activation of entrepreneurship and technological innovation which, consequently, should positively influence the development of business activity. In the longer term, this should translate into accelerating the pace of economic development, increasing GDP and improving the situation on the labor market. Therefore, in this section, significant correlations and feedback in the field of technological innovation in the sector of economic entities and cooperation of these entities with public sector institutions were pointed out. Since the beginning of the 1990s, the economic growth in Poland has been determined mainly by the development of entrepreneurship, commercialization of economic processes, implementation of modern technological solutions, and adjustment of procedural standards to the normative regulations of the European Union. The participation of creativity and innovativeness of economic entities oper-

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ating in Poland, as well as local and national entities operating in the public sector, including local government ones, is significant in this respect. These positive trends were not disturbed even by the negative global financial crisis. On the other hand, the level of technological innovativeness in Poland is significantly lower in the context of the standards of highly developed countries [A. Borcuch 2012, p. 92]. Therefore, there is a need for further systemic in the socio-economic policy to inspire to create technological innovations emerging in enterprises and their imple-

mentation in public-sector institutions [D. Prokopowicz, S. Gwoździewicz 2016, pp. 155-156]. This will translate into an improvement in the financial management of these entities, and thus this process may be an important factor in improving the finances of public institutions, including local government units, some of those already highly indebted. In addition, correlations and feedbacks that improve cooperation between business entities and public - sector institutions should also develop in the context of this process.

2. The growing importance of information and the Internet in the activities of business entities

Since the 1990s, the importance of the issue of rationalization of the conducted financial economy has been growing in Poland, because these activities are to lead to an increase in the economic efficiency of the process of managing available resources. These projects should contribute to the activation of economic processes and thus contribute to improving the functioning of both individual business entities and entities from the public sector and indirectly the entire economy. In all areas of effective functioning of enterprises and public institutions, acquisition, processing, collection, archiving and sharing of various types of information for other entities, including public and classified information, including personal data of Internet users, is an important issue. The key issue in this circulation and the provision of information is the improvement of archiving and data transfer techniques as well as information security in the IT systems of individual entities as well as in the Internet network [M. Hill ed. 2014, p. 148].

Just like commercial sector entities, public sector institutions in order to function efficiently must constantly adapt to the changing realities of the socio-economic envi-

ronment and technological progress in the field of modern in-format solutions for secure archiving, processing and sharing of information.

The ongoing process of informatization of infrastructure of enterprises and offices increases the scale of involvement of IT technology for the needs of electronic collection, processing and sharing of classified information between entities operating in the economy. This issue also concerns the computerization of processes that operate on the resources of personal data of business entities' clients and citizens towards public offices and institutions. On the other hand, the progress in the field of IT technology enforces permanent improvement of techniques for obtaining and archiving information, which are then processed in databases of enterprises, financial institutions and public institutions and again made available and transferred via the Internet. The main determinant of the development of online techniques for acquiring, processing and sharing information on the Internet is marketing activities of business entities. This activity, which can be both a goal and a tool, which should ultimately increase the recognition of a given brand or product in a particular

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segment of Internet users [J. Sarnowski, D. Prokopowicz 2015, pp. 135-136].

3. The use of computerized analytical Business Intelligence platforms in the process of business improvement of the enterprise

Effective development of the company is determined by making the right decisions in the management process. The main determinants of enterprise development include the increase in the value of held capital, the improvement of the product offer and increasing the share in the target markets in the sales of manufactured goods. Achieving these goals is conditioned by efficient picking of market signals and gaining a competitive advantage, which requires efficient knowledge management and making economically effective decisions. For many operating business entities, information is classified as a key factor of production, i.e. it significantly affects the functioning of a given organization. Information about the market, technologies, competition, changing consumer demand for a given range of products and services are just some of the categories of data relevant to each organization operating on the market. The position of a given company on the market depends on the efficiency of acquiring specific information from the market and its proper interpretation, effective processing and inference in the reports being developed [D. Power 2013, p. 59]. The development of IT technology, which has been developing for several decades, significantly accelerated at the end of the last century, which was connected, among others, with the implementation of informatics in key business processes of enterprises and financial institutions [A. Dmowski, D. Prokopowicz 2010, p. 158] and other entities. The successive increase in the formalization of the business entities' activity allows for a significant increase in the efficiency of the production, business and technology processes being carried out but also in the area of

management and reporting, which is particularly important for making decisions. The synergy of these evolutionary processes has led to the development of new business applications of information technology. At the end of the last century, a medium of information technology appears which sets a new direction for the processes of obtaining, processing, transmitting and collecting information relevant to the effective functioning of business entities. This new medium of information technology that changed the business models of many companies turned out to be the Internet.

In the environment of this global medium, data processing in the cloud was created, and the collection of data sets in Big Data databases [H. Lee, I. Sohn 2016, p. 127] and the integration of business processes of entities that are geographically distant from each other but integrated with Internet information systems and electronic banking. The importance of direct remote communication of products' suppliers with consumers and the use of information exchange between potential customers, i.e. data resources collected on social networks by the suppliers of products and services, is growing. In recent years, another important factor supporting the analytical and decision-making processes of business entities is developing, thanks to which the use of the above-mentioned ones becomes fuller and more integrated. The next important factor that can potentially significantly increase the efficiency of enterprises' operations are computerized platforms used to conduct business analyzes in the formula of Business Intelligence [J. Grzegorek, D. Prokopowicz 2017, p. 223]. However, after the emergence of Business Intelligence platforms, other determinants

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of the development of the global network shaped the development of business applications and the use of information and communication capabilities that the Internet potentially offers to business entities [C. M. Olszak, E. Ziemba ed. 2012, p. 62]. Since the 90s of the last century, the main determinants modeling the business use of information and communication resources of the global network in enterprises and public institutions were the development of online marketing techniques, electronic banking and related security issues of electronic transfer of classified data. The development of online electronic banking has determined the need for continuous refinement of teleinformatic technology and regulation of shapes that secure electronic data transfers and protection of secret data [S. Gwoździewicz 2014, p. 75]. The introduction of modern IT solutions to the entities of the financial system in Poland was also determined by the entry of Poland into the market structures of the European Union and the resulting process of adjusting and unifying the IT technologies and technical standards of the systems in the early 1990s in IT services operating in institutions of the financial sector. These processes were also an important determinant of the globalization of the financial system operating in Poland at that time [S. Gwoździewicz, D. Prokopowicz 2016, p. 68].

Financial institutions cooperating with enterprises are developing a new area of management of the issues of data transfer security and issues carried out through the Financial Transactions Initiative, i.e. security management of IT systems. In the situation of a dynamically growing number of banking users of electronic banking systems, the issue of improving the functioning of IT systems in terms of security of transactions, risk analysis and incurring costs for creating system solutions for maintaining a high level of security and

protection of classified data is growing. The problem of improvement of system security solutions is particularly important in the situation of commonly occurring hacker attacks on electronic online banking systems [S. Gwoździewicz, D. Prokopowicz, 2016a, p. 243].

Enterprises in the pursuit of market and business success try to build their competitive advantage by implementing new IT solutions to their activities. One of the areas of activity of companies and institutions that significantly affects the efficiency of their functioning is the issue of efficient knowledge management in the context of the management process of a given organization. Therefore, efficient use of the information technology and information resources of the organization influences the quality of decision making in the business management process. Organization management should be based on a previous analysis of reliable and current market data and information on the business. More and more companies and financial institutions use for this purpose business analyzes conducted on platforms that offer Business Intelligence solutions [M. S. Gendron 2014, p. 157]. On these platforms, information necessary for managerial decision-making processes is updated on an ongoing basis, archived, classified and used to develop analytical reports of Business Intelligence [J. Surma 2016, p. 31]. Most companies and institutions supporting their management processes with analyzes carried out in the form of Business Intelligence treat these solutions as business analytics instruments helpful in transforming multicriteria data sets into knowledge necessary for effective and efficient management of a given organization. Corporations use computerized analytical Business Intelligence platforms, usually for the purpose of organizing, processing and reporting the economic and financial situation of the researched entity.

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Reporting uses the analyzed information in the form of extensive comparative summaries, the results of queries and conclusions facilitating real-time, multi-criteria analyzes of selected areas of the company's operations [P. Radziszewski 2016, p. 73].

Nowadays, it is assumed that analyzes carried out with the use of Business Intelligence solutions make it easier for managers to conduct real-time analyzes of large data sets related to the company's operations. Therefore, the dominant opinion is that Business Intelligence solutions are becoming more and more useful in organizational management processes [J. Grzegorek, D. Prokopowicz 2017, p. 224]. Some software companies operating in Poland for several years have been producing programs dedicated to conducting business analyzes in the Business Intelligence formula. Some versions of these specialized

computer programs are also offered to enterprises in the SME sector, which means that the Business Intelligence software produced in Poland is not only targeted at corporations and large enterprises [C. M. Olszak 2014, p. 47].

The analyzes show that the decision-making processes carried out in business entities should be based on the analysis of reliable and current market and business data. Information necessary for managerial decision-making processes is collected, organized and presented in the form of analytical Business Intelligence reports in corporations. Analyzes carried out in the Business Intelligence formula give the management team new opportunities to analyze large datasets in real-time, which significantly contributes to increasing the efficiency of business management.

Conclusions

Over the past few decades, significant progress has been made in electronic data transmission systems, which was mainly determined by the development of information and telecommunications technologies. Customers of services and products offered by various enterprises, public and financial institutions are increasingly contacting these entities remotely via the Internet. This is the main but not the only factor determining the currently occurring digital revolution in information societies. In addition, the determinants of this development include also the development processes of IT equipment that enable easy access to the global Internet network, and the financial institutions' offer is gradually extended [A. Dmowski, D. Prokopowicz, J. Sarnowski 2008, p. 168] in the field of online electronic banking. These processes are one of the key factors of the ongoing economic

Companies operating in Poland in pursuit of market and business success are trying to build their competitive advantage by implementing new IT solutions for their operations. More and more companies and financial institutions use for this purpose business analyzes conducted on the platform of formats offering Business Intelligence solutions. On these platforms, information necessary for managerial decision-making processes is constantly updated, archived, classified and used to develop Business Intelligence analytical reports [J. Surma 2016, p. 31]. A significant part of business entities operating in Poland that support their management processes with analyses conducted in the form of Business Intelligence treats these solutions as business analytics instruments helpful in transforming multi-criteria data sets into knowledge necessary for effective and efficient management of

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a given organization. The conducted research shows that the analyzes carried out with the use of Business Intelligence solutions make it easier for managers to conduct real-time analyzes of large data sets related to the company's operations. Therefore, the dominant opinion is that Business Intelligence solutions are becoming more and more useful in organizational management processes [J. Grzegorek, D. Prokopowicz 2017, p. 224].

Bibliography:

1. A. Borcuch (2012), *Electronic banking in Poland, second edition changed*, Warsaw: CeDeWu Publishing House.
2. S. Bukowski, ed. (2010), *Globalization and regional integration and economic growth*, Warsaw: CeDeWu Publishing House.
3. A. Dmowski, D. Prokopowicz (2010), *Financial Markets*, Warsaw: Difin sp. z o.o.
4. A. Dmowski, D. Prokopowicz, J. Sarnowski (2008), *Finance and banking. Theory and practice*, Warsaw: Difin sp. z o.o.
5. B. Domańska-Szaruga, (2013), *Common banking supervision within the financial safety net*, (in :) K. Raczkowski, F. Schneider, (ed.), *The Economic Security of Business Transactions. Management in business*, Oxford: Chartridge Books Oxford.
6. M. Dutko, M. Karciarz (2011), *Information on the Internet*, Warsaw: PWN.
7. M. S. Gendron (2014), *Business Intelligence and the Cloud. Strategic Implementation Guide*, John Wiley & Sons Inc.
8. M. Hill, ed. (2014), *Cyber security as the basis for a secure state and society in the 21st century*, Warsaw: Difin Sp. z o.o..
9. J. Grzegorek, D. Prokopowicz (2017), *The Application Of The MS EXCEL Program And The Informalized Business Intelligence Analytics Platforms In The Management Of The Enterprises* (in :) "International Journal of New Economics and Social Sciences" - "International Journal of New Economics and Social Sciences" (IJONESS), International Institute for Innovation Science - Education - Development in Warsaw, No. 1 (5) 2017, pp. 222-237.
10. S. Gwoździewicz, (2014), *The European Union Towards the Threats in Cyberspace* [in] International Scientific Journal "Verejna Sprava a Spolocnost", Year XV, ISSN 1335-7182, Kosice, Slovakia, No. 2/2014: 70- 79.
11. S. Gwoździewicz, D. Prokopowicz (2015), *The role and the application of Keynesian macroeconomic anti-crisis in the context of the financial system in Poland* (in :) Globalization, the State and the Individual, "International Scientific Journal ", Free University of Varna" Chernorizets Hrabar ", Chayka, Varna, Bulgaria 9007, Varna 2015, No. 3 (7) 2015, p. 49.
12. S. Gwoździewicz, D. Prokopowicz (2016a), *Security of internet banking and conditions of electronic data transfer in Big Data technology in Poland* (in :) V. Vlastimil (ed.), "Medunarodni naučni zbornik. Pravo Ekonomija Menadžment I" / International scientific journals. Zarządzanie Prawa Gospodarka I / International scientific books. Right, Economy and Management I / , Publisher [Izdavač:] Srpsko Razvojno Udruženje / Association for the Development of Serbia / Bački Petrovac 2016, pp. 228-252.
13. S. Gwoździewicz, D. Prokopowicz (2016b), *Globalization, the State and the Individual*, "International Scientific Journal. ", Free University of Varna" Chernorizets Hrabar ", Chayka, Varna, Bulgaria 9007, Varna 2016, No. 1 (9) 2016: 63-75.
14. S. Gwoździewicz, D. Prokopowicz (2016c), *Social and Economic Determinants of Otwock in Poland* (in :) J. Szabłowski (ed.) "Entrepreneurship and Innovation in Selected Countries of Europe ", University of Finance and Management in Białystok, Białystok 2016, pp. 151-170.
15. T. T. Kaczmarek (2009), *Global economy and global crisis*, Warsaw: Difin sp. z o.o.
16. J. Kos-Labędowicz (2015), *Internet as a source of information in consumer purchasing decisions*, Warsaw: C.H. Beck.

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PhD Mirosław Matosek

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17. M. Łakomy (2015), *Cyberspace as a new dimension of rivalry and cooperation of states, Katowice*: University of Silesia.
18. H. Lee, I. Sohn (2016), *Big Data in industry. How to use data analysis to optimize process costs ?*, Warsaw: PWN.
19. M. Matosek (2014), *Innovative activity in cross-border teams*, (in :) Zeszyty Naukowe, ekonomics series, Lublin: WSEI.
20. C. M. Olszak (2014), *Business Intelligence in cloud*, (in :) "Polish Journal of Management Studies", (10) 2014.
21. CM Olszak, E. Ziemia (2012) ed., *Business intelligence systems as a subject of economic research*, (in :) "Faculty of Economics in the University of Economics in Katowice", Economic Studies, No. 113, University of Economics in Katowice, Katowice 2012.
22. D. Power (2013), *Decision Support, Analytics, and Business Intelligence*, Business Expert Press.
23. D. Prokopowicz (2009), *Threats to development and security of electronic banking* (in :) Zeszyty Naukowe, the Helena Chodkowska Legal and Management University in Warsaw. Year XIV. No. 1 (30) / 2009, pp. 60-73.
24. D. Prokopowicz (2010), *Influence of the global financial market crisis on the economic situation of the Polish economy* (in :) Zeszyty Naukowe of the Almamater University with its headquarters in Warsaw, (Ekonomia). The Almamater University of Economics, Warsaw, No. 4 (61) 2010, p. 148.
25. D. Prokopowicz (2012), *Against the background of market structures of the European Union* (in :) "Enterprise of the future", the Helena Chodkowska Legal and Management University in Warsaw, No. 2 (11) 2012, April 2012, Year of publication IV, pp. 25-34.
26. D. Prokopowicz (2016a), *Social and economic determinants of the banking system in Poland* (in :) *Globalization, the State and the Individual*, "International Scientific Journal", Free University of Varna "Chernorizets Hrabar", Chayka, Varna, Bulgaria 9007, Varna 2016, No. 2 (10) 2016, pp. 21-22.
27. D. Prokopowicz (2016b), *The Importance of the Financial System in Poland* (in :) "International Journal of New Economics and Social Sciences", ZN, No. 2 (4) 2016, pp. 9-10.
28. P. Radziszewski (2016), *Business Intelligence. Fashion, salvation or a problem for companies?* Modern Manager's Library, Warsaw: Poltext.
29. J. Sarnowski, D. Prokopowicz (2015), *Application of marketing innovations in enterprises in Poland* (in :) M. Sitek, T. Graca (ed.), "New challenges for 21st century Europe in the field of management and education", post-conference edition, University of Euroregional Economy Alcide De Gasperi in Józefów, Józefów 2015, pp. 135-156.
30. J. Surma (2016), *Business Intelligence. Business decision support systems*, Warsaw: PWN.
31. G. Szpor, W. Wiewiórowski (2012), *Internet. IT law problems of portals and e-services networks*, Warsaw: C.H. Beck.
32. M. Wiśniewska (2013), *Finance in times of crisis*, Series: Scientific Papers of the Banking College in Gdańsk, Warsaw: CeDeWu Publishing House, p. 78.
33. P. Wróbel (2014), *Electronic communication. Threats and their consequences for the organization*, Gdańsk: Gdańsk University.
34. A. Żoźniński (2012), *The importance of social capital in innovation management processes*, (in :) Report on innovativeness of the Polish economy in 2011, T. Baczko, (ed.) Warsaw: INE PAN.

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