BUSINESS INTELLIGENCE AND BUSINESS CONTINUITY: EMPIRICAL ANALYSIS OF CROATIAN COMPANIES

Danijela Lucić

University of Zagreb, Faculty of Humanities and Social Science, Department of Sociology

Abstract

Business Intelligence (BI) is an important strategic resource for business decision making. It is a cyclical system comprised of several separate phases; planning and direction, data collection, processing and data analysis, and dissemination or distribution of information to the business decision makers. The passing and maturation of the third and fourth scientific revolutions, in which the rate of data flow has surpassed that of goods and services, has made timely, accurate and relevant information the key resource for business continuity. In Croatia, two comprehensive surveys on the BI application within the largest companies have been conducted. The first survey, from October 2010 to April 2011, indicated a low level of application and understanding of the BI system and its benefits. The cross-sectional follow-up survey from March to July 2017 showed that although significant changes did not occur, there are indicators of potentially adverse effects on the health and security of Croatian business entities and the overall Croatian economic security. The paper presents the conclusions of the 2017 survey which comprised a sample size of the 1000 highest grossing companies operating in Croatia, along with a short comparison to the initial survey from 2010/2011. Considering that the BI system encompasses the internal, but primarily external environment of a business entity with respect to four key intelligence topics (decisions, key players, early warnings associated with possible threats or opportunities and business counterintelligence), the paper argues that a lack of knowledge on BI and low level of application of BI activities can significantly affect business continuity. In other words, non-application of business intelligence activities can lead to income loss, loss of competitive advantage, loss of data and productivity, cost increase, violation of law and regulations and even to the temporary or complete business downfall.

Keywords: business intelligence, business intelligence management system, business continuity, early warning system, empirical analysis, competitive advantage

Address for correspondence: Danijela Lucić, University of Zagreb, Faculty of Humanities and Social Science, Department of Sociology, email: dalucic@ffzg.hr

1. INTRODUCTION

Continuity is one of the key preconditions for tracking modern-world changes and adapting to them. Continuity does not designate sameness or monotony, but constancy and stability. These are abilities which facilitate the business entity to adapt to permanent and rapid internal changes, and more importantly, changes in the external environment. The important relationship of continuity and change was probably best described by an undisputed authority in business management and competitiveness and the founder of a modern strategy – Michael Porter, professor at the *Harvard Business School*, who once said: "The ability to change constantly and effectively is made easier by high-level continuity." [1] Achieving a high level of continuity is not an instantaneous phenomenon, rather a process, and when continuity is accomplished, permanent work is needed to preserve it. On the other hand, when continuity was disturbed due to various less or more foreseeable threats, its re-establishment is necessary. Continuity gives

---

1 Geoff Colvin, one of the main editors of Fortune Magazine, in 2012 said about Michael Porter: "He has influenced more executives - and more nations - than any other business professor on earth." Porter is in the world of economics, especially in the field of strategy and management, known by numerous and highly quoted thoughts. Many of them could be found on various websites. For more quotes read at: https://www.brainyquote.com/authors/michael_porter. (20/3/2019.)

stability to a business entity. It could be compared to the root of a plant that, if it is firm and stable, allows the plant to adapt more easily and quickly to conditions above ground level and to become more resistant which ultimately results in more and higher quality fruits.

Achieving business continuity is one of the substantive tasks of every business entity. The unpredictability of the 21st century world indisputably represents a major challenge for establishing and maintaining business continuity. Therefore, many national economies and numerous private business entities have developed mechanisms and procedures to keep pace with the world, as well as to gain a competitive advantage.

One important mechanism for coping with the ever-present risks is business intelligence (BI). BI is a system that is often compared to a radar which keeps track of changes in the external environment and punctually detects risks. It also indicates opportunities for acquiring competitive advantages for a business entity. In other words, it is an intelligence activity for business purposes. This activity includes data gathering from internal and external environments, transforming data by analytical processing into the information and knowledge that serves as a basis for making business decisions.

The well-known McKinsey Global Institute (2016) announced that flow and data exchange in 2014 surpassed the exchange of goods and services. The global network economy, which depends on digital technologies, is unthinkable without the development of a business intelligence system that is important for business continuity. Therefore, the main purpose of this paper is to indicate the relationship between BI (business intelligence) and business continuity. The paper argues that the implementation and application of BI activities can greatly contribute to the building and maintenance of business continuity. For this purpose, the key results of BI application from 2017 are presented in the paper with a brief review and

comparison with the 2010/2011 survey data. The emphasis is on the low level of BI usage and the consequences that such weak activity could have and/or already has for the business continuity of business entities operating in Croatia.

2. DIGITAL GLOBALIZATION – FEATURES OF MODERN BUSINESS

At the beginning of the 21st century, Manuel Castells explained in his famous book *The Information Age: Economy, Society and* Culture the distinction between "information society" and "informational society". He said that information plays a crucial role for the "information society", emphasizing that this was actually a key feature of all societies throughout history. "Informational society" on the other hand is characterized by a specific form of social organization "in which the production of information and its processing and transmission become the main sources of productivity and power thanks to the new technological conditions emerging in the present period of history" (Castells, 2000: 56). The aforementioned new technological conditions have brought modern civilization to the forefront of the new scientific-technological revolution or the Fourth Industrial Revolution which is characterized by unimaginable possibilities associated with information and communication technology. Because of the dominance of digital technology, the term "Industry 4.0" is increasingly being used. Industry 4.0 means "integrating modern Information Communication Technologies (ICT) with conventional physical production and processes, enabling the development of new markets and business models" (Veža, 2018). Such industry is represented by digital and smart production, 3D printers, digitization and capital efficiency.

Klaus Schwab (2017: 3), founder and executive chairman of the World Economic Forum and one of the most productive authors on the topic of the Fourth Industrial Revolution, outlines three key arguments that support his thesis on the specificity

of the new revolution which he thinks has already begun. First of all, this is the "velocity" which functions exponentially rather than linearly, and is "the result of the multifaceted, deeply interconnected world" enabled by powerful technology. The second feature is the "breadth and depth" of the digital revolution that "combines multiple technologies that are leading to unprecedented paradigm shifts in economy, business, society, and individually ". The third characteristic is "system impact" which "involves the transformation of the entire system, across (and within) countries, companies, industries and society as a whole" (Schwab, 2017: 3).

Regardless of major and rapid changes, information remains the key resource for business continuity and competitiveness of business entity. Moreover, increasing data exchange through digital technologies makes processing more difficult. So, processing analytical data in an accurate, relevant and timely manner as a foundation for decision making represents a huge challenge. Trends indicate that data volumes will continue to grow. By 2020, 50 billion devices are expected to be connected to the Internet which means that predicted data production will be 44 times greater than it was ten years ago, i.e. in 2009 (Khan, et al., 2014). The so-called *Internet of Things[1]* is also an important basis for doing business. The McKinsey Global Institute recently estimated that the *Internet of Things* could generate $4 trillion to $11 trillion in value globally in 2025 (Bauer, Patel and Veira, 2015: 2). All the above suggests that business will be even more dependent on digital technology in the future. Also, information will remain a key business resource. Therefore, the use and further development of business intelligence systems is essential for the modern business entities and their business continuity.

3. METHODOLOGY

In this paper, the triangulation technique was implemented using some qualitative as well as quantitative methods. In the first part of the paper, the descriptive method was used in order to investigate and understand business intelligence and business continuity. Then the relationship between the two concepts was established using the analytic-synthetic method and their interdependence was determined. In the second part of the paper, a quantitative methodology was used and the results of the research survey *Business Intelligence Application in 2017* have been shown. It is a repetition of a cross-sectional research survey, devised as the result of cooperation between the Department of Sociology of the Faculty of Humanities and Social Science at the University of Zagreb and Lider Media. The online survey method[2] was used with a target population of the thousand largest companies operating in Croatia. This ranking was made by the weekly business magazine *Lider* and the basic criterion for creating a list was the total revenue in the previous year[3]. Data collection started in March 2017 and was finished in July 2017 via electronic invitations to all of the thousand largest companies operating in Croatia. The research participation invitations were sent on several occasions to achieve a higher survey response rate. Unfortunately, the low response rate of 74 companies or 7.4%[4] meant that sample representability could not be achieved, and that the data was not weighted.

A highly structured questionnaire divided into three thematic sections was used. The first part was a knowledge test about the business intelligence system and its usage. In the second part of the questionnaire, participants were asked about the plans related to the BI system in their company. The third part included general questions about

---

1 *Internet of Things – IoT* is a "system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction" (Rouse, 2019).

2 The online survey was created using *Google Docs Form*.

3 Since a newer ranking has not been released when the survey has started, the list from 2014 was used. Special issue "Top 1000" was published on May 2014 as a special edition along with weekly business magazine *Lider*.

4 For comparison, in the first research (2010/2011) survey response rate was much higher - 23,3%.

the company profile. The results obtained were subjected to a descriptive statistical analysis using the SPSS (*Statistical Package for the Social* Science) and MS Excel.

4. DEFINING BUSINESS INTELLIGENCE (BI) AND BUSINESS CONTINUITY AND THEIR RELATIONSHIP

4.1. Business intelligence (BI)

The business intelligence concept is Howard Dresner's invention which dates back to 1989. At that time, Dresner founded the BI analytical department at the US consulting firm *Gartner Group*. Along with Steven Dedijer, Howard Dresner is considered to be the forerunner of business intelligence. However, it should be emphasized that Dedijer used the term "social intelligence" (Dedijer, 2000: 83) not "business intelligence". Although BI is only thirty years old, the practice of business intelligence is very old and is closely related to the sphere of "military action, state management, business administration, marketing, economics in general" (Juhari and Stephens, 2006: 77). There is no generally accepted translation of the term "business intelligence" in the Croatian language, but in the last ten years the term "business information management system" has often been used (Bilandžić et al., 2012; Bilandžić and Lucić, 2018). Apart from terminological controversies, both in Croatian and English, there are also those related to the definition of business intelligence, which partly result from terminological controversies[5]. The Global Intelligence Alliance (GIA)[6] has defined business/competitive intelligence as a "systematized and continuous approach to focus,

collect, analyze, communicate, and use information about customers, competitors, distributors, technology, macroeconomic issues and political issues in order to increase the competitiveness of the organization" (GIA, 2006: 4). It should be emphasized that business intelligence, as almost every other intelligence activity, implies a cyclical character that begins with a data collection plan, or assignment of tasks, and ends with a business intelligence product which serves as the basis for management decision making.

In his analysis of business intelligence, Luetić (2013: 2) states that it is a concept of organized, systematic, legal, legitimate and ethical collection, analysis and use of data and information obtained from them that provide management useful knowledge for making more efficient, faster, and more effective business decisions at all management levels in order to achieve business continuity and higher levels of competitiveness. From Luetić's definition, it is very clear that there is a connection between business intelligence and business continuity, which is discussed in more detail below.

4.2. Business continuity

The term business continuity sounds very intuitive and is defined as "the strategic and tactical capability of the organization to plan for and respond to incidents and business disruptions in order to continue business operations at an acceptable predefined level" (BCI, 2017: 6). Business continuity is often misidentified with disaster recovery that assumes „the process, policies and procedures related to preparing for recovery or continuation of technology infrastructure, systems and applications which are vital to an organization after a disaster or outage" (BCI, 2018: 26). Disaster recovery is a narrower term than business continuity and is one of the key components of business continuity, which puts primary focus on the technological aspect, while business continuity is about the overall business activity. The central idea of business continuity is to "protect the information in case of a larger and unexpected accident" and mana-

---

5 More about terminological controversies and various syntax, see more Bilandžić and Lucić (2018: 12-14). Here, only the most commonly used synonym for "business intelligence" (BI) is stated – "competitive intelligence" (CI). BI is a much broader term than the CI that appears for the first time in the US almost three decades before BI. For details see Bilandžić (2008: 23-27).

6 It is a globally known association and one of the most significant in the BI area. It was founded in 1999 in Finland, and in 2015 it has been renamed to M-Brain. More about the association see: *https://www.m-brain.com/* *(20/3/2019).*

ging business continuity involves "writing plans that determine how to deal in emergency situations" (NCERT & LSS, 2010: 6). Just like BI, business continuity also has its own life cycle: initial assessment and objective setting; critical process identification (risk assessment); business impact analysis; continuity response strategies (solutions' architecture and design considerations); and monitoring, testing and improvement ofthe plans. Those elements of the cycle are the backbone of what is called business continuity management – BCM (Krell, 2006; Lingeswara Tammineedi, 2010; Hinson, 2012).

At the end of 2006, two original British standards in the field of business continuity management (BCM) were defined: BS 25999-1 and BS 25999-2. These standards prescribed the methodology for BCM. In 2012, two new international standards (ISO) for business continuity management systems were defined - ISO 22301 and ISO 22313.[7]

Croatian National CERT (Computer Emergency Response Team) precisely describes and emphasizes the link between business continuity and information security in a publication titled "Business continuity management". According to CERT, information security "deals with the confidentiality, integrity, and availability of information within an organization" and business continuity "ensures that information is available to those who need it" (NCERT & LSS, 2010: 7). The importance of (business) information is common to both theinformation security and business continuity. Business information represents a dominant interest in business intelligence (BI) system as well, so

the relationship between business intelligence and business continuity is discussed below.

4.3. Business intelligence and business continuity connection

The BI system encompasses the internal, but primarily the external environment of a business entity and it is based on three key intelligence topics as Herring states (2001: 4): decision topics, key player topics, early warning topics associated with possible threats or opportunities. Bernhardt (2003: 28) points to the fourth topic – business counterintelligence.

The topic where the BI and business continuity are clearly connected is the early warning system (EWS). The purpose of EWS is mitigating surprises through risk identification and monitoring of these risks and warning should any threat occur (GIA, 2006: 5)[8] while the purpose of business continuity is to protect the information in case of a larger and unexpected accident. In other words, the BI system is a kind of dam that detects possible dangers through an early warning system and incites decision-makers to action in order to prevent possible impacts on business continuity. BI implies various instruments and analytical techniques to enhance foresight. In this paper, we put an emphasis on two: (Strategic) Early Warning System – SEWS and Scenario Analysis. The object of the SEWS is to "look beyond what is already known within the organization and is therefore designed to not only look at the longer term but also look from the outside in, across current issues and beyond the boundaries of existing dossiers" (Steen, et al. 2013: 22). Scenario analysis is a somewhat familiar BI technique which combines quantitative and qualitative analysis that imagines many possible future scenarios of environmental change (Fleisher & Bensoussan, 2015: 369). Scenario analysis results with plans that are applicable in

---

7 The first one, (ISO 22301: 2012) specifies "requirements to plan, establish, implement, operate, monitor, review, maintain and continually improve a documented management system to protect against, reduce the likelihood of occurrence, prepare for, respond to, and recover from disruptive incidents when they arise". The latter standard "provides guidance based on good international practice for planning, establishing, implementing, operating, monitoring, reviewing, maintaining and continually improving a documented management system that enables organizations to prepare for, respond to and recover from disruptive incidents when they arise" (ISO 22313: 2012).

8 It is a narrow understanding of the early warning system. Namely, an extended understanding, apart from the identification of threats, includes the identification of opportunities as well. For more details see: GIA (2006: 5-6) and Bilandžić & Lucić (2014).

various contexts and crisis situations.

Additionally, there is one more element that is common to BI and business continuity – cycle. There is a classic BI cycle with its key phases and there is the cycle of a business continuity plan[9].

Finally, business intelligence and business continuity have a common goal - to ensure that key business processes are done and thus prevent possible losses that could range from loss of reputation, loss of data, loss of productivity, financial losses and many others. Those losses ultimately lead to loss of competitive advantage and in the harshest scenarios could lead to dissolution, cancellation or withdrawal of a business entity.

After BI system and business continuity linkages have been established and described as well as the preventive function of BI for every business entity, the findings of empirical research on the application of the BI system in the largest companies operating in the Republic of Croatia are presented below.

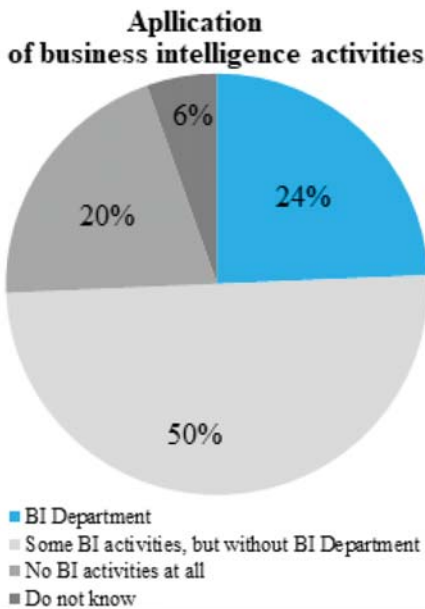## 5. APPLICATION OF BI ACTIVITIES IN CROATIA – DISCUSSION OF RESEARCH FINDINGS

In the initial phase of the research, projections were made to determine the required proportions in order to achieve representativeness in relation to the two key independent variables - the company size[10] and the region where the company is based[11]. Due to the low response rate, representation was not achieved (Table 1). So, the research findings have limitations that do not allow the generalization of the "1000 largest" population as the sample includes 74 companies (N=74).

Table 1: Number and structure of company responses

| | Company size | | | | | TOTAL | |
| | Small | | Medium-sized | | Large | | | |
Region	N	(%)	N	%	N	%	N	%
Northwestern Croatia	0	(0)	31	(56,4)	24	(43,6)	55	(100)
Eastern Croatia	0	(0)	5	(62,5)	3	(37,5)	8	(100)
South (Adriatic) Croatia	0	(0)	7	(63,6)	4	(36,4)	11	(100)

Source: Data collected by empirical research.

---

9   Both cycles are described in the text above.

10   Company size was determined by the number of employees (official categories) where companies with fewer than 50 employees are included into the category small, companies between 50 and 249 are medium-sized, while those companies with more than 250 employees are included in the category large. Micro companies were not included in the survey.

11   Regional division was made according to the NUTS II classification (NUTS - *Nomenclature des unités territoriales Statistiques)*. It is the official classification of the European Union, which determines the statistical spatial units. Such classification was proposed by the Croatian Bureau of Statistics in March 2007. The European Commission confirmed the compliance of the proposal of such regional divisions with the EU standards. This division was valid between 2007 and 2012, after which a new classification was proposed – Adriatic Croatia and Continental Croatia. But we used the same classification of three regions in the 2017 research survey in order to make the comparison with the 2010/2011 survey.

Graph 1: Application of business intelligence activities in Croatian companies[12] (N=74)

Apllication of business intelligence activities

- BI Department
- Some BI activities, but without BI Department
- No BI activities at all
- Do not know

Source: Data collected by empirical research.

Out of 18 companies with a BI department, 9 (50%) of them have operated a BI department for 1-3 years. Five or 28% of the companies have a BI department operating for 4-10 years. The number of employees in institutionalized departments varies. For example, in some companies the department employs only one person, while some employ about twenty people. In most cases, there are five employees in charge of BI activities within the company. Most of the companies that systematically or occasionally apply BI activities are dominantly focused on data related to existing

or potential consumers rather than on data related to products and services, business opportunities including potential business partners, and business law regulation. The security situation, the general political situation and the socio-cultural aspects, along with staff structure and potential clients are the categories of data in which the companies are less interested. These findings show that companies neglect important areas where many contemporary risks are present, which could jeopardize business and business continuity as well (Table 2).

Table 2: Data categories collected by companies that apply some business intelligence activities or have an institutionalized business intelligence department (N=55)[13]

Data that companies collect	Measure of data collection (%)
Finding new consumers	98
Potential business opportunities	98
Own customers	96
Products and services placement	96
Business law regulation	96
New products, services and prices	95
Potential business partners	95
Competitive strategies and financial conditions	93
Science, technology, and social movements	91
Economic situation	89
Security situation	71
Personnel structure and potential competitors	67
Political situation	56
Socioeconomic aspects	49

Source: Data collected by empirical research.

---

12 The variable originally consisted of two variables: 1) "Is your company applying some of business intelligence (BI) activities?": (a) Yes; (b) No; (c) I do not know and 2) "Does your company have an institutionalized business intelligence (BI) system?": (a) Yes; (b) No; (c) I do not know. For the sake of visibility, but also to make comparisons with the 2010/2010 survey results, variables were merged into one. In analyses where the relationship between the activities of the BI system with the other variables was verified, the companies that declared "I do not know" were excluded, i.e. 5.5% of them (because of rounding to the whole value of 6%). There were four such companies.

13 This question was only addressed to those companies that have a BI department and apply some BI activities. This is about 74% of companies or 55 (Graph 1).

When it comes to BI techniques and the frequency of their use, responsible persons in the companies said that the following five BI tools within the company were often used: win-loss analysis – 70.3%; data warehousing – 58.1%; SWOT analysis – 45.9%; data mining – 33.8%; timelining - 31.1%. The previously described analytical technique, which is crucial in the context of the analyzed themes and which clearly shows the connection between the BI system and business continuity -the SEWS (Strategic Early Warning System) – is not the focus of the companies analyzed in this survey. Namely, most companies (45.9%) do not use this BI technique at all, a quarter of companies (25.7%) use it sometimes, while just 12.2% of the companies use it frequently (Table 3). The second prominent and previously described predictive technique - scenario analysis- is occasionally or often used by three-quarters of the companies.

Table 3: Frequency of using predictive BI techniques (N=74)

To what extent does your company use this technique?	Strategic Early Warning System	Scenario Analysis
Not at all	45.9%	17.6%
Periodically	25.7%	51.4%
Often	12.2%	24.3%
I cannot estimate	16.2%	6.8%

Source: Data collected by empirical research.

Some analyses, which are also predictive and can contribute to the maintenance of business continuity, are almost unknown to the companies involved in the research. For example, linchpin analysis is used either occasionally or often by only 9.5% of the analyzed companies, while 17.6% of the companies use the fusion of industry analysis.

There are many other BI techniques that can be useful for detecting different risks, but the question is: are companies in Croatia aware of the importance and usefulness they could have for business continuity?

6. CONCLUSION

The dynamics of modern economic and social movements require constant changes and adjustments of economic subjects in order to keep pace with the competition or, if possible, to be a step ahead of it. In order to successfully change and adapt, business entities must achieve a high level of business continuity that needs to be maintained. Information is one of the basic resources for business continuity. The risks facing the business entities, or the national economy, represent a major challenge for modern business, so preparation for unknown or unpredictable variables is one of the basic tasks of every business entity. Risks cannot be avoided, but it is possible to detect and manage them. Successful detection and risk management is important for maintaining business continuity, and the business intelligence (BI) system has tools for identifying and managing risks. According to the research findings, the minority of companies that operate in Croatia, exactly 18 of 74, are aware of this fact and systematically apply BI activities in their business operations. It is important to note that the surveyed companies are ranked on the list of the 1000 largest companies by revenue and that percentage would be significantly smaller if companies not included in the top 1000 list were investigated. One of the basic elements of business intelligence is an early warning and it is logical to assume that any company that does not invest in such tools is more vulnerable to negative external influences than the one which is able to detect and respond to them in a timely manner and thereby reduce the potential damage to business continuity. When business continuity is broken, then it is only possible to sum up the damage and establish plans for a faster return to the normal course of business. The indicators found in the survey point to the vulnerability of economic entities operating in Croatia, but also point to the vulnerability of the Croatian economy in general. This makes the need for a national business intelligence system more than evident. Croatian

business entities should strive for the patterns of economically developed countries where systematic business intelligence has long reached the level of over 80%. The Finnish example might best illustrate how a country with or without little perspective can achieve remarkable economic and overall social shifts in just one decade.

BIBILIOGRAPHY

Bauer, H., Patel, M. & Veira, J. (2015). *Internet of Things: Opportunities and challenges for semiconductor companies*. New York: McKinsey&Company.

BCI (*Business Continuity Institute*) (2017). „Glossary of Business Continuity Terms".

Disaster Recovery Journal. Retrieved from: https://www.drj.com/uncategorised-sp-433/glossary.html (23/3/2019)

Bernhardt, D. (2003) *Competitve Intelligence: How to Acquire and Use Corporate*

Intelligence and Counter-Intelligence. London: Prentice Hall Financial Times.

Bilandžić, M. (2008). *Poslovno-obavještajno djelovanje: business intelligence u praksi*. Zagreb: AGM.

Bilandžić, M. *et al.* (2012). „Business Intelligence u hrvatskom gospodarstvu". *Poslovna izvrsnost*, 6 (1): 9-27. Retrieved from: https://hrcak.srce.hr/84678 (23/3/2019)

Bilandžić, M. & Lucić, D. (2014). „Predicting business opportunities and/or threats – business intelligence in the service of corporate security (empirical analysis of the usage in the economy of Republic of Croatia". *Collegium antropologicum*, 38: 25-33.Retrieved from: https://hrcak.srce.hr/120992 (23/3/2019)

Bilandžić, M. & Lucić, D. (2018) „Business intelligence u hrvatskom gospodarstvu – rezultati istraživanja 2017." *Poslovna izvrsnost*, 12 (1): 9-30. Retrieved from DOI: 10.22598/pi-be/2018.12.1.9 (23/3/2019)

Castells, M. (2000). *Informacijsko doba: Ekonomija, društvo i kultura. Uspon umreženog društva*. Zagreb: Golden Marketing.

Dedijer, S. (2000). *Stevan Dedijer - The World Jumper*. Čakovec: Zrinski d.d.

GIA (*Global Intelligence Alliance*) (2006). „Does Your Business Radar Work? Early

Warning/Opportunity System for Intelligence". *GIA White Paper*, 1/2006. Retrieved from: https://www.m-brain.com/wp-content/uploads/2015/04/10886.pdf (23/3/2019)

Fleisher, C. & Bensoussan, E. B. (2015). *Business and Competitive Analysis: EffectiveApplication of New and Classic Methods* (2nd Edition). New Jersey: Pearson Education.

Herring, J. P. (2001) „Key intelligence topics: A process to identify and define intelligence needs". *Competitive Intelligence Review*, 10 (2): 4-14. Retrieved from DOI:https://doi.org/10.1002/(SICI)1520-6386(199932)10:2<4::AID-CIR3>3.0.CO;2-C (24/3/2019)

Hinson, G. (2012). „Technical Briefing: Business Continuity Management". *EDPACS The EDP Audit, Control, and Security Newsletter*, 45(3): 14-25. Retrieved from DOI: https://doi.org/10.1080/07366981.2012.678125 (23/3/2019)

ISO 22301 (International Organization for Standardization) (2012). „ISO 22301:2012 Societal security -- Business continuity management systems -- Requirements". Retrieved from: https://www.iso.org/standard/50038.html (23/3/2019)

ISO 22313 (International Organization for Standardization) (2012). „ISO 22313:2012 Societal security -- Business continuity management systems – Guidance". Retrieved from: https://www.iso.org/standard/50050.html (23/3/2019)

Juhari, A. S. and Stephens, D. (2006). „Tracing the Origins of Competitive Intelligence Throughout History". *Journal of Competitive Intelligence and Management*, 4 (3): 61-82.

Khan, N. et *al.* (2014) „Big Data: Survey, Technologies, Opportunities, and Challenges". *Scientific World Journal*, vol. 2014. Retrieved from DOI:10.1155/2014/712826 (22/3/2019)

Krell, E. (2006). *Management Accounting Guideline. Business Continuity Management*. The Society of Management Accountants of Canada and The American Institute of Certified Public Accountants.

Lingeswara Tammineedi, R. (2010). „Business Continuity Management: A Standards-Based Approach". *Information Security Journal: A Global Perspective*, 19 (1): 36-50. Retrieved from DOI: https://doi.org/10.1080/19393550903551843 (22/3/2019)

Luetić, A. (2013). *Poslovna inteligencija i upravljanje opskrbnim lancem* (doktorska disertacija). Sveučilište u Splitu, Split, Ekonomski fakultet.

McKinsey Global Institute (2016). *Digital Globalization: The New Era of Global Flows*. New York: McKinsey&Company.

NCERT (Nationaln CERT) & LSS (Laboratory for Systems and Signals, Department ofElectronic Systems and Information Processing Faculty of electrical engineering and computing University of Zagreb) (2010). *Upravljanje kontinuitetom poslovnih procesa, NCERT-PUBDOC-2010-07-307*. Zagreb: CARNET. Retrieved from: https://www.cis.hr/files/dokumenti/CIS-DOC-2011-06-017.pdf (23/3/2019)

Rouse, M. (2019). „Internet of Things (IoT)". Retrieved from: https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT (23/3/2019)

Schwab, K. (2017). *Fourth Industrial Revolution.* New York: Crow Business.

Steen, van der M. *et al.* (2013). *Early signals, Timely strategy The Early Warning systemat the Dutch Rijkswaterstaat*. The Hague: Netherlands School of Public Administration.

Veža, I. (2018) *Inovativno pametno poduzeće.* Okrugli stol Hrvatske gospodarske komore „Kibernetsko fizikalni sustavi i internet stvari", 11. travnja 2018. Retrieved from: http://www.icent.hr/wp-content/uploads/2018/04/Ve%C5%BEa_HATZ_kibernetika.pdf (21/3/2019)