

Original Article**BUILDING COMPETITIVENESS AND BUSINESS RESILIENCE
IN THE ENVIRONMENT OF DIGITAL ECONOMY – A
RESEARCH IN A CHAIN OF SERBIAN PHARMACIES****Spomenka Babić Banković**

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Received: 13 January 2024; **Revised:** 23 March 2024; **Accepted:** 2 April 2024**Published:** 3 April 2024**DOI:** 10.5937/annnur2-48697**Abstract**

Background: Digital healthcare encompasses the use of information and communication technologies (ICT) to improve processes related to health, prevention, diagnosis, and treatment of diseases.

Aim: The goal of this research is to explore the transformation of conventional pharmaceutical profession into digital roles.

Materials and Methods: The research was conducted in 2022 within a chain of five pharmacies named "Hygia Pharmacy" in Arandjelovac, Serbia, employing 23 individuals. The primary focus was to assess the impact of digitization on the company's performance, competitiveness, and business resilience. An internet-based survey was conducted among the employees at three different time points: initially, three months later, and six months later.

Results: The business resilience plan of the company was confirmed by 91% of respondents. Most respondents stated that they attend professional webinars (81%) and Zoom meetings (57%) to improve their competitiveness. All respondents rated online sales as positively impacting consumers in terms of shopping convenience and mentioned that internal shipping and receiving documents facilitate work in the pharmacy. Most respondents (78%) gather professional information from digital sources (e-Pharmacy) compared to the paper form of the journal Pharmacy Practice. The survey revealed a downward trend in traditional working techniques compared to digital techniques, which showed an upward trend throughout all three testing cycles.

Conclusion: The research conducted within Serbian pharmacies indicates that the digital economy and ICT have caused significant transformations in terms of improving the competitiveness and business resilience of pharmacists.

Keywords: healthcare, electronic prescribing, pharmacy**Corresponding Author:** Spomenka Babić Banković, e-mail: z.u.higija.ar@gmail.com

Introduction

The term 'digital economy' refers to the use of information and communication technologies (ICT), as well as new products and services, as a concept in the contemporary economy. This concept emerged in the late 20th century^{1,2}. The COVID-19 pandemic has significantly accelerated the use of e-identities, electronic signatures, and the implementation of digital processes in patient healthcare³. Digital health care pertains to tools and services that utilize ICT to improve the prevention, diagnosis, treatment, monitoring, and management of health, as well as monitoring lifestyles that impact health^{4,5}. The implementation of innovative solutions enhances access to quality patient care and overall efficiency in the healthcare sector. Health challenges in the pharmaceutical and medical fields include the need for: a) an efficient and integrated healthcare system; b) personalized health research, diagnosis, and treatment; and c) preventive and healthcare services tailored to citizens.

Today, there are over 4000 pharmacies in the Serbian market⁶. For their operation and sustainability, digital elements of communication, education, and marketing activities are extremely important, such as digital health materials (webinars, e-journals, etc.). As integral parts of the healthcare system, pharmacies facilitate access to healthcare services for both legal entities and individuals through e-networks, e-prescriptions, and e-health. The electronic health system is an information and management system that supports healthcare processes.

The focus of this research encompasses several key areas: the impact of digitized prescription drug acquisition through e-prescriptions, the application of digitization within pharmacy institutions via communication using digital networks (both internal and external), the role of

digitization in the development of Customer Relationship Management strategies, exploration of emerging digital technologies (such as 3D printing) as future developmental trends promoting innovative communication and digital tools, and the importance of pharmacist and medical education in fostering pharmaceutical competitiveness and business resilience⁷.

The aim of this research is to explore the transformation of traditional jobs into digital ones and to identify the various advantages associated with this transition. Additionally, the study aims to investigate the relationship between digital and health business models, with a particular focus on the benefits of employing digital algorithms.

Materials and Methods

In the methodological approach of this work, which primarily focuses on the theoretical foundation of applying digital transformation in the domain of developing good pharmacy practice and enhancing the business resilience of pharmacists, we conducted an analysis and adopted both domestic and foreign reference literature, research papers, studies, as well as scientific journals.

To ensure a high level of reliability in our research, we employed the following research methods:

Survey Research: We conducted internet-based surveys to collect data from a group of 23 employees at A.U. Pharmacy Higija, including pharmacists and technicians. The survey covered demographic (gender, age, civil status) and socio-economic (work experience, job position, education level, courses attended) characteristics of the participants. Additionally, it explored their attitudes and beliefs regarding the digitization of pharmacies at three

different time points: initially, three months later, and six months later.

The survey included questions on various topics, such as: Attendance of training courses in business resilience, digital pharmacy, and agile behavior (yes/no); Existence of a business resilience plan in the company (yes/no); Ease of working with prescriptions due to the application of e-prescriptions and the use of e-medicine (yes/no); Frequency of following webinars for interest and accreditation (often, rarely, not at all); Role of Zoom meetings in improving pharmaceutical competitiveness (great, little, no role); Effect of online sales on consumer shopping comfort (yes, partly, no effect); Degree of facilitation of work in the pharmacy by internal dispatch notes and receipts (a lot, moderately, not at all); Implementation of behavioral principles in the institution (yes, no, I don't know); Implementation of behavioral principles in the institution (yes, no, I don't know); Dependency of agile business in the pharmacy on the application of new digital possibilities (great, little, not at all); Implementation of digital projects in the institution on a daily basis (yes, no); Approach to online education and licensing methods (structured, not structured, I don't know); Knowledge about the development and application of e-commerce and e-prescription compared to neighboring countries (great, not at all, I don't know); Existence of a plan for the development of digital competencies within A.U. (yes, no, I don't know); Importance of digital agility for proper collaboration with stakeholders (internal and external) (yes, no); Frequency of mistakes in the application of e-identity within the business and the approach to addressing them for development and learning (always, often, no); Preference for reading digital magazine E-apoteka or Pharmacy Practice (paper form) (E-apoteka, Pharmacy Practice, I don't know); Recognition of a continuous need for technological and

digital innovation within the pharmacies in the future (yes, no, I don't know).

This comprehensive survey aimed to gather detailed insights into the perceptions and experiences of employees regarding the digitization of pharmacy practices and its impact on various aspects of their work

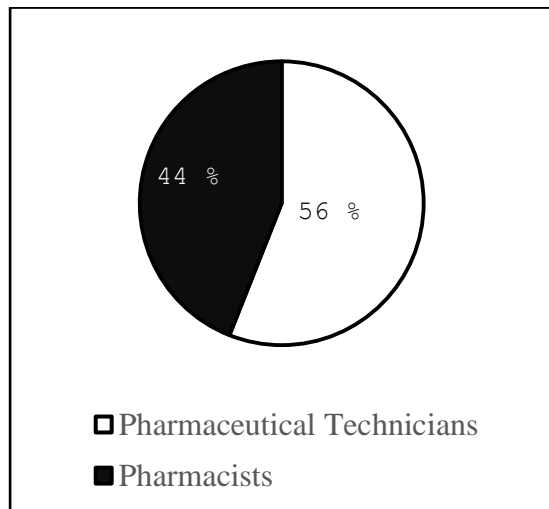
Statistical and Mathematical Analysis of Survey Results: The results obtained from the survey were processed using statistical and mathematical models to derive meaningful insights.

The research was conducted at 'Hygia Pharmacy,' a chain of five pharmacies located in Arandelovac, Serbia. The study aimed to investigate the impact of digital business on the company's communication, sales, operations, and marketing activities. We specifically focused on analyzing how pharmacists within the company utilize these digital skills to enhance their competitive engagement at work and improve the overall performance of the pharmacy chain.

Results

In the survey, 13 pharmaceutical technicians and 10 pharmacists participated (Figure 1). We observed that in 90 percent of cases, both pharmacists and pharmacy technicians held identical attitudes regarding the benefits of digital methods such as e-prescriptions, e-health, and e-commerce. The findings of the survey highlight the structured nature of education as a crucial aspect of organizing work in the pharmacy. Pharmacists and specialists in pharmaceutical activities demonstrated a high level of agility in the application and delegation of e-models. Conversely, from the perspective of technicians, the survey reveals a clear need, ability, desire, and motivation for development and learning in this domain.

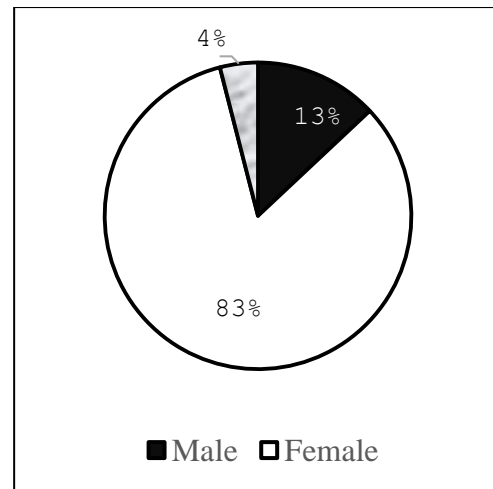
Figure 1. Distribution of respondents in relation to job position



The number of men in our collective, whether pharmacy technicians or pharmacists, is minor compared to women (3 and 19, respectively, with one non-respondent). However, regardless of gender, interest, and dedication to the profession through the aspect of digital methods are not lacking (Figure 2).

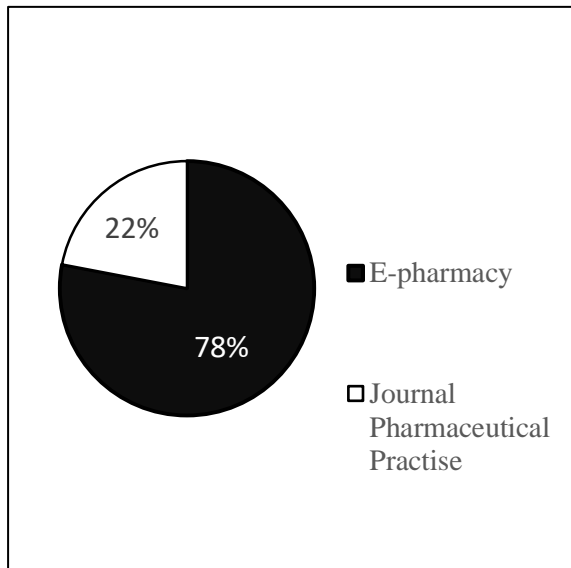
The business resilience plan in our company was confirmed by 91% of respondents (21 out of 23). All respondents confirmed that the implementation of e-prescriptions and the use of e-medicine have facilitated work with prescriptions. Thirty-five percent of respondents (8 out of 23) often attend webinars for licensing, while only 9% of respondents (2 out of 23) do not attend webinars at all. Fifty-seven percent of respondents (13 out of 23) rated the

Figure 2. Distribution of respondents in relation to gender



significant role of Zoom meetings in improving their competitiveness, while 22% found them interesting (5 out of 23). All respondents rated that online sales positively impact consumers in terms of shopping convenience. Similarly, all respondents rated that internal shipping and receiving documents facilitate work in the pharmacy. Seventy-four percent of respondents (17 out of 23) stated a structured approach to online education and licensing methods. Eighty-three percent of respondents (19 out of 23) stated a lack of knowledge about the development and application of e-commerce and e-prescriptions compared to neighboring countries. All respondents confirmed that there is a plan for the development of digital competencies in their pharmacy. Seventy-eight percent of respondents (18 out of 23) rated the crucial importance of digital agility for collaboration with internal and external stakeholders. Moreover, all respondents confirmed that errors in the application of e-identities are possible but are identified and corrected in time, thus facilitating development and learning. Finally, most respondents (18 out of 23) gather professional information from digital sources (e-Pharmacy) compared to the paper form of the journal *Pharmacy Practice* (5 out of 23) (Figure 3)

Figure 3. Sources of professional information for the employees in “Hygia Pharmacy”



All respondents confirmed that there is a continuous need for the implementation of technological and digital innovations within their pharmacy in the future.

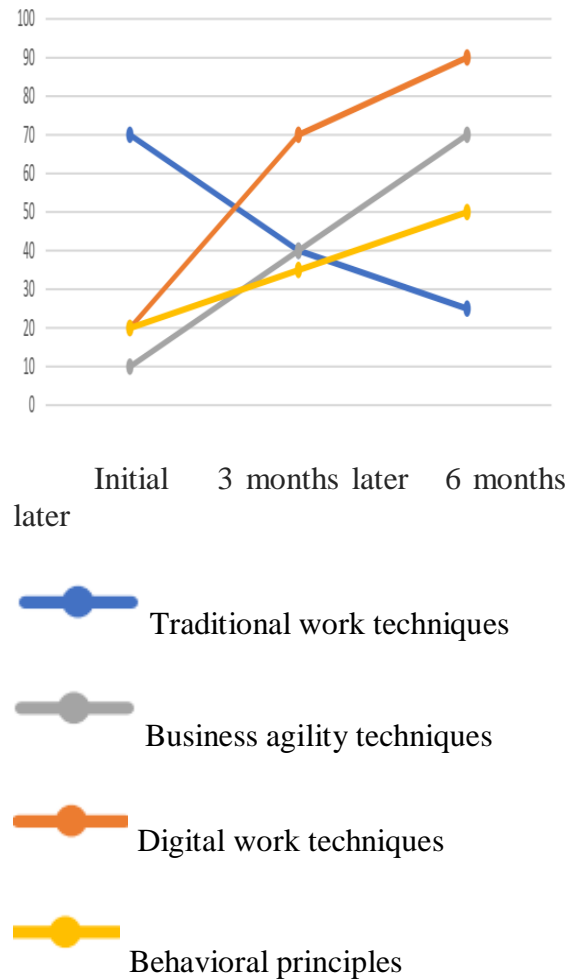
Figure 4 presents the percentage of positive responses to questions regarding applied techniques in three survey cycles. It is evident that traditional working techniques exhibit a downward trend compared to digital techniques, which show an upward trend across all three testing cycles. Business agility techniques follow digital techniques in a demonstrated growth trend.

Behavioral principles are integrated into the progression of digital technologies, impacting teamwork and operational and managerial aspects such as planning, organization, leading, and controlling processes. As a result, new digital structures that significantly streamline the entire organizational workflow are prominently involved in all processes.

Based on the number of affirmative responses, we have elaborated the stance that there is a continuous need for the application of technological and digital

innovations within our pharmacies in the future.

Figure 4. The percentage of positive answers in connection with applied techniques through three survey cycles



Discussion

The application of digital economic methods at 'Hygia Pharmacy' has facilitated more modern, precise, faster, and comprehensive communication among doctors, pharmacists, pharmacy technicians, and patients. New e-forms, such as e-prescriptions and e-health, have been implemented, along with new functionalities for receiving e-delivery

notes from important external stakeholders, such as suppliers. Additionally, e-commerce for online purchases and new digital communication tools like webinars and Zoom have been introduced. Furthermore, future trends in the development of 3D printing medicines are being explored.

Each participant in this study confirmed that integrating e-prescriptions and employing e-medicine has streamlined the prescription management process. An e-prescription involves the electronic generation, transmission, and fulfillment of a medical prescription based on a computer, replacing traditional paper prescriptions⁸. The doctor initiates the treatment process by prescribing the appropriate medication to the patient, whether for chronic or acute therapy. Subsequently, a request for medication issuance based on the prescription is generated through the portal of the Republic Health Insurance Fund (RHIF). All patient data is managed through software.

When the pharmacist scans the barcode on the e-prescription via the patient's health card using a barcode reader, they can access all relevant information, including the patient's name, diagnosis, reasons for exemption from participation, dosage, and the possible number of prescription refills. Additionally, the system provides a history dating back up to six months⁹.

Every respondent in this study acknowledged the potential for errors in applying e-identities but emphasized the proactive identification and rectification of such errors, contributing to ongoing growth and learning. The e-prescription, devoid of potential errors in traditional handwriting, is electronically transmitted from the healthcare provider to the pharmacy, which acts as the executor. This process ensures the accurate transmission of the entire prescription to the pharmacist

through a single channel, making it a convenient, precise, and fast method for doctors¹⁰.

The primary objective of e-prescription is to minimize the risks associated with prescribing and streamline the realization of prescriptions. Unlike traditional manual paper prescriptions, this new approach offers numerous advantages. With the introduction of new functionalities aligned with the fourth industrial revolution, the Serbian Government approved the implementation of e-prescriptions. The process commenced on October 30, 2017, in ten municipalities in Belgrade, with full implementation across the entire country completed in 2018¹¹.

Since then, e-prescriptions can be utilized in all pharmacies throughout the Republic of Serbia that have signed contracts with the RHIF, allowing the issuance of prescription drugs covered by mandatory health insurance funds. Agreements for dispensing and supplying patients with medicines are renewed annually. This transformation has positioned Serbia among the most modern healthcare systems, facilitating easy access for the population to receive adequate medical care and therapy¹².

Most participants (78%) indicated a preference for sourcing professional information from digital platforms such as e-Pharmacy, as opposed to the traditional paper format of the Pharmacy Practice journal. Pharmacist obligations are evolving in the following directions: a) Analytics of reception programs (work in the pharmacy), creating larger time intervals during which pharmacists can dedicate themselves to explaining, referring patients, and developing e-therapy. b) Continuous improvement of internal business systems (pharmacy software). c) Staying updated with the latest news and ensuring swift compliance with RHIF (changes in the list of drugs

approved by RHIF). d) Better temporal correspondence between pharmacies (e-info)¹³.

The role of pharmacists is to upgrade themselves through continuous education, thereby developing their skills in the application of e-prescriptions, following innovative digital progress streams, and gaining full agility for the operation and management of this system¹⁴.

The potential of digital applications, including e-prescription in healthcare, is reflected in a more efficient and integrated healthcare system, personalized health research, diagnosis, and treatment, as well as prevention and health services aimed at citizens¹⁵.

The findings of this study illustrate a declining trend in traditional working methods when contrasted with the upward trajectory observed in digital techniques across all three testing cycles. Moreover, business agility methodologies are seen to parallel the growth trend observed in digital techniques.

Along with e-prescription, e-health is also developing in Serbia. It involves the application of ICT technology to meet the health needs of citizens, patients, experts, and health institutions. The electronic health system serves as an informational and management system that supports health processes. These systems share the common goal of utilizing health data to enhance research and personalize medicine, thereby providing better information for citizens and contributing to the development of healthcare through digital tools¹⁶.

By developing modern healthcare models through telemedicine (telehealth) and mHealth (mobile health) via e-health, the care of patients over large distances providing advice, interventions, and monitoring becomes possible. MHealth

refers to medical practice and public health supported by mobile devices such as mobile phones, tablets, and smartphones¹⁷.

We anticipate the introduction of new functionalities on the e-health portal with the approval of the Serbian Pharmaceutical Chamber. Patients can voluntarily register to receive electronic notifications about the possibility and date of prescription drug delivery. This represents a new phase of digitization and personal communication, allowing patients to interact with doctors and pharmacists via mobile devices, including video communication¹⁸.

All respondents in this study rated online sales positively impact consumers in terms of shopping convenience, and they also acknowledged that internal shipping and receiving documents facilitate work in the pharmacy. Communication between Pharmacy Specialized Units (PSUs) is facilitated via internal dispatch notes. An internal dispatch note is a document used to transfer goods (medicines) within the same legal entity. Each internal dispatch note contains elements automatically assigned by the software. The significance of e-dispatch notes lies in the indirect control of PSU inventory, enabling daily inventory lists, fast communication between business units, and swift turnover of pharmacy stock. An additional advantage is the efficient allocation of a given business unit to provide patients with their desired choice of therapy by gaining insight into the warehouse of other PSU.

All participants in this study affirmed the ongoing necessity for integrating technological and digital innovations within their pharmacy moving forward. Digital business transformation gives rise to numerous security issues and implications. The greater the expressiveness of information and communication progress, the proportionally higher the degree of

complication and security tendencies and factors. The key reason is that digital transformation goes beyond merely applying new technologies to business processes; it represents a comprehensive disruptive transformation of all existing economic models. This includes communication and interconnection methods of every modern company with its suppliers, customers, and public administration¹⁹.

E-knowledge and e-skills have become fundamental components of work in modern pharmacies. The necessity for knowledge, continuous learning, and their practical application across various domains of pharmacy activities is inevitable. Therefore, possessing strong digital communication skills is a basic prerequisite for pharmacists to develop business resilience²⁰.

Conclusion

This research, conducted within a chain of Serbian pharmacies, highlights the crucial role of the digital economy and ICT in the functioning of modern pharmaceutical systems. E-changes are driving significant transformations in business and represent a rapidly developing trend. The research, conducted using analytical-deductive methods, underscores the importance of relevant digital transformations and serves as a valuable contribution to new scientific research findings.

Ethical Approval

N/A (the survey was anonymous)

Conflict of Interest

The author declares no conflict of interest.

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References

1. Tapscott D. The Digital Economy: Promise and Peril in the Age of Networked Intelligence. New York: Mc Graw Hill; 1996.
2. Stojanović M, Regodić D. Uticaj informaciono-komunikacionih tehnologija na ekonomski rast. Zbornik radova, Sinergija 2015 "Informatička ekonomija, izazovi, i šanse za budući razvoj Republike Srpske", XVI međunarodni naučni skup, Bijeljina, Republika Srpska, Bosna i Hercegovina. 2015, str. 105-108.
3. Amankwah-Amoah J, Zheer Khan Z, Wood G, Knight G. COVID-19 and digitalization: The great acceleration. *J Bus Res* 2021; 136: 602-11. doi:10.1016/j.jbusres.2021.08.011
4. Available at: https://healthcare.ec.europa.eu/ehealth-digital-health-and-care/over-view_hr. Last access: January 3, 2024.
5. Butcher CJ, Hussain W. Digital healthcare: the future. *Future Healthc J* 2022; 9(2): 113–117. doi: 10.7861/fhj.2022-0046.
6. The Pharmaceutical Chamber of Serbia. Available at: <https://www.farmkom.rs/en>. Last access on January 6, 2024.
7. Vejdani M, Varmaghani M, Meraji M, Jamali J, Hooshmand E, Ali Vafae-Najar A. Electronic prescription system requirements: a scoping review. *BMC Med Inform Decis Mak* 2022; 22: 231. doi: 10.1186/s12911-022-01948-w

8. Salmon JW, Jiang R. E-prescribing: history, issues, and potentials. *Online J Public Health Inform.* 2012;4(3):ojphi.v4i3.4304. doi: 10.5210/ojphi.v4i3.4304
9. Hareem A, Lee J, Stupans I, Park JS, Wang K. Benefits and barriers associated with e-prescribing in community pharmacy - A systematic review. *Explor Res Clin Soc Pharm* 2023; 12:100375. doi: 10.1016/j.rcsop.2023.100375.
10. Cassidy CE, Boulos L, McConnell E, et al. E-prescribing and medication safety in community settings: A rapid scoping review. *Explor Res Clin Soc Pharm* 2023; 7;12:100365. doi: 10.1016/j.rcsop.2023.100365.
11. Vekić B, Pilipović F, Dragojević-Simić V, Živić R, Radovanović D, Rančić N. Implementation of the nationwide electronic health record system in Serbia: challenges, lessons learned, and early outcomes. *Acta Clin Croat* 2022; 61(3): 488–95. doi: 10.20471/acc.2022.61.03.14.
12. Milenković D, Milenković MJ, Vujin V, Aleksić A, Radojčić Z. Electronic health system-- development and implementation into the health system of the republic of Serbia. *Vojnosanit Pregl* 2012; 69(10):880-90. PMID: 23155610
13. Lavigne JE, Wright SA, Sutton Burke E, Kirwan B, Ball J. Community pharmacies and population health. *Am J Health Syst Pharm* 2017;74(19):1522-23. doi: 10.2146/ajhp161029.
14. Park T, Kim H, Song S, Griggs SK. Economic Evaluation of Pharmacist - Led Digital Health Interventions: A Systematic Review. *Int J Environ Res Public Health* 2022;19(19):11996. doi: 10.3390/ijerph191911996.
15. Dick H, Doth S, Ernst C, Fischer S, Holderried M. Current developments on digitalization : Analysis of quality and economics in healthcare. *Urologe A.* 2021; 60(9):1141-49. doi: 0.1007/s00120-021-01606-5.
16. Schiza EC, Neokleous KC, Petkov N, Schizas CN. A patient centered electronic health: e-Health system development. *Technol Health Care.* 2015;23(4):509-22. doi: 10.3233/THC-150919.
17. Adibi S, (Ed.), *Mobile Health: A Technology Road Map.* Springer Series in Bio-/Neuroinformatics, Vol. 5; Cham: Springer; 2015.
18. Coomber P, Clavarino A, Ballard E, Luetsch K. Doctor-pharmacist communication in hospitals: strategies, perceptions, limitations and opportunities. *Int J Clin Pharm* 2018;40(2):464-73. doi: 10.1007/s11096-018-0592-1.
19. Čelik P. Institucionalne mere za povećanje sajber sigurnosti poslovanja u Evropskoj Uniji, *Ekonomске teme* 2019; 57 (3): 351-64. doi: 10.2478/ethemes-2019-0020
20. Vidas Bujanja M, Bujanja I. The Challenge of Going Digital, *JEMC* 2017; 7 (2): 126-136. doi:10.5937/-jemc1702126V