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DIGITALIZATION OF UKRAINIAN COMPANIES' ACTIVITIES IN WAR CONDITIONS: CHALLENGES vs OPPORTUNITIES

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ЦИФРОВІЗАЦІЯ ДІЯЛЬНОСТІ УКРАЇНСЬКИХ КОМПАНІЙ В УМОВАХ ВІЙНИ: ВИКЛИКИ vs МОЖЛИВОСТІ

Objective. The objective of this study is to summarize the pressing problems of Ukrainian companies in times of war and select relevant areas of digitalization that would help reduce these problems.

Methods. To achieve the outlined objective, the following methods of empirical and theoretical research are used: literature review, theoretical generalization (to identify, collect and analyse modern research on the digitalization of enterprise activities and overcoming the problems of Ukrainian companies), descriptive method (to highlight the business consequences of Russia's military aggression against Ukraine), methods of analysis and systematization (to identify promising ways to overcome the problems of domestic producers and group them by functional characteristics).

Results. Diagnostics of the problems that arose during the war and grouping of digital technologies to solve them are carried out focusing on the functional subsystems of domestic companies: financial, personnel, marketing, operational and research. The analysis reveals a wide range of digital tools suitable for use by domestic producers. The transfer of basic and supporting business processes into a virtual format, the spread of forms of remote work, the widespread use of highly specialized software products and artificial intelligence give domestic companies a great chance to stay afloat and improve their competitive position in the market. Digital technologies allow both reducing physical risks and the impact of war on business, and providing new opportunities for adaptation, automation, development and innovation. At the same time, for the successful

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implementation of digital solutions, technical and organizational changes, state support, as well as the readiness of the enterprises themselves for rapid adaptation and learning are necessary.

Key words: challenges, opportunities, digitalization, artificial intelligence, smart solutions, excellence, competitiveness.

Problem stating. Ukrainian business and entrepreneurs are going through especially difficult times. Russian aggression has caused and continues to cause damage and it will take much more than one year to calculate and clarify the actual impact and scales. In such a period any reserves for increasing operational efficiency and competitiveness become even more important for companies. So, the global digital transformation is even more vital for business as it allows to substitute physical activities with digitalised process. Most studies on the impact of the war on the economy and functioning of companies are limited to focusing on social and humanitarian issues, in particular, water, heat, electricity, food supply or garbage collection, but the issues of digitalization remain beyond the attention of most institutions and researchers [1].

Analysis of recent research and publications. A large number of modern publications are devoted to various tools and directions of digitalization of business organizations, as well as to the challenges and benefits of digital transformation. The impact of digitalization on small and medium-sized enterprises (SMEs) and the problems of digital transformation of business and possible ways to solve have been in focus of study by J. Singh and G. Zh. Ji [2]. Losheniuk I. etc. have examined the features of using virtual reality for business and systematized appropriate digital marketing tools [3]. The risks of widespread use of generative artificial intelligence and its prospects in human resource management were examined by P. Budhwar etc. [4].

Various ways to use artificial intelligence for innovate international business, human resource management, supply chain optimization, etc. have been offered by J. Menzies etc. [5]. Bombalier J. examined the ways in which artificial intelligence can help meet business needs and ensure its competitive advantages [6]. Moreover, M. Abraham and D. Edelman detail the constituent benefits of personalization created through artificial intelligence [7]. Ratten V. etc. have explored the

role that AI will play in internationalization and competitiveness, and how to integrate AI learning into business operations [8]. Six areas in which companies will secure their competitive advantage in the AI era have been outlined by J. Azagury and M. Moore [9].

The number of publications that explore the issues of digitalization of companies in crisis situations in scientific discourse is relatively small. However, since 2022, as evidenced by data from bibliometric databases, in particular Scopus, their number has been increasing. At the same time, researchers from Ukraine are losing ground to colleagues from the USA, Germany, and Great Britain, so it is not the matter of Ukrainians but global. It is necessary to distinguish between crisis conditions (which are an applied subject, primarily, of the theory of change management, internal readiness and flexibility of the functioning companies) and conditions that occur during war or armed conflicts (which are the reaction of companies to exogenous *force majeure* circumstances) (Fig. 1).

With the beginning of Russia's military aggression against Ukraine, publications have appeared that examine the problems of domestic enterprises in wartime. One of the first was V. Ratten who outlined the consequences of Russian aggression for the population of Ukraine and global business [10]. Exploitation of National Institute Global Econometric Model (NiGEM) by Liadze I. etc. allowed authors to quantify the impact of the war on the global and European economies, namely loss of 1% of GDP and inflation growth by 1% annually [11]. Ukraine's infrastructure losses due to Russia's invasion since 2022 have been assessed by I. Dunayev etc. following the offer of prospective state actions regarding reconstruction during and after the end of the war [12]. One more research of general impact of Russia's war against Ukraine on business and society has been carried out by W. M. Lim etc. [13].

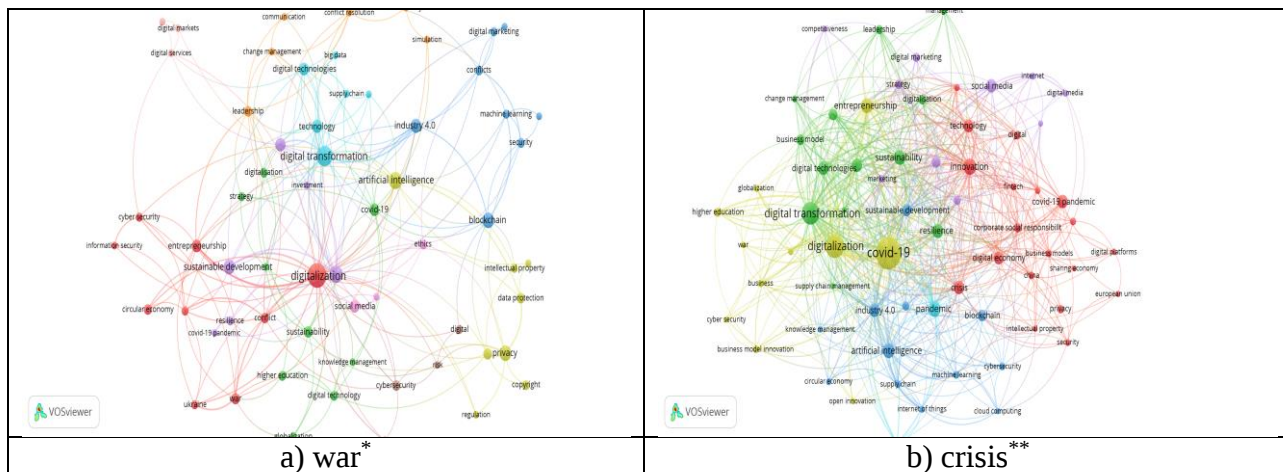


Fig. 1. Semantic map of digitalisation of companies in times of war and crisis (authors compilation based on Scopus data and use of VOSviewer)

Notes:

* 720 documents for search string - (TITLE-ABS-KEY (digital*) AND TITLE-ABS-KEY (business OR smes OR entrepr* OR compan* OR corporat*) AND TITLE-ABS-KEY (problem* OR challeng* OR obstac* OR threat*) AND TITLE-ABS-KEY (war OR warsh* OR conflic*))

** 1763 documents for search string - (TITLE-ABS-KEY (digital*) AND TITLE-ABS-KEY (business OR smes OR entrepr* OR compan* OR corporat*) AND TITLE-ABS-KEY (problem* OR challeng* OR obstac*) AND TITLE-ABS-KEY (war OR war* OR conflic* OR crisis))

However, there is still no clear answer to the question of how to make best use of digital tools by companies operating in a war zone, suffering from rocket attacks and emergency power outages, losing key personnel due to mobilization and mobility, and a number of other risks.

Objectives of the article. The objective of this study is to summarize the pressing problems of Ukrainian companies in times of war and select relevant areas of digitalization that would help reduce these problems. For better perception, the generalization has been carried out by functional subsystems of the enterprise (financial, personnel, marketing, operational and research areas of activity of domestic companies).

The main material of the study. At first glance, the functioning of a business in a country where full-scale military operations are taking place is a continuous problem. Since the beginning of Russian military aggression, people, households, infrastructure and, of course, business have been the most affected in Ukraine. In conditions of war, Ukrainian companies also face numerous challenges that significantly affect their activities. In order to overcome most of the challenges, authors

grouped the main problems by functional criteria.

The financial difficulties of Ukrainian companies have increased significantly after the brake of the war by Russia in 2022. Reduced demand due to economic uncertainty and falling consumer incomes, loss or damage to assets due to military operations and bombings, increased costs for security and logistics, increased cost of products and services due to instability in the foreign exchange market and a jump in energy prices, inflation and devaluation of the national currency are just a few negative aspects that greatly affect the financial results of businesses in Ukraine.

Studies and case are the best description of the situation in times of lack of statistical data for financial performance. For example, even with a 30% increase in revenue of Ukrainian catering SMEs in 2023, a 10% increase in attendance, and an 18% increase in the average check, the profitability of this business decreased at 38% of restaurateurs, did not change in 38% of cases, and only about quarter of 5000 respondents to the Poster company confirmed an increase in profitability [14].

Digitalization and technological innovations are powerful tools for overcoming

financial challenges. The use of electronic money and digital currencies (for example, cryptocurrencies) or electronic payment systems can help mitigate problems associated with the devaluation of the national currency. While electronic payment systems such as PayPal, LiqPay, Fondy would allow international payments and ensure stable financial flows even during economic instability. Digital platforms for attracting investments from individuals, such as Kickstarter, GoFundMe and other Ukrainian peers, could be used to finance a business now. This may help to raise money without having to contact banks or other financial institutions in person. Digital platforms could help companies become smarter and conduct risk analysis leading to quicker responds to challenges in the market situation or change strategies to minimize losses. To continue working even during periods of lockdowns or personal movement restrictions, many businesses may transfer to online activities, which will reduce the costs of physical stores and reach a wider physically disconnected audience. Online trading platforms such as Shopify, WooCommerce, Prom.ua, OLX create opportunities for sales without restrictions in time and space.

Human resource problems of Ukrainian companies have become one of the biggest challenges during the period of economic and social instability, especially after the outbreak of the war in Ukraine. The personnel of companies and the country's labour market are affected by the high level of migration, mobilization, demographic changes and insufficient level of qualification of the workforce, especially in such areas as IT, engineering, marketing and finance. The fall in real incomes and a stressful atmosphere reduce the motivation and productivity of personnel. The combination of risks forces companies to limit the planning period to less than one year, which adds uncertainty to their employees. SMEs face difficulties in finding and retaining qualified managers, because in conditions of turbulence and martial law, managers capable of effectively leading companies through the crisis become scarce.

Proper use of digitalization opportunities, infrastructural readiness and openness to innovations allows to compensate various

problems with personnel by a number of ways. At the moment there are the following opportunities and cases most widely used in Ukraine:

- remote forms of work and flexible schedules. Video conferencing platforms such as *Zoom*, *Microsoft Teams*, *Slack* allow companies to maintain communication between employees and clients, even if they are in different parts of the country or abroad, as well as to attract personnel from other countries or those who were forced to leave the country. Team collaboration and entertainment platforms such as *Slack*, *Miro*, *Donut* help to facilitate formal and informal interactions between colleagues, which contributes to the creation of a healthy corporate culture;
- digital tools for hiring and recruiting. Labour market platforms like *Work.ua*, *Rabota.ua*, *LinkedIn* provide a quick search for candidates for vacancies, which is especially important in conditions of staff shortage, and IT solutions for recruiting automation based on artificial intelligence and machine learning help reduce the time for searching and selecting candidates, as well as make the process more efficient [4];
- online courses and platforms for advanced training. To solve the problem of a shortage of qualified personnel and restricted mobility, companies can use online courses to train employees in new skills [8]. Learning platforms like *Coursera*, *Udemy*, *Prometheus*, and others allow employees to acquire the necessary knowledge without traveling abroad or spending a lot of money on traditional education [15]. This also helps to reduce the gap in professional skills development, especially in technology and innovation industries;
- tools for managing flexible schedules and work shifts. Schedule management platforms like “*When I Work*” or “*Deputy*” allow for a flexible approach to work, which is especially important for employees who work part-time or in unstable conditions.
- digital tools for monitoring employee's productivity and motivation. Using various tools for monitoring and evaluating employee performance, such as *Trello*, *Asana*, *Monday.com*, ensures a high level of efficiency even with remote collaboration. With the help of such tools, managers can track the progress of tasks, set deadlines, and control the quality of

work, which helps maintain motivation and reduce stress in a team.

- tools for automating personnel management processes. Automation tools such as *BambooHR*, *Zoho People*, and *SAP SuccessFactors* help with reducing the workload on HR managers, streamline the recruitment, onboarding, and HR management processes, and enable rapid response to changes in the workforce and efficient use of available resources [5].

Marketing problems of Ukrainian companies during the war became even more complex due to market uncertainty, disruption of supply chains of raw materials and finished products, changes in the structure of consumer preferences and customer behaviour, limited resources, etc. The war significantly affected the economy, markets, and business strategies in Ukraine. According to official data, inflation in two years exceeded 30%, but the real growth of consumer prices in stores for individual product groups is more significant [16]. The situation with the reduction in the number of consumers is even worse. In recent years, UN experts have postulated extremely high rates of population decline in Ukraine, due to a combination of factors. Low birth rates and a significant mortality rate have been especially facilitated by the steady increase in external migration of Ukrainians [17].

With the beginning of the war, trends have dramatically worsened [10]. As of May 4, 2023, according to various estimates, from 29 to 32 million people lived in Ukraine, while up to 9 million Ukrainians have not returned home, having left abroad since the beginning of the invasion. The economically active population was only up to 12 million, of which up to 3 million were unemployed. Therefore, Ukrainian Institute for the Future fears that rather soon there will be no one to create GDP in Ukraine [18].

Marketing problems of Ukrainian companies could be overcome by adapting strategies, using digital technologies, innovating and creating situation-sensitive communications. Companies that effectively respond to changes in consumer behaviour and economic conditions will be able not only to maintain their position in the market, but also to strengthen their competitiveness even in times of

crisis. Development of online sales strategy could be an effective digital opportunity for improving the marketing situation. The creation and promotion of online stores, as well as integration with e-commerce platforms, will allow companies to expand their audience and sell products in international markets. Therefore, optimization of websites for mobile devices has become an important aspect that needs skilled staff. Wide implementation of customer relationship management (CRM) systems, data analytics and automation of marketing processes will allow companies to improve interaction with customers and increase the effectiveness of marketing campaigns. Virtual reality tools are also helpful in promoting a wide range of products in global markets [3, p. 177-178]. Active use of social media platforms (*Instagram*, *Facebook*, *TikTok*) to promote the brand and attract new customers is becoming more important. In addition, content marketing in the form of blogs, videos and infographics will help to shape the brand image and increase audience engagement. Collaboration with bloggers and opinion leaders is especially effective for small brands with limited marketing budgets. The use of digital advertising tools (*Google Ads*, *Facebook Ads*, *YouTube*) with the ability to target by age, geography and other parameters will allow companies to effectively reach target customers with minimal costs. The implementation of analytics tools to understand customer behaviour may ensure the creation of personalized offers that will increase loyalty and reduce customer churn [5]. The implementation of chatbots and online customer support systems will help improve the level of service and accelerate the speed of response to customer requests.

The war in Ukraine has significantly changed the business environment and presented new challenges to Ukrainian companies. The **operational and research problems** faced by enterprises have become particularly acute: a decrease in production capacity or a complete shutdown of production due to the destruction of infrastructure, lack of materials or a shortage of labour; cyber threats; disruptions in logistics and electricity supply; the difficulty in forecasting future needs for technologies and products due to hostilities, economic restrictions and political

changes, etc. [13]. In the first year of the war, 6 stores of the *Eldorado* network were destroyed, another 3 fell under temporary occupation, and as many as 25 were closed or frozen due to changes in consumer demand, reduced traffic, forced migration and for reasons of reducing costs for maintaining retail premises, logistics and ready-to-work personnel. At the same time, one of the central warehouses was destroyed, assets located in stores in Mariupol, Kherson, Bucha, Melitopol, Irpin, Nova Kakhovka, Kharkiv, Berdiansk, Brovary and Kyiv were damaged. Almost half – 65 stores – were closed in two years [19]. In total, direct losses from the destruction of assets of Ukrainian companies as of January 2024 were estimated at 13.1 billion USD [20].

Meanwhile there are digital “recipes” to mitigate many of the operational and research problems. Intelligent manufacturing systems based on IoT and Big Data help the enterprise become smarter and enable monitoring of the condition of equipment and running of effective management of production processes in real time, which allows for rapid response to local failures and reduce productivity losses. Virtualization of operational processes (for example, creating digital twins to simulate production processes) allows finding solutions to optimize production and service without the need to launch full-scale physical experiments. Supply chain management platforms will guarantee tracking of cargo movements, route optimization and automation of logistics processes, and supply chain modelling using digital tools will provide prediction of possible disruptions and finding alternative suppliers. Automation of production processes through the use of robotic systems can partially compensate for the shortage of labour, and remote work for certain types of activities will allow preserving some jobs even in difficult conditions. The use of modern data protection tools, data virtualization and cloud solutions will help to preserve critical information in secure environments protected from physical attacks, which will reduce the risk of data loss. The use of real-time change management systems (for example, ERP systems) will allow companies to quickly respond to changes, optimize resources and adjust research and production plans. Virtual laboratories and online platforms for

collaborative research allow scientists and engineers to work remotely, maintaining a high level of collaboration through video conferencing, shared databases and virtual testing environments.

Many of the digital tools mentioned above rely on AI functionality that is available to companies of all sizes [2]. The range of AI tools that are useful for small businesses is quite wide:

- Customer service functions can be facilitated with chatbots. For example, *Tidio* offers a free plan for customer service and engagement support;
- Marketing processes can be simplified with *Hubspot*, which offers customers a free CRM system, including analytical scoring and email scheduling features;
- For more in-depth data analytics, *Google Analytics* provides AI-powered analytics on website traffic and user information to help with assessment of trends in customer queries;
- *OpenAI's GPT-3* gives SMEs the ability to subscribe to content creation for free or for a small fee;
- Social media managers can use applications such as *Buffer* and *Hootsuite* to schedule posts and analyse social media performance;
- *Wave Accounting* offers a free accounting app with AI capabilities for tracking income and expenses, invoicing, and scanning receipts [6].

Digital technologies allow both reducing physical risks and the impact of war on business, and providing new opportunities for adaptation, automation, development and innovation. At the same time, for the successful implementation of digital solutions, technical and organizational changes, state support, as well as the readiness of the enterprises themselves for rapid adaptation and learning are necessary.

Conclusions. Deep investigation into the problem of development of Ukrainian companies in times of war has revealed a wide range of opportunities that come from digital tools available for use by domestic producers. The conducted research allowed grouping the acute problems of Ukrainian companies in conditions of military operations by functional criteria, based on the study of international and local experience. Authors also selected and generalized effective digitalization tools that

may allow reducing and sometimes solving the problems of operations in times of war. The transfer of basic and supporting business processes into a virtual format, the spread of forms of remote work, the wide use of highly specialized software products and artificial intelligence gives domestic companies a great chance to stay afloat and improve their competitive position in the market. Company owners and management should choose those areas of digitalization that best meet the needs of a particular enterprise and the conditions of its operation which makes vital their integration

into ecosystems of digital innovations.

Some other aspects need to be considered and investigated in order to come with strategies and operational decisions. These areas include corporate social responsibility, access to capital and labour market, readiness to innovate, improvement of skills, management of emotional burnout etc. What is more, convergence with digital innovation ecosystem opens variety of opportunities for companies, however its development suffers in times of war and need state support.

Literature

1. Ukraine: Third Rapid Damage and Needs Assessment (RDNA3). February 2022 – December 2023. *World Bank*. 2024. 191 p. URL: <https://ukraine.un.org/sites/default/files/2024-02/UA%20RDNA3%20report%20EN.pdf>
2. Singh J., Goh Zhi Ji. Digitalization and Its Impact on Small and Medium-Sized Enterprises (SMEs): An Exploratory Study of Challenges and Proposed Solutions. *International Journal of Business and Technology Management*. 2023. Vol. 5. No. 4. P. 238–255. DOI: <https://doi.org/10.55057/ijbtm.2023.5.4.22>
3. Losheniuk, I. et al. The future of virtual reality in marketing and advertising: benefits and challenges for business. *Futurity Economics & Law*. 2023. 3(3). 173–186. DOI: <https://doi.org/10.57125/FEL.2023.09.25.10>
4. Budhwar P. et al. Human resource management in the age of generative artificial intelligence: Perspectives and research directions on ChatGPT. *Human Resource Management Journal*. 2023. Vol. 33. Issue 3, P. 606–659. DOI: <https://doi.org/10.1111/1748-8583.12524>
5. Menzies J., Sabert B., Hassan R., Mensah P. K. Artificial intelligence for international business: Its use, challenges, and suggestions for future research and practice. *Thunderbird International Business Review*. 2024. Volume 66. Issue 2. P. 185–200. DOI: <https://doi.org/10.1002/tie.22370>
6. Bombalier, J. The Competitive Advantage of Using AI in Business. *Florida International University*. 2024. URL: <https://business.fiu.edu/academics/graduate/insights/posts/competitive-advantage-of-using-ai-in-business.html>
7. Abraham M., Edelman D.C. Here's the formula companies like Netflix, Uber, and Spotify will use to capture \$2T in growth over the next decade. *Fortune*. 2024. November 22. URL: <https://fortune.com/2024/11/22/formula-companies-like-netflix-uber-and-spotify-will-use-capture-2t-growth-next-decade-ai-tech/?abc123>
8. Ratten V. et al. Learning from artificial intelligence researchers about international business implications. *Thunderbird International Business Review*. 2024. Volume 66, Issue 2, P. 211–219. DOI: <https://doi.org/10.1002/tie.22374>
9. Azagury J., Moore M. Competitive Advantage in the Age of AI. *California Management Review*. 2024. October 14. URL: <https://cmr.berkeley.edu/2024/10/competitive-advantage-in-the-age-of-ai/>
10. Ratten V. The Ukraine/Russia conflict: Geopolitical and international business strategies. *Thunderbird International Business Review*. 2023. Volume 65, Issue 2, P. 265–271. DOI: <https://doi.org/10.1002/tie.22319>
11. Liadze I. et al. Economic costs of the Russia-Ukraine war. *The World Economy*. 2023. Volume 46, Issue 4. P. 874–886. DOI: <https://doi.org/10.1111/twec.13336>
12. Dunayev I., Kuchma M., Byelova L., Jatkiewicz P., Bilichenko O. & Poberezhets H. Wartime destruction: regional assessment of damage to Ukraine's infrastructure. *International Journal of Environmental Studies*. Volume 81. 07 Feb 2024. P. 8–17. DOI:

<https://doi.org/10.1080/00207233.2024.2314862>

13. Lim W. M. et al. What is at stake in a war? A prospective evaluation of the Ukraine and Russia conflict for business and society. *Global Business and Organizational Excellence*. 2022. Volume 41, Issue 6, P. 23–36. DOI: 10.1002/joe.22162

14. Антонюк Т., Маранчак М. Як змінилися виручка, середній чек і відвідуваність закладів харчування в 2023 році. Три висновки і дев'ять інфографік із дослідження Poster. *Forbes*. 17 січня 2024 р. URL: <https://forbes.ua/company/yak-zminilasya-viruchka-seredniy-chek-i-vidviduvanist-zakladiv-kharchuvannya-u-2023-rotsi-tri-visnovki-i-devyat-infografik-z-doslidzhennya-poster-17012024-18559>

15. Barabas D., Smakohrai M. Distance learning: a chance or a headache? Management: strategic imperatives and trends of transformations: monograph. Kyiv: KNEU named after Vadym Hetman. 2020. P. 220–230.

16. Inflation. National Bank of Ukraine. Official website. URL: <https://bank.gov.ua/en/news/all?tags=inflation&page=1&perPage=5>.

17. World Population Prospects 2024, current revision. United Nations.

URL: <https://population.un.org/wpp/Download/Standard/Population>.

18. Марущак О. Скільки залишиться українців після війни: експерти про скорочення населення та катастрофічне співвідношення жінок і чоловіків. 27.06.23. URL: <https://tsn.ua/exclusive/skilki-zalishitsya-ukrayinciv-pislya-viyni-eksperti-poyasnili-chomu-skorochuvatimetsya-kilkist-naselennya-2358379.html>.

19. Шаріпов О. Незолоте «Ельдорадо». Черговий бізнес Віктора Поліщука обростає проблемами – борги, закриття магазинів. Що відбувається з одним із найбільших продавців техніки. *Forbes*. 18 серпня 2023 р. URL: <https://forbes.ua/company/nezolote-eldorado-chergoviy-biznes-viktora-polishchuka-obrostaet-problemami-borgi-zakrittya-magaziniv-shcho-vidbuvaetsya-z-odnim-z-naybilshikh-prodavtsiv-tekhniki-18082023-15473>.

20. Report on damages to infrastructure from the destruction caused by Russia's military aggression against Ukraine as of January 2024. Kyiv School of Economics. 2024. April. 38 p. URL: https://kse.ua/wp-content/uploads/2024/05/Eng_01.01.24_Damages_Report.pdf

References

1. World Bank (2024). Ukraine: Third Rapid Damage and Needs Assessment (RDNA3). February 2022 – December 2023. 191 p. Available at: <https://ukraine.un.org/sites/default/files/2024-02/UA%20RDNA3%20report%20EN.pdf> (accessed December 10, 2024).

2. Singh, J., Goh Zhi Ji (2023). Digitalization And Its Impact on Small and Medium-Sized Enterprises (SMEs): An Exploratory Study of Challenges and Proposed Solutions. *International Journal of Business and Technology Management*, vol. 5, no. 4, pp. 238–255. DOI: 10.55057/ijbtm.2023.5.4.22.

3. Losheniuk, I. et al. (2023). The future of virtual reality in marketing and advertising: benefits and challenges for business. *Futurity Economics & Law*, no. 3(3) pp. 173–186. Available at: <https://doi.org/10.57125/FEL.2023.09.25.10>.

4. Budhwar, P. et al. (2023). Human

resource management in the age of generative artificial intelligence: Perspectives and research directions on ChatGPT. *Human Resource Management Journal*, no. 33 (3), pp. 606–659. DOI: 10.1111/1748-8583.12524 .

5. Menzies, J., Sabert, B., Hassan, R. & Mensah, P. K. (2024). Artificial intelligence for international business: Its use, challenges, and suggestions for future research and practice. *Thunderbird International Business Review*, no. 66 (2), pp. 185–200. DOI: 10.1002/tie.22370 .

6. Bombalier, J. (2024). The Competitive Advantage of Using AI in Business. *Florida International University*. Url: Available at: <https://business.fiu.edu/academics/graduate/insights/posts/competitive-advantage-of-using-ai-in-business.html> .

7. Abraham, M. & Edelman, D. C. (2024). Here's the formula companies like Netflix, Uber, and Spotify will use to capture \$2T in growth over the next decade. *Fortune*,

- November 22. Available at: <https://fortune.com/2024/11/22/formula-companies-like-netflix-uber-and-spotify-will-use-capture-2t-growth-next-decade-ai-tech/?abc123> .
8. Ratten, V. et al. (2024). Learning from artificial intelligence researchers about international business implications. *Thunderbird International Business Review*, no. 66 (2), pp. 211–219. DOI: 10.1002/tie.22374 .
9. Azagury, J. & Moore, M. (2024). Competitive Advantage in the Age of AI. *California Management Review*, October 14. Available at: <https://cmr.berkeley.edu/2024/10/competitive-advantage-in-the-age-of-ai/>.
10. Ratten, V. (2023). The Ukraine/Russia conflict: Geopolitical and international business strategies. *Thunderbird International Business Review*, no. 65 (2), pp. 265–271. DOI: 10.1002/tie.22319.
11. Liadze, I. et al. (2023). Economic costs of the Russia-Ukraine war. *The World Economy*, no. 46 (4), pp. 874–886. DOI: 10.1111/twec.13336 .
12. Dunayev, I. et al. (2024). Wartime destruction: regional assessment of damage to Ukraine's infrastructure. *International Journal of Environmental Studies*, no. 81, pp. 8–17. DOI: 10.1080/00207233.2024.2314862 .
13. Lim, W. M. et al. (2022). What is at stake in a war? A prospective evaluation of the Ukraine and Russia conflict for business and society. *Global Business and Organizational Excellence*, no. 41 (6), pp. 23–36. DOI: <https://doi.org/10.1002/joe.22162> .
14. Antoniuk, T. & Maranchak, M. (2024). *Yak zminylysia vyruchka, serednii chek i vidviduvaniest zakladiv kharchuvannia v 2023 rotsi. Try vysnovky i deviat infografik iz doslidzhennia Poster* [How revenue, average check, and attendance at food establishments changed in 2023. Three conclusions and nine infographics from the study Poster]. *Forbes*, January 17. Available at: <https://forbes.ua/company/yak-zminilasya-viruchka-seredniy-chek-i-vidviduvaniest-zakladiv-kharchuvannya-u-2023-rotsi-tri-visnovki-i-devyat-infografik-z-doslidzhennya-poster-17012024-18559> .
15. Barabas, D. & Smakohrai, M. (2020). Distance learning: a chance or a headache? *Management: strategic imperatives and trends of transformations*: monograph. Kyiv, KNEU named after Vadym Hetman Publ., pp. 220–230.
16. Inflation. National Bank of Ukraine. Official website. Available at: <https://bank.gov.ua/en/news/all?tags=inflation&page=1&perPage=5>
17. World Population Prospects 2024, current revision. United Nations. Available at: <https://population.un.org/wpp/Download/Standard/Population/>
18. Marushchak, O. (2023). *Skilky zalyshytisia ukraintsiv pislia viiny: eksperty pro skorochennia naseleennia ta katastrofichne spivvidnoshennia zhinok i cholovikiv* [How many Ukrainians will remain after the war: experts on population decline and the catastrophic ratio of women to men] Available at: <https://tsn.ua/exclusive/skilki-zalishitsya-ukrayinciv-pislya-viyni-eksperti-poyasnili-chomu-skorochuvatimetsya-kilkist-naselennya-2358379.html> .
19. Sharipov, O. (2023). *Nezolote «Eldorado». Cherhovyi biznes Viktora Polishchuka obrostaie problemamy – borhy, zakryttia mahazyniv. Shcho vidbuvaetsia z odnym iz naibilshykh prodavtsiv tekhniky* [The Ungolden “Eldorado”. Viktor Polishchuk's next business is overgrown with problems – debts, store closures. What is happening to one of the largest sellers of equipment]. *Forbes*, August 18 available at: <https://forbes.ua/company/nezolote-eldorado-chergoviy-biznes-viktora-polishchuka-obrostaie-problemami-borgi-zakryttia-magazyniv-shcho-vidbuvaetsia-z-odnim-z-naybilshikh-prodavtsiv-tekhniki-18082023-15473> .
20. Report on damages to infrastructure from the destruction caused by Russia's military aggression against Ukraine as of January 2024. Kyiv School of Economics. April 2024. 38 p. Available at: https://kse.ua/wp-content/uploads/2024/05/Eng_01.01.24_Damages_Report.pdf

Мета. Мета цього дослідження – узагальнити нагальні проблеми українських компаній під час війни та обрати актуальні напрямки цифровізації, які б допомогли зменшити ці проблеми.

Методи. Для досягнення мети було використано наступні методи емпіричного та теоретичного дослідження: огляд літератури, теоретичне узагальнення (для виявлення, збору та аналізу сучасних досліджень щодо цифровізації діяльності підприємств та подолання проблем українських компаній), описовий метод (для висвітлити бізнес-наслідки військової агресії Росії проти України), методи аналізу та систематизації (визначити перспективні шляхи подолання проблем вітчизняних товаровиробників та згрупувати їх за функціональними ознаками).

Результати. Проведено діагностику проблем, що виникли під час війни, та згруповано цифрові технології для їх вирішення з акцентом на функціональні підсистеми вітчизняних компаній: фінансову, кадрову, маркетингову, операційну та дослідницьку. Виявлено широкий спектр цифрових інструментів, придатних для використання вітчизняними виробниками: переведення базових і допоміжних бізнес-процесів у віртуальний формат, поширення форм віддаленої роботи, широке використання вузькоспеціалізованих програмних продуктів і штучного інтелекту дають вітчизняним компаніям великі шанси втриматися на плаву і покращити конкурентні позиції на ринку. Аргументовано, що цифрові технології дозволяють як зменшити фізичні ризики та вплив війни на бізнес, так і надати нові можливості для адаптації, автоматизації, розвитку та інновацій. Водночас для успішного впровадження цифрових рішень необхідні технічні та організаційні зміни, державна підтримка, а також готовність самих підприємств до швидкої адаптації та навчання.

Ключові слова: виклики, можливості, цифровізація, штучний інтелект, смарт-рішення, досконалість, конкурентоспроможність.

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