UDC 001.3:316.3
JEL Classification: G14; L86

THE IT INDUSTRY AS A DRIVER OF THE STRATEGIC DEVELOPMENT OF UKRAINE'S ECONOMY IN THE CONTEXT OF DIGITAL TRANSFORMATION

©2023 **PROKHOROVA V. V., DIACHENKO K. S., BABICHEV A. V.**

UDC 001.3:316.3
JEL Classification: G14; L86

Prokhorova V. V., Diachenko K. S., Babichev A. V.

The IT Industry as a Driver of the Strategic Development of Ukraine's Economy in the Context of Digital Transformation

The purpose of the article is analyze the current state of the IT industry of Ukraine and determine its promising directions as a driver of the strategic development of Ukraine's economy in the context of digital transformation. By analyzing, systematizing and summarizing the scientific works of leading domestic and foreign scientists, the destabilizing factors of the development of the IT industry were determined, both the pre-war and the current state of the IT industry was analyzed, and the challenges and advantages of its operation in the strategic development of Ukraine were outlined. During the research, it was found that in the pre-war period, the IT industry of Ukraine was one of the largest exporters of IT services in European countries, with the growth by 25–30% every year, generating more than 4% of Ukraine's GDP. The current state of the IT industry in Ukraine, which is complicated by the state of war, economic instability, and systematic blackouts, is also analyzed. As a result of the research, the challenges that have a significant impact on the activities of the companies in the IT industry as a whole were identified and formulated. The advantages of the IT industry from the point of view of the global economy, for the State, for other branches of the economy, and for those employed in the field of IT technologies, are determined. Prospects for further research in this direction are the development of a set of measures to stimulate and develop the IT sphere of Ukraine, in particular at the State level, which would ensure sustainable development in both the long-term and the short-term perspective.

Keywords: IT *industry, IT company, IT sector, information technologies, digital economy, informatization, digitization.*

DOI: *https://doi.org/10.32983/2222-0712-2023-1-65-73*

Fig.: *9.* ***Bibl.:*** *20.*

Prokhorova Viktoriia V. *– Doctor of Sciences (Economics), Professor, Head of the Department of Economics and Management, Ukrainian Engineering and Pedagogical Academy (16 Universytetska Str., Kharkiv, 61003, Ukraine)*

E-mail: *vkprohkorova@gmail.com*

ORCID: *https://orcid.org/0000-0003-2552-2131*

Researcher ID: *https://www.webofscience.com/wos/author/record/2000787*

Scopus Author ID: *https://www.scopus.com/authid/detail.uri?authorId=57203623016*

Diachenko Kateryna S. *– Candidate of Sciences (Economics), Associate Professor, Associate Professor of the Department of Economics and Management, Ukrainian Engineering and Pedagogical Academy (16 Universytetska Str., Kharkiv, 61003, Ukraine)*

E-mail: *yoo.katrin@gmail.com*

ORCID: *https://orcid.org/0000-0003-0164-6156*

Babichev Anatoliy V. *– Candidate of Sciences (Public Administration), Associate Professor, Pro-rector of the V. N. Karazin Kharkiv National University (4 Svobody Square, Kharkiv, 61022, Ukraine)*

E-mail: *babichev@karazin.ua*

ORCID: *https://orcid.org/0000-0002-7587-4824*

UDC УДК 001.3:316.3
JEL Classification: G14; L86

Прохорова В. В., Дяченко К. С., Бабічев А. В. ІТ-індустрія як драйвер стратегічного розвитку економіки України в умовах цифрової трансформації

Метою статті є аналіз сучасного стану ІТ-індустрії України та визначення її перспективних напрямів як драйвера стратегічного розвитку економіки України в умовах цифрової трансформації. Шляхом аналізу, систематизації та узагальнення наукових праць провідних вітчизняних та зарубіжних вчених було визначено дестабілізуючі фактори розвитку ІТ-індустрії, проаналізовано довоєнний та сучасний стан ІТ-індустрії, окреслено виклики та переваги її функціонування у стратегічному розвитку України. В ході дослідження було виявлено, що в довоєнний період ІТ-індустрія України була одним з найбільших експортерів ІТ-послуг в європейські країни, з ростом на 25-30% щороку, генеруючи понад 4% ВВП України. Також проаналізовано сучасний стан ІТ-індустрії в Україні, який ускладнюється станом війни, економічною нестабільністю та систематичними відключеннями електроенергії. В результаті дослідження було виявлено та сформульовано виклики, які мають значний вплив на діяльність компаній ІТ-індустрії в цілому. Визначено переваги ІТ-індустрії з точки зору глобальної економіки, для держави, для інших галузей економіки, а також для працівників, зайнятих у сфері ІТ-технологій. Перспективами подальших досліджень у даному напрямі є розробка комплексу заходів щодо стимулювання та розвитку ІТ-сфери України, зокрема на державному рівні, які б забезпечили сталий розвиток як у довгостроковій, так і в короткостроковій перспективі.

Ключові слова: *IT-індустрія, IT-компанія, IT-сектор, інформаційні технології, цифрова економіка, інформатизація, диджиталізація.*

Рис.: *9.* ***Бібл.:*** *20.*

Прохорова Вікторія Володимирівна *– доктор економічних наук, професор, завідувач кафедри економіки та менеджменту, Українська інженерно-педагогічна академія (вул. Університетська, 16, Харків, 61003, Україна)*

E-mail: *vkprohkorova@gmail.com*

ORCID: *https://orcid.org/0000-0003-2552-2131*

Researcher ID: *https://www.webofscience.com/wos/author/record/2000787*

Scopus Author ID: *https://www.scopus.com/authid/detail.uri?authorId=57203623016*

Дяченко Катерина Сергіївна *– кандидат економічних наук, доцент, доцент кафедри економіки та менеджменту, Українська інженерно-педагогічна академія (вул. Університетська, 16, Харків, 61003, Україна)*

E-mail: *yoo.katrin@gmail.com*

ORCID: *https://orcid.org/0000-0003-0164-6156*

Бабічев Анатолій Валерійович *– кандидат наук з державного управління, доцент, проректор Харківського національного університету ім. В. Н. Каразіна (майдан Свободи, 4, Харків, 61022, Україна)*

E-mail: *babichev@karazin.ua*

ORCID: *https://orcid.org/0000-0002-7587-4824*

Introduction. A development and implementation of modern information and computer technologies, digitalization and automation of business are the important prerequisites for the formation of the economy of a new technological order based on the production, transfer and use of new knowledge, ensuring the integration of countries and regions into a single information space.

The digital and information technologies are constantly being improved and integrated into global networks and into various spheres of social life. It is changing the global economy. Digital transformation, introduction of advanced technologies represent the main factors of innovative development.

According to the report by the World Economic Forum (WEF) [2], increasing automation is encouraging businesses to invest more resources in cloud technologies, machine learning, and working with data. New popular professions also appear and the criteria for existing ones are changing. Technologies are already changing the reality of business and influencing the global economy, becoming its driver.

The Ukrainian IT industry is developing and making a significant contribution to digital transformation, strengthening the country's technological position on the world stage. The IT industry is gradually transforming almost all aspects of the development of the modern economy and society, the way of life and behavior of people, becoming one of the most important types of activity that is developing most dynamically in the economy of the vast majority of countries over the world. Therefore, studying the current state of the IT industry provides the basis for determining the prospects for the development of various directions of economic activity in the future, the areas of application of new technologies and the search for competitive advantages both for employees of the IT sector and related entities and industries.

Analysis of recent research and publications. The issue of studying the digital economy and its influence on the development of both the national and international economy was reflected in the works of T. Karchev, D. Ogorodnaya, V. Openko, and H. Chmeruk. The current state of digitalization in Ukraine was described by N. Podolchak. O. Aref'eva, K. Dyachenko, A. Kirylenko, V. Prokhorova, T. Tyshchuk, R. Chemchikalenko, V. Khaustova, which also concerned the features and problems of the development of the IT sector in Ukraine. Prospective directions for the development of the IT industry were considered in the works of J. Boyett, B. Golden, M. Naim, Z. Kapers, S. Maldonado, A. Morkes, R. Silberglitt [1–6, 9–13, 15–19].

Simultaneously, the IT industry is characterized by rapid development and, accordingly, exerts a significant influence on the development of related activities, which determines the relevance and timeliness of the presented research.

Highlighting previously unresolved parts of the overall problem. In the conditions of wartime and martial law resulting in numerous challenges for the country's economy as a whole, the IT industry, along with the entire country, demonstrates phenomenal resilience. The industry remains the only export branch of Ukraine, which fully works during the wartime, maintains the economic front of the country, actively helps the army and supports a powerful volunteer movement.

That is why the study of the current state of the IT industry of Ukraine and the determination of promising directions for its development is relevant and timely.

The purpose of the research is to analyze the current state of the IT industry of Ukraine and determine its promising directions as a driver of the development of the Ukrainian economy in modern conditions.

Presentation of the main material and obtained scientific results. According to the NBU [10], in 2022 the economy of Ukraine showed a reduction of 30%. At first, such negative trends were preceded by the COVID-19 pandemic, further – by the hostilities, the introduction of martial law, the occupation of part of the territories, losses due to the destruction and damage of facilities, interruptions in work due to the lack of electricity, difficulties in selling products, limited freight shipping by Black Sea.

Despite the fact that the majority of enterprises of various sizes and sectors of the economy primarily felt the negative impact of the consequences of the COVID-19 pandemic, the

IT industry not only did not feel this negative impact, but was even able to benefit from this unfavorable situation.

Due to quarantine restrictions, most businesses were forced to go online, which significantly increased the need for IT services, which led to the rapid expansion and development of technology companies, increasing the need for qualified programmers.

In the pre-war period, the IT industry of Ukraine became one of the largest exporters of IT services in European countries, which grew by 25–30% every year and generated more than 4% of Ukraine's GDP. The IT market was the largest and constantly growing due to formal education and switching [8, p. 5].

At the beginning of 2022, half of the IT companies operating in Ukraine were service companies, i. e. companies that specialize in providing IT outsourcing services for the US and European markets.

Another third of companies were service and product companies, which create turnkey products both for customers and selling licenses for their own software.

Two-thirds of all IT specialists in Ukraine work in either service or service-product companies. Only 16% of IT companies in Ukraine develop a product under their own brand. This includes the IT departments of large online retailers, fintech services, manufacturers of high-tech products, as well as start-ups.

The third category of companies in Ukraine is the least, at the same time they are generating the product with the most surplus value. The level of the capitalization of such companies is higher than of the service companies [13].

The war started a new wave in the history of the industry. Following the results of first ten months of 2022 the sector brought to the economy of Ukraine 6 billion US dollars of export revenue, which reached the mark of growth of 10% equal to the previous year. The share of exports of IT services in GDP increased by 51% – up to 5.4%, and in the exports of services it increased by 24% and became 47%, thus comprising more than a half [20].

Such results have become possible for the effective implementation of business continuity plans, the timely operational relocation of teams and diversification of distribution centers both in Ukraine and abroad.

IT is one of the leading industries of the Ukrainian economy and it is rapidly growing annually. So, for the remaining five years, the share of exports of computer services in GDP increased from 2.2% to 3.5%, and the share of exports of computer services in the exports of services – from 17.4% to 37.8% (Fig. 1).

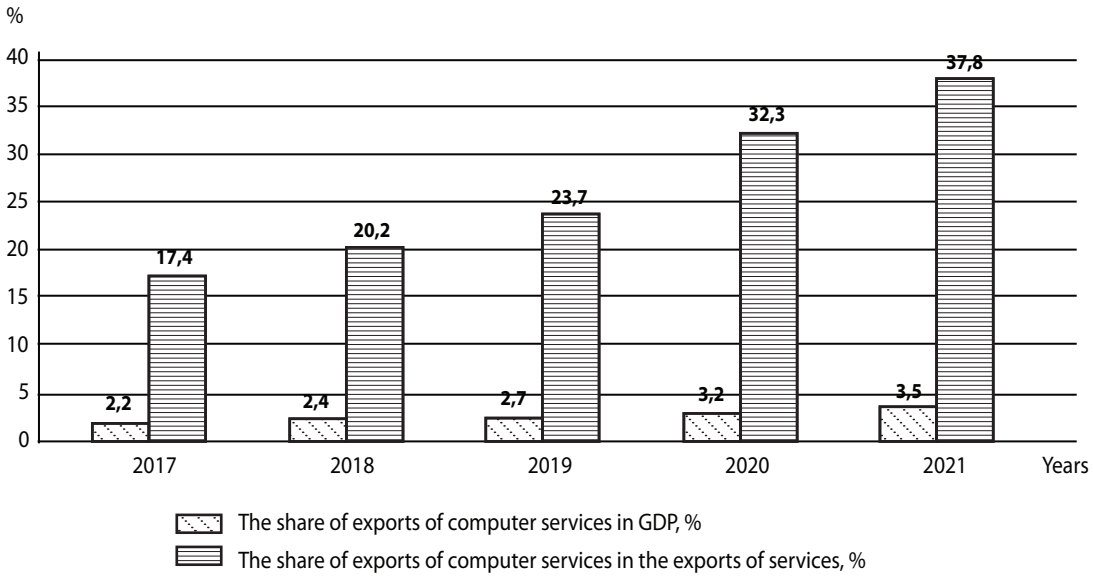

Fig. 1. The share of exports of computer services

Source: compiled on the basis of the data provided by [8; 14].

289,000 people are employed in the sector of information technology and computer services, which is 1.9% of all employed persons (Fig. 2).

The IT industry is mostly export-oriented. Over the past six years, the volume of exports of computer services has grown by an average of 26.8% annually and will reach $7.3 billion in 2022 (Fig. 3).

In general, there is a general growth of the indicator by 4.2 times and by 26.8% for 2017–2022. The volume of computer services exports in 2022 had increased by 5.8%, compared to 2020.

According to the results of 2022, the IT industry provided currency income to the Ukrainian economy in the amount of $7.34 billion, as evidenced by the data of the National Bank of Ukraine. The volume of exports has increased by $400 million, compared to pre-war year of 2021.

Information about the amount of IT companies in Ukraine differs greatly. The State Statistics Service provides data about 8.800 active legal entities with the IT codes of economic activity in 2021 (Fig. 4).

However, companies often consist of several legal entities, so the Tech Ecosystem portal [7] gives an estimate of 2.4

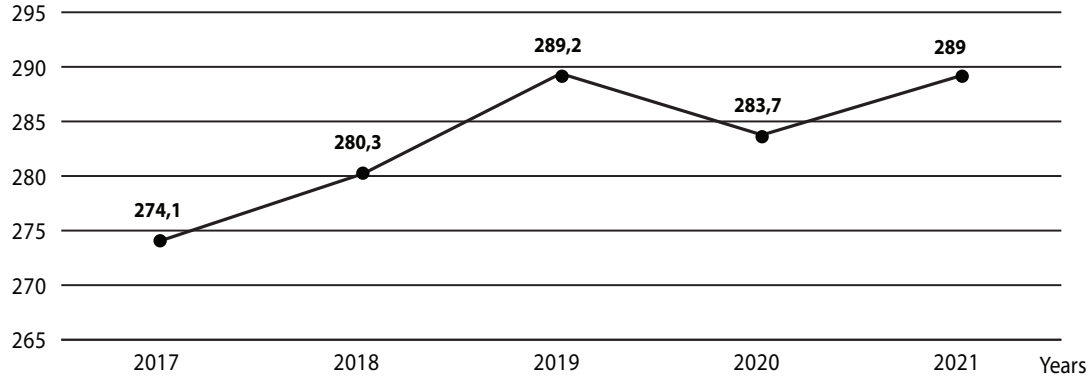

Fig. 2. The amount of people employed in the sector of information technology aged 15–70, thousands of people

Source: compiled on the basis of the data provided by [8; 14]

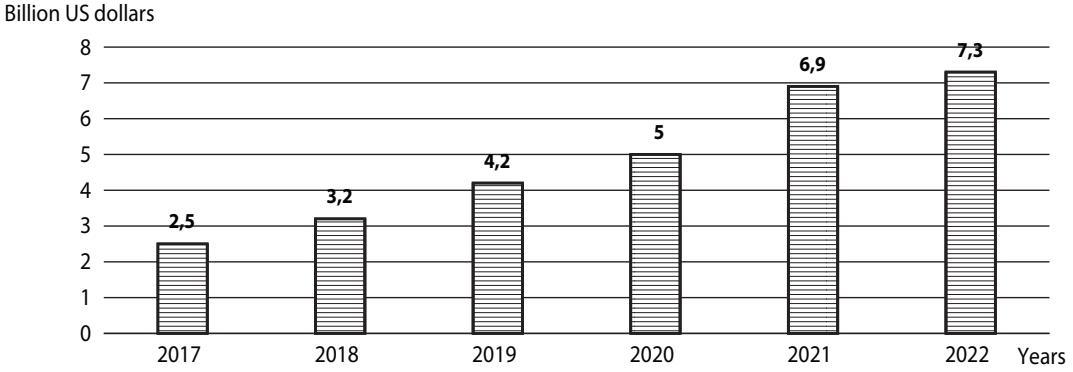

Fig. 3. Volume of exports of computer services, billion US dollars.

Source: compiled on the basis of the data provided by [8; 10; 14].

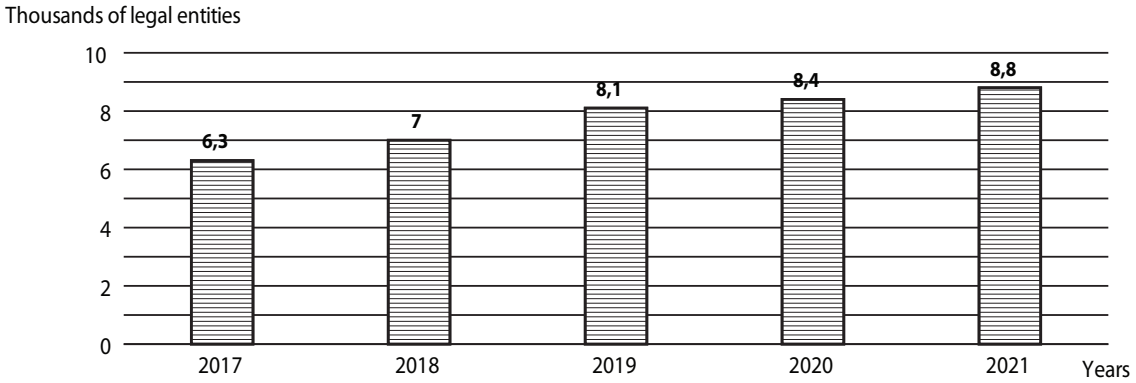

Fig. 4. The number of the active legal entities with the IT codes of economic activity, thousands of legal entities

Source: compiled on the basis of the data provided by [8; 14; 18]

thousand IT companies at the beginning of December 2022, while according to expert calculations 1.8–2 thousand of them were active in the labor market. The market slumped significantly in 2022, after the Russian full-scale invasion.

The active development of the IT industry leads to an increase in the number of IT specialists. Since 2017, their number has increased by 116%, mostly due to the growth of active individual entrepreneurs (also known as FOPs), because such interaction is more convenient for companies (Fig. 5).

Human capital is the foundation of the IT industry. The more qualified personnel a company has, the more projects it can implement and, accordingly, more revenue will be received. And this, in turn, affects the added value of the industry and the amount of the taxes paid.

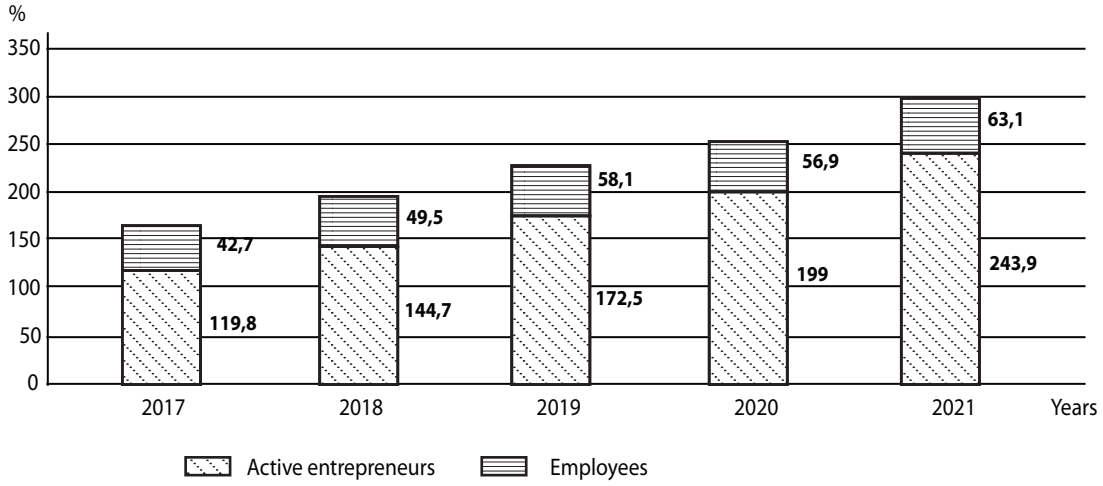

Fig. 5. The amount of employed workers in the IT industry, thousands of people

Source: compiled on the basis of the data provided by [8; 14; 18].

The damaged and destroyed infrastructure, constant shelling, occupation of regions and labor migration became the factors that most affected the activity of the Ukrainian economy during the ongoing war. Among the export-oriented industries, only the IT industry increased its exports, compared to the last year, while the others suffered significant losses.

Export volume for the first 10 months of 2021–2022, in billions of the US dollars, is presented in the Fig. 6.

From the Fig. 6 we can see that metallurgy decreased by 59%, export of mineral products by 46.1%, chemical industry products by 42.6%. Against this background, the share of IT services exports in GDP increased by 51%, comprising 5.4%.

Likewise, the share of IT in the exports of services has increased by 24%, comprising almost a half (47.0%) of the total export of services [8].

Despite the difficulty of doing business during the wartime, the IT industry continues to pay taxes. Some companies pay taxes in advance to support the State in this difficult period.

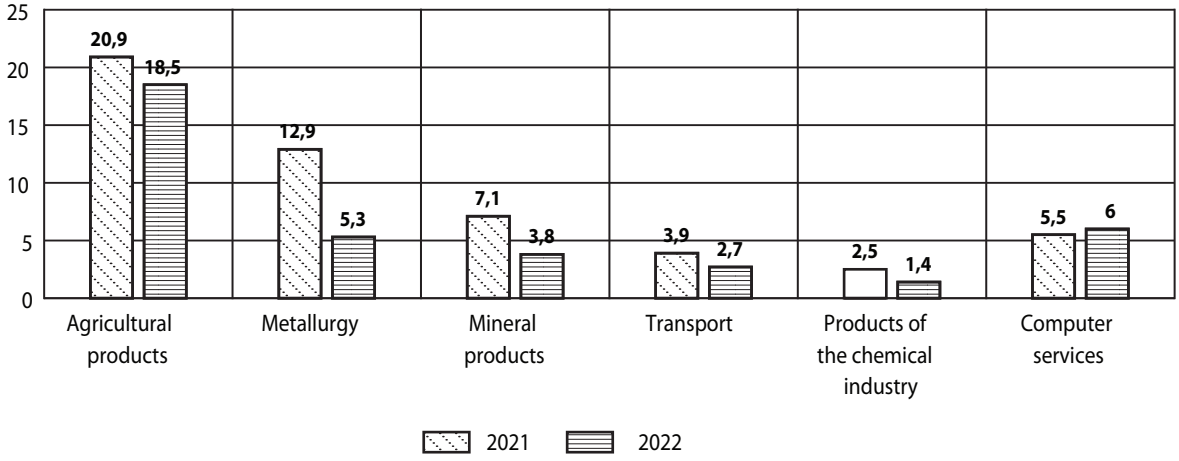

Fig. 6. Export volume for the first 10 months of 2021–2022, in billions of the US dollars

Source: compiled on the basis of the data provided by [8; 14; 18].

According to the State Fiscal Service of Ukraine, as of January 1st, 2023, the amount of the taxes and fees to the consolidated budget of Ukraine paid by the IT business comprises UAH 32.2 billion, which is by UAH 4.4 billion and by 16% more than last year's indicator (Fig. 7).

The tax activity of companies and entrepreneurs is increasing. As of November 1st, 2023, the number of taxpayers has increased by 7.5%, compared to the last year (Fig. 8).

Thanks to maintaining the growth rates, the working IT business supports the economy and the Armed Forces of

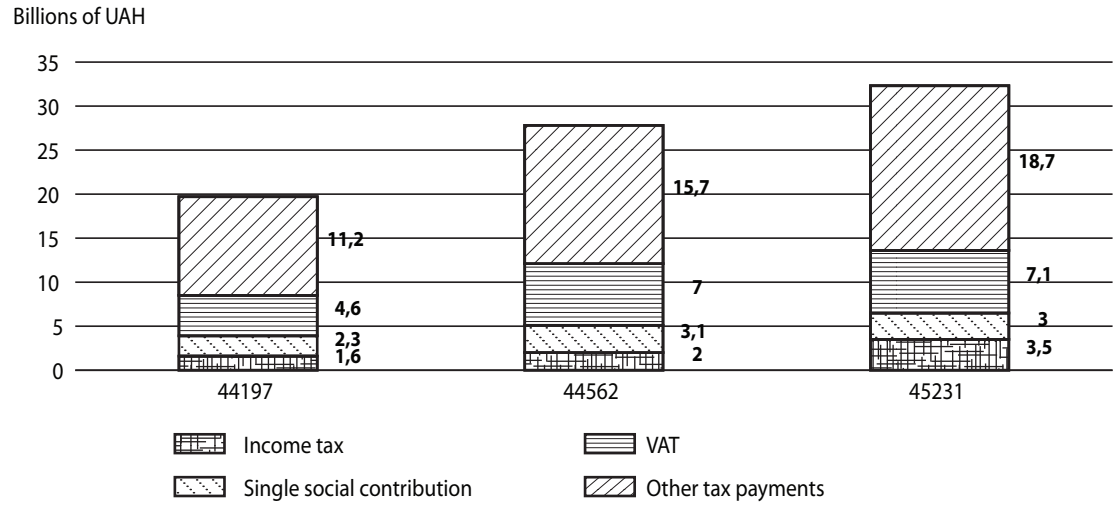

Fig. 7. Amount of the taxes paid under IT-codes of economic activity, in billions of UAH

Source: compiled on the basis of the data provided by [8; 14; 18].

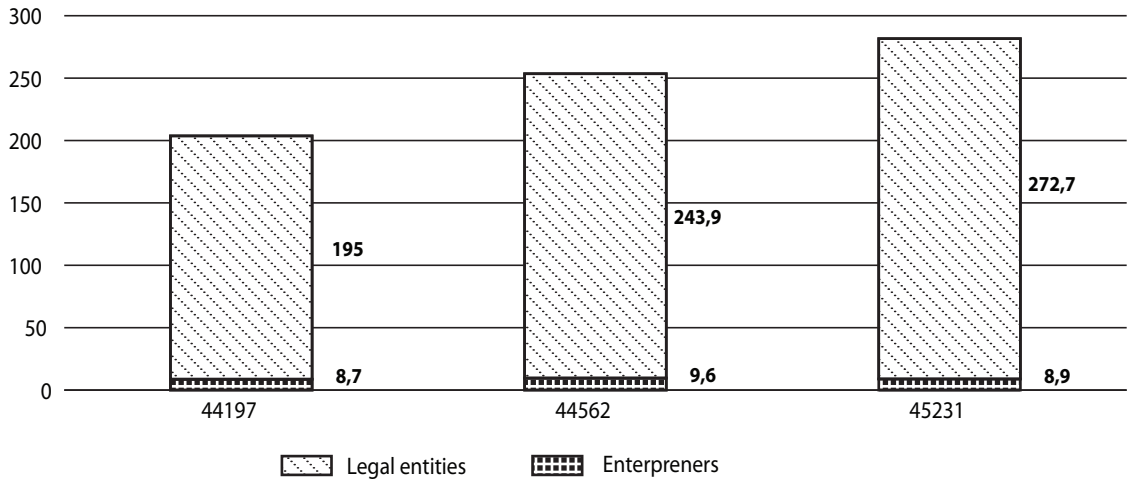

Fig. 8. Number of the taxpayers with IT-codes of economic activity, thousands of people

Source: Compiled on the basis of the provided by [8; 14; 18].

Ukraine, creates new jobs during the war, implements humanitarian initiatives, and thus contributes to Victory.

According to a survey by the IT Ukraine Association and Top Lead, 54.7% of IT companies planned to open new offices and branches in 2022. However, only a quarter managed to do so, the rest were disturbed by the war. As a result of the Russian full-scale invasion, 70.8% of IT companies conducted an unplanned relocation, a quarter of them were relocated completely.

At the beginning of the hostilities, IT companies were forced to evacuate their thousands of developer teams to the central and western regions of Ukraine from the cities where the hostilities began. The most active combat operations and missile attacks took place precisely in those regions where the largest number of the IT specialists of Ukraine was concentrated. In particular, 44% of all IT specialists in Ukraine worked in Kyiv and the region, 14% in the Kharkiv region, 9% in Dnipropetrovsk, 5% in Odesa, 3% in Zaporizhzhia, 2% in Mykolaiv, Zhytomyr, Chernihiv and Donetsk respectively. In the Kherson and Sumy regions, there were 1% of all IT specialists [14].

The most popular regions for relocation were Lviv, Ivano-Frankivsk and Zakarpattia regions. The number of IT spe-

cialists in these regions has tripled since the beginning of the war. For example, in Lviv, the number of technical specialists has increased from 30.000 before the war to 100.000, and in Zakarpattia region, the number of IT specialists has increased by 30.000. The geography of company relocation has changed, and today the list of top-10 countries includes: Poland, Germany, the USA, Portugal, Bulgaria, Czech Republic, Romania, Moldova, Spain, Canada.

At the same time, despite these challenges, Ukrainian IT companies were able to adapt and remain effective. This was achieved thanks to a comfortable tax system (employment as individual entrepreneurs (FOP), or as residency in Diia.City), as well as the readiness of the sector for remote work.

The most of the technology companies were able to ensure the continuity of business processes from the first months of the war and thanks to this kept productivity at the level of 85–90%. Systematic and comprehensive development of the IT industry as a driver of the strategic development of Ukraine's economy in the context of digital transformation is expedient (Fig. 9).

The authors identified a number of advantages of the IT industry, which emphasize the importance of the IT industry as a whole for the economy and security of Ukraine. It is the IT industry that can become the key to ensuring the inflow of investments into the country and filling the budget, the basis for the further development of the economy after the Victory.

Conclusions and prospects for further research in this direction. Modern globalization processes taking place as in the world economy so in the Ukrainian environment, in particular, require the development and implementation of innovative strategies for the markets of digitalization and informatization of society, as well as the creation of favorable conditions for digital transformation at the State level. Achieving a positive effect from informatization and digitalization requires intervention on the part of the State in the process of developing modern directions for the development and functioning of the digital economy.

Positive indicators of the IT industry became possible due to its large-scale and rapid reformation during the wartime. Most companies managed to effectively implement business continuity plans, switch to flexible work models, relocate teams and diversify offices both in Ukraine and abroad.

IT companies continue to work and implement projects even during blackouts, pay taxes on time, increase their presence in the global market and attract new customers. It is thanks to such unique properties and experience that the IT sector has all the prerequisites to become the main driver of the reconstruction of Ukraine after the end of the war.

With a strong personnel potential and with regard to globalization, Ukraine has every chance to become a world leader in the IT industry, one of the main technological centers in Europe.

The prospect of further scientific research in the field of the IT industry should be the development of a set of measures for the stimulation and development of the IT sphere of Ukraine, in particular at the State level, which would ensure sustainable and stable development in both the long-term and the short-term perspective.

LITERATURE

1. Capers Z. 10 Predictions for the Future of IT and the Management Strategies That Will Follow. URL: https://www.getapp.com/resources/future-of-it/

2. Golden B. 5 Tech Trends for 2022: Digital Transformation, Cloud and Talent Wars. URL: https://www.eweek.com/cloud/technology-trends-2022/

3. Prokhorova V, Protsenko V., Abuselidze G., Mushnykova S., Us Yu. Innovative technologies under digital economics conditions. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*. 2019. Vol. 5. P. 155–161.

4. Prokhorova V. Digitalization process for enterprise growth and security management: the cognitive approach. *International Journal of Advanced Science and Technology*. 2020. Vol. 29 (8s). P. 2511–2517.

5. Prokhorova V., Pylypenko Yu., Halkiv L., Koleshchuk O., Dubiei Yu. Innovative intellectual capital in the system of factors of technical and technological development. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*. 2022. Vol. 6. P. 181–186.

6. Silberglitt R. The Global technology revolution 2020, executive summary: bio/nano/materials/information trends, drivers, barriers, and social implications. URL: https://www.amazon.fr/Global-Technology-Revolution-Executive-Summary-ebook/dp/B0046LVCSS

7. The Global Risks. Report the World Economic Forum 2023. 18th Edition. URL: https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf?fbclid=IwAR3KbV8aeD_NTu21YcpzNLUo9c2IZHMG8NiYV2bJ74Rf4kUqbziSFoGv3QQ/

8. Ukraine IT Report 2021. Звіт Асоціації «IT Ukraine». URL: https://reports.itukraine.org.ua/doitlikeukraine2022

9. Ареф'єва О. В., Побережна З. М. Холістичне управління адаптивністю підприємства в умовах циклічної економіки. *«Економічний вісник НТУУ «Київський політехнічний інститут»*. 2021. № 18. С. 64–70.

10. Дяченко К. С. Роль та значення ІТ-сектору для економіки України в умовах війни // Актуальні проблеми сучасного бізнесу: обліково-фінансовий та управлінський аспекти : матеріали IV Міжнар. наук.-практ. інтернет-конф. (22–23 берез. 2022 р.). Ч. 2. Львів : ЛНУП, 2022. С. 73–75.

11. Захарченко Л. А., Хазрат М. С., Григор'єв М. С. Стратегічні напрями формування інформаційного потенціалу підприємства в умовах цифрової економіки. *Modern Economics*. 2018. № 12. С. 93–99.

12. Карчева Т. Г., Огородня Д. В., Опенько В. А. Цифрова економіка та її вплив на розвиток національної та міжнародної економіки. *Фінансовий простір*. 2017. № 3 (27). С. 13–23.

13. Кириленко А. В., Тищук Т. О. Від традиційної до цифрової: як «ботани й нерди» побудували найдинамічнішу галузь української економіки. URL: https://voxukraine.org/longreads/plugged-in-economy/index.html

14. Офіційний сайт IT Ukraine Association. URL: https://itukraine.org.ua/en/it-industry-in-ukraine-count-not-neglect.html.

15. Подольчак Н. Ю., Білик О. І., Левицька Я. В. Сучасний стан цифровізації в Україні. *Ефективна економіка*. 2019. № 10. URL: http://www.economy.nayka.com.ua/?op=1&z=7300

16. Прохорова В. В., Крутова А. С., Дяченко К. С. Економічна безпека підприємств України в умовах дестабілізаційного розвитку. *Адаптивне управління: теорія і практика. Серія «Економіка»*. 2022. Вип. 14 (28). URL: https://amtp.org.ua/index.php/journal2/article/view/490/425

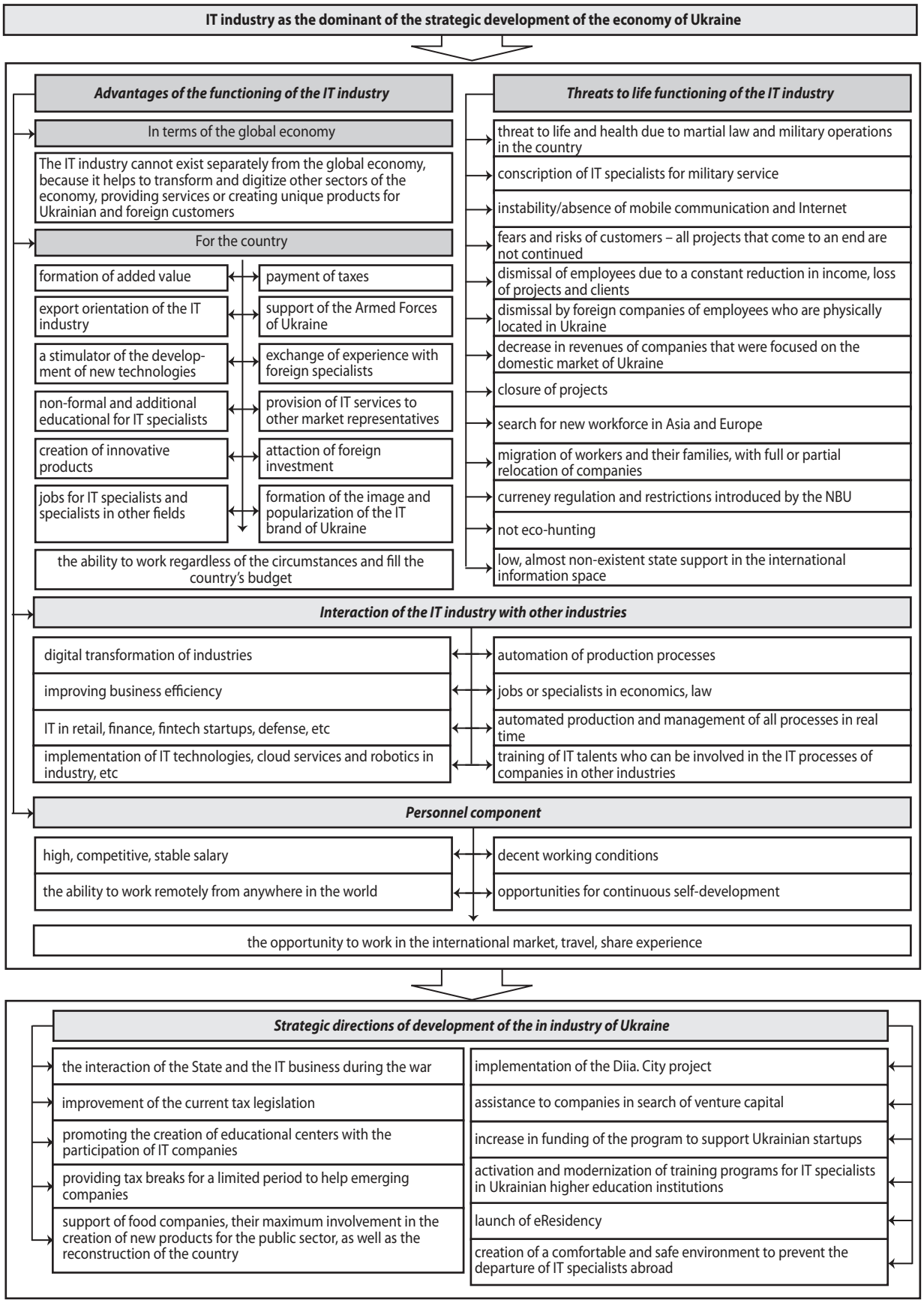

Fig. 9. The IT industry as a driver of the strategic development of Ukraine's economy in the context of digital transformation

Source: compiled by the authors.

17. Прохорова В. В., Чобіток В. І. Організаційно-управлінське забезпечення реінжинірингу бізнес-процесів на підприємстві в умовах цифровізації. *Бізнес Інформ*. 2021. № 1. С. 45–50.

18. Україна – 2030Е – країна з розвинутою цифровою економікою // Український інститут майбутнього. 2020. URL: https://strategy.uifuture.org

19. Чмерук Г. Г. Цифрова економіка як окремий сектор національної економіки держави. *Науковий вісник Ужгородського національного університету. Серія «Міжнародні економічні відносини та світове господарство»*. 2019. № 27. С. 92–97.

20. Як змінювалася частка ІТ-галузі у загальному обсязі ВВП України // Слово і Діло. URL: https://www.slovoidilo.ua/2021/09/15/infografika/ekonomika/yak-zminyuvalasya-chastka-it-haluzi-zahalnomu-obsyazi-vvp-ukrayiny.

REFERENCES

Arefieva, O. V., and Poberezhna, Z. M. "Kholistychne upravlinnia adaptyvnistiu pidpryiemstva v umovakh tsyklichnoi ekonomiky" [Holistic Management of Enterprise Adaptability in Cyclical Economy Conditions]. *Ekonomichnyi visnyk NTUU «Kyivskyi politekhnichnyi instytut»*, no. 18 (2021): 64-70.

Capers, Z. "10 Predictions for the Future of IT and the Management Strategies That Will Follow". https://www.getapp.com/resources/future-of-it/

Chmeruk, H. H. "Tsyfrova ekonomika yak okremyi sektor natsionalnoi ekonomiky derzhavy" [Digital Economy as a Separate Sector of the National Economy of the State]. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Seriia «Mizhnarodni ekonomichni vidnosyny ta svitove hospodarstvo»*, no. 27 (2019): 92-97.

Diachenko, K. S. "Rol ta znachennia IT-sektoru dlia ekonomiky Ukrainy v umovakh viiny" [The Role and Importance of the IT Sector for the Economy of Ukraine in Wartime Conditions]. *Aktualni problemy suchasnoho biznesu: oblikovo-finansovyi ta upravlinskyi aspekty*. Lviv: LNUP, 2022. 73-75.

Golden, B. "5 Tech Trends for 2022: Digital Transformation, Cloud and Talent Wars". https://www.eweek.com/cloud/technology-trends-2022/

Karcheva, T. H., Ohorodnia, D. V., and Openko, V. A. "Tsyfrova ekonomika ta yii vplyv na rozvytok natsionalnoi ta mizhnarodnoi ekonomiky" [The Digital Economy and Its Impact on the Development of the National and International Economy]. *Finansovyi prostir*, no. 3(27) (2017): 13-23.

Kyrylenko, A. V., and Tyshchuk, T. O. "Vid tradytsiinoi do tsyfrovoi: yak «botany i nerdy» pobuduvaly naidynamichnishu haluz ukrainskoi ekonomiky" [From Traditional to Digital: How "Nerds and Nerds" Built the Most Dynamic Branch of the Ukrainian Economy]. https://voxukraine.org/longreads/plugged-in-economy/index.html

Ofitsiinyi sait IT Ukraine Association. https://itukraine.org.ua/en/it-industry-in-ukraine-count-not-neglect.html

Podolchak, N. Yu., Bilyk, O. I., and Levytska, Ya. V. "Suchasnyi stan tsyfrovizatsii v Ukraini" [The Current State of Digitization in Ukraine]. Efektyvna ekonomika. 2019. http://www.economy.nayka.com.ua/?op=1&z=7300

Prokhorova, V. et al. "Digitalization process for enterprise growth and security management: the cognitive approach". *International Journal of Advanced Science and Technology*, vol. 29 (8s) (2020): 2511-2517.

Prokhorova, V. et al. "Innovative intellectual capital in the system of factors of technical and technological development". *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, vol. 6 (2022): 181-186.

Prokhorova, V. et al. "Innovative technologies under digital economics conditions". *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, vol. 5 (2019): 155-161.

Prokhorova, V. V., and Chobitok, V. I. "Orhanizatsiino-upravlinske zabezpechennia reinzhynirynhu biznes-protsesiv na pidpryiemstvi v umovakh tsyfrovizatsii" [The Organizational and Managerial Provision of Business Processes Reengineering at Enterprise in the Conditions of Digitalization]. *Biznes Inform*, no. 1 (2021): 279-285.

Prokhorova, V. V., Krutova, A. S., and Diachenko, K. S. "Ekonomichna bezpeka pidpryiemstv Ukrainy v umovakh destabilizatsiinoho rozvytku" [Economic Security of Ukrainian Enterprises in the Conditions of Destabilizing Development]. Adaptyvne upravlinnia: teoriia i praktyka. Seriia «Ekonomika». 2022. https://amtp.org.ua/index.php/journal2/article/view/490/425

Silberglitt, R. "The Global technology revolution 2020, executive summary: bio/nano/materials/information trends, drivers, barriers, and social implications". https://www.amazon.fr/Global-Technology-Revolution-Executive-Summary-ebook/dp/B0046LVCSS

"The Global Risks. Report the World Economic Forum 2023". https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf?fbclid=IwAR3KbV8aeD_NTu21YcpzNLUo9c2IZHMG8NiYV2bJ74Rf4kUqbziSFoGv3QQ/

"Ukraina - 2030E - kraina z rozvynutoiu tsyfrovoiu ekonomikoiu" [Ukraine - 2030E - A Country with a Developed Digital Economy]. Ukrainskyi instytut maibutnyoho. 2020. https://strategy.uifuture.org

"Ukraine IT Report 2021. Zvit Asotsiatsii «IT Ukraine»" [Ukraine IT Report 2021. Report of the "IT Ukraine" Association]. https://reports.itukraine.org.ua/doitlikeukraine2022

"Yak zminiuvalasia chastka IT-haluzi u zahalnomu obsiazi VVP Ukrainy" [How the Share of the IT Industry in the Total GDP of Ukraine Changed]. Slovo i Dilo. https://www.slovoidilo.ua/2021/09/15/infografika/ekonomika/yak-zminyuvalasya-chastka-it-haluzi-zahalnomu-obsyazi-vvp-ukrayiny

Zakharchenko, L. A., Khazrat, M. S., and Hryhoriev, M. S. "Stratehichni napriamy formuvannia informatsiinoho potentsialu pidpryiemstva v umovakh tsyfrovoi ekonomiky" [Strategic Directions of Forming the Information Potential of the Enterprise in the Conditions of the Digital Economy]. *Modern Economics*, no. 12 (2018): 93-99.

Стаття надійшла до редакції 02.02.2023 р.