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INTERNATIONAL IT OUTSOURCING: PROSPECTS FOR UKRAINE

Abstract. *The article is devoted to assessment of the role of the international IT outsourcing for Ukraine and substantiation of its development prospects in our country. The general advantages of outsourcing in the world practice and its importance for optimizing the companies' activities in various fields of activity are highlighted. The existing scientific approaches to defining the outsourcing process are considered. Attention is paid to the analysis of international experience in the practical use of outsourcing, the development trends and characteristics of the modern international outsourcing market are highlighted. It is emphasized that IT outsourcing has a significant impact on the business processes development, which allows the IT industry to become a reliable foundation of the Ukrainian economy during the war and in the period of post-war recovery. The main achievements of IT outsourcing in Ukraine are considered. It is proved that the IT industry is one of the leading sectors of the national economy and IT companies make a significant contribution to the state budget as computer services exporters. The constructed trend model shows that over the past twenty years the export of IT services has been showing rapid exponential growth. An econometric model of the dependence of Ukraine's GDP on the computer services export has been developed, proving that the growth of computer services exports will directly lead to GDP growth. Future trends in the development of IT outsourcing are outlined including remote work, building companies with a high organizational culture, global competition for developers, transition to R&D centers and growing demand for programmers from Eastern Europe. It is emphasized that the main trends and clear prospects for outsourcing in the future will be associated with the cloud technologies development, artificial intelligence and robotic process automation, strengthening cybersecurity, strategic partnerships development etc. The authors substantiate strategic and*

tactical guidelines for the development and implementation of the State regulatory policy for the IT sector development in Ukraine.

Key words: IT outsourcing, computer services, export, cyber security, digitization.

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МІЖНАРОДНИЙ ІТ-АУТСОРСИНГ: ПЕРСПЕКТИВИ ДЛЯ УКРАЇНИ

Анотація. Стаття присвячена оцінюванню ролі міжнародного ІТ-аутсорсингу для України та обґрунтуванню перспектив його розвитку в нашій країні. Виділено загальні переваги аутсорсингу у світовій практиці та його значення для оптимізації діяльності компаній різних сфер діяльності. Розглянуто існуючі наукові підходи до визначення процесу аутсорсингу. Приділено увагу аналізу міжнародного досвіду практичного використання аутсорсингу, виокремлено тенденції розвитку та характерні риси сучасного ринку міжнародного аутсорсингу. Наголошено, що ІТ-аутсорсинг має значний вплив на розвиток бізнес-процесів, що дозволяє ІТ-індустрії стати надійним фундаментом економіки України під час війни та у період післявоєнного відновлення. Розглянуто основні досягнення ІТ-аутсорсингу в Україні. Доведено, що ІТ-індустрія є однією з провідних галузей вітчизняної економіки та ІТ-компанії здійснюють суттєвий внесок у наповнення державного бюджету, виступаючи експортерами комп'ютерних послуг. Побудована трендова модель показує, що впродовж більш ніж двадцяти останніх років експорт ІТ-послуг демонструє стрімке експоненційне зростання. Розроблено економетричну моделі залежності ВВП України від показника експорту комп'ютерних послуг, доведено, що зростання експорту комп'ютерних послуг безпосередньо призводитиме до зростання ВВП. Окреслено майбутні тренди розвитку ІТ-аутсорсингу, серед яких віддалена робота, побудова компаній з високою організаційною культурою, глобальна конкуренція за розробників, перехід на R&D центри, зростаючий попит на роботу

програмістів з території Східної Європи. Наголошено, що основні тенденції та чіткі перспективи аутсорсингу в майбутньому будуть пов'язуватися із розвитком сучасних хмарних технологій, штучного інтелекту та роботизовано автоматизацією процесів, зміцненням кібербезпеки, розвитком стратегічного партнерства тощо. Обґрунтовано стратегічні і тактичні орієнтири для розробки та реалізації державної регуляторної політики розвитку ІТ-сфери в Україні.

Ключові слова: ІТ-аутсорсинг, комп'ютерні послуги, експорт, кібербезпека, діджиталізація.

Introduction. In today's global environment many companies are improving their market competitiveness by increasing the production flexibility level, reducing the cost of goods and services and cutting administrative costs and at the same time are increasingly using the latest management tools among which outsourcing occupies an important place.

Outsourcing is actively used by leading market players who are trying to relocate production facilities and jobs from developed to developing countries. Today various types of outsourcing are actively developing and are becoming international in nature: IT outsourcing (offshore programming services, software testing, e-business), business project outsourcing (accounting and finance, human resources, marketing, advertising, logistics), service outsourcing (leasing, construction and architectural services, catering, transport and communication services) and manufacturing outsourcing (core production outsourcing, value-added production outsourcing).

IT outsourcing has a significant impact on the development of many companies. The main clients of IT outsourcing are multinational industrial corporations, large banks and government agencies. The world's largest producers of computer hardware, software, network technologies and applications, corporate planning and resource management systems are the global IT outsourcing services providers on the market. IT outsourcing can actually become one of the most promising export destinations for our Ukraine.

Efficiency, mobility and flexible adaptability to new challenges allow the IT industry to become a reliable foundation for Ukraine during the war and in the period of post-war recovery. Maintaining positive dynamics in the face of a full-scale aggressor invasion and high demand in the foreign and domestic markets demonstrate the industry's accumulated strong potential and ability to adapt. The domestic IT sector has already occupied an important market niche in

cybersecurity and military tech at the international level and has experience in the public services digitalisation.

Literature review. The scientific aspects related to the development and peculiarities of outsourcing both at the domestic and international levels are covered in the works of foreign and domestic scholars. The focus is on the study of the international outsourcing experience, trends in the outsourcing development of various types of services in the world and Ukraine, the outsourcing effectiveness in the international activities of enterprises, the place of outsourcing in global value chains etc.

For example N. Parkhomenko studies outsourcing as a strategy for the business systems organisational development in the global environment where she identifies the main advantages of the outsourcing strategy and notes that the use of outsourcing allows business systems to focus on the main activity and, as a result, gain competitive advantages on the market [1]. V. Derhachova and D. Ostroverkha substantiate the expediency of using foreign experience for domestic business entities to increase the competitiveness of both individual companies and Ukraine as a whole [2]. O. Makovoz and A. Zaitseva define outsourcing as a process in which certain functions are transferred to a process, namely, one organisation uses the resources of another to optimise its current activities. At the same time the authors argue that getting rid of a number of labour-intensive and non-core operations makes it possible to focus on the new products development and if necessary to quickly and painlessly restructure the production process [3]. The issues of international IT outsourcing development in Ukraine, in particular IT outsourcing as such, which demonstrates positive dynamics even in times of war, are becoming increasingly relevant.

The research aims. The aim of the article is to assess the role of international IT outsourcing for Ukraine and to substantiate the prospects for its development.

Research results. Outsourcing as a relatively new concept and modern process has gained relevance not only in the domestic markets but also internationally. We consider it relatively new because until the early 90s of XX century this term was not used in economic terminology or in any national language. Today outsourcing helps companies optimise their operations by focusing on their core business and transferring non-specific functions and non-core tasks to external specialised companies. Accordingly researchers use different approaches to study the role and place of outsourcing in the leading companies activities. In particular outsourcing is viewed from the perspective of organising a firm's activities by focusing on priorities while transferring non-core functions to third-party companies on a contractual basis, including the use of intermediation. There are also opinions that justify outsourcing as the abandonment of one's own business process and the purchase of services for the implementation of a similar business process from other entities; the use of external resources to solve one's own tasks.

International experience has shown that the practical use of outsourcing contributes to the global economy development through the deepening and intensification as well as the application of new technological processes and solutions in production activities and other areas of social life. Leading international companies directly determine the trends in the development of research and innovation in many countries, stimulating the high-tech industries growth that produce technologically sophisticated end products. In the United States outsourcing has become a well-known traditional phenomenon, where almost 20% of all information technology costs are handled by outsourcing companies.

The main countries that provide outsourcing services include India, China, the Philippines, Panama, Ireland, Egypt and Eastern Europe. Their advantages are revealed in the following: availability of a large skilled workforce; low wages; high quality of scientific and educational processes; high-level proficiency in foreign languages; employee motivation; and technological sophistication of telecommunications [2]. Looking at each country India has a good command of English, while Ukraine has many highly skilled programmers. India remains the leader in outsourcing, accounting for 50-80% of international outsourcing revenues. The success of Indian companies is justified

by a competent state policy, when the Indian authorities in conditions of closeness to foreign companies determined the directions of the information and communication technologies sector development by introducing state orders for high-tech products manufactured in India [2]. Thus international outsourcing is gradually gaining importance for the international business.

The list of companies that have become leaders in the international information and computer industry and continue to be the shadow engines of scientific and technological development is quite large in the world and includes such firms as Compal Electronics, Flextronics, Quanta Computer, Wipro Technologies etc. which are located in Taiwan, India and other Asian countries [4].

Experience shows that the global trends in the modern international outsourcing market development are characterised by the following features:

1. Parallel manifestations, in particular, the differentiation of outsourcing services, full specialisation, on the one hand, and the emergence of complex products and solutions generated by leading outsourcing leaders, on the other hand.
2. Increase in the outsourcing services volume provided in certain market segments, increase in contracts value quantitative parameters and a wide range of business areas for outsourcing processes.
3. Formation and operation of strategic alliances by powerful companies with small and medium-sized specialised players in the market based on global outsourcing.
4. Gradual transition from providing outsourcing services only to large clients to small and medium-sized companies.

Today domestic outsourcers are most active in working with American partners, as statistics show that this country accounts for almost 80% of domestic exports of IT services. They are followed in the ranking by EU member states and Israel. Among the set of well-known competitive advantages of Ukraine is a fairly wide range of scientific and technical potential, ranging from software to industrial engineering.

The main features of outsourcing in the international arena are:

- 1) long-term agreements (more than a year);
- 2) agreements on the transfer of functions of enterprises, organisations or their separate divisions, operations etc.;

- 3) transfer of only non-core operations;
- 4) possibility of transferring business processes (accounting, maintenance, recruitment) [3, p. 88].

The essence of outsourcing is to increase the efficiency of a company by transferring certain functions to external organisations in order to optimise all types of resources and concentrate on the core business. An important aspect of outsourcing activities is building customer-supplier relationships. Today experts distinguish two models, which are known in the literature as the American (horizontal) and Japanese (pyramidal) models. The American is aimed at using the services of a large number of suppliers and only within a single order, while the other is designed for the long term. The Japanese model allows for the formation of industry and inter-industry clusters, which is its undoubted advantage over the American model [2, p. 96–99].

The outsourcing in Ukraine shows its own peculiarities in terms of justifying the popularity of its individual types. According to the degree of spread of outsourcing types they are arranged as follows: IT services, logistics, production processes resource support, marketing services, recruitment, accounting, information processing and systematisation, medical professionals

outsourcing, personnel records and HR support, administrative functions.

The main achievements of IT outsourcing in Ukraine are as follows [5]:

- Ukraine won the Outsourcing Destination of The Year nomination at the European Outsourcing Excellence Awards;
- Ukraine won the first place among the countries of Central and Eastern Europe in the categories "Best market value in IT-outsourcing" and "The largest number of staff employed in IT";
- three Ukrainian companies (Intetics, Miratech and Softengi) were included in the TOP 5 Rising Stars of The Global Outsourcing 100.

The IT industry is one of the leading sectors of the Ukrainian economy. IT companies make a significant contribution to the state budget as computer services exporters. Over the past twenty years exports of IT services have been showing rapid exponential growth, as evidenced by the trend model we have built (Figure 1).

Between 2000 and 2022 the share of computer services exports in exports of goods and services increased from 1.2% to 46.7%, again with an exponential growth rate (Figure 2). According to the results of the military year of 2022 the IT industry brought USD 7,521 million in export revenue to the Ukrainian economy. The industry generated USD 7,521 million in

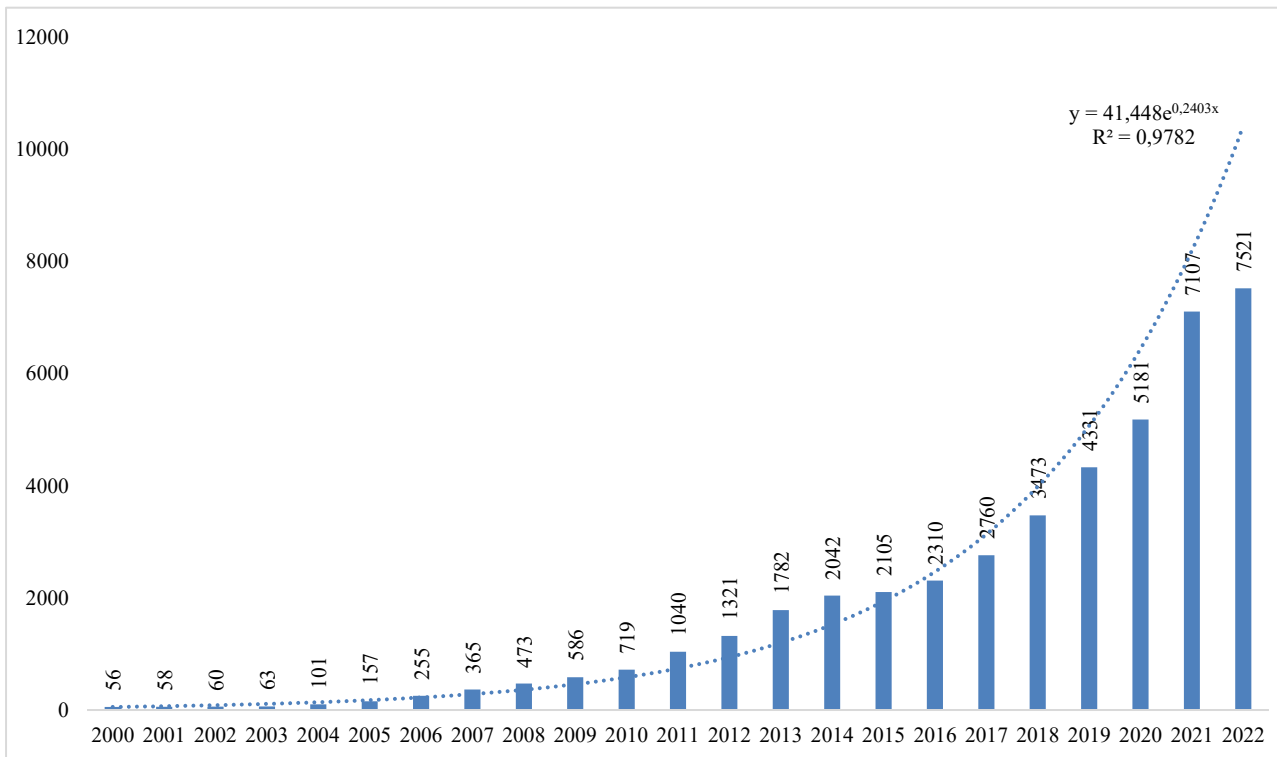


Figure 1. Exports of computer services in Ukraine in 2000–2022, million USD

export revenues and achieved 5.5% growth compared to the previous year. These results were made possible by the effective implementation of business continuity plans, timely relocation of teams and diversification of development centres in Ukraine and abroad. In fact IT was the only export sector that grew during the war. The direct dependence of the domestic economy on the export activity of the computer services sector can be confirmed by applying the correlation and regression analysis tools. In this study we have built an econometric model

of the dependence of Ukraine's GDP on the computer services exports.

For the calculations we used statistical data for the period 2014–2022 (Table 1).

The linear regression model reflects the dependence of Ukraine's GDP on computer services exports:

$$Y = 78359,11 + 14,29 X, \quad (1)$$

Y – GDP, X – computer services exports.

The intensity of the relationship between the variables included in the regression model is measured by the correlation coefficient

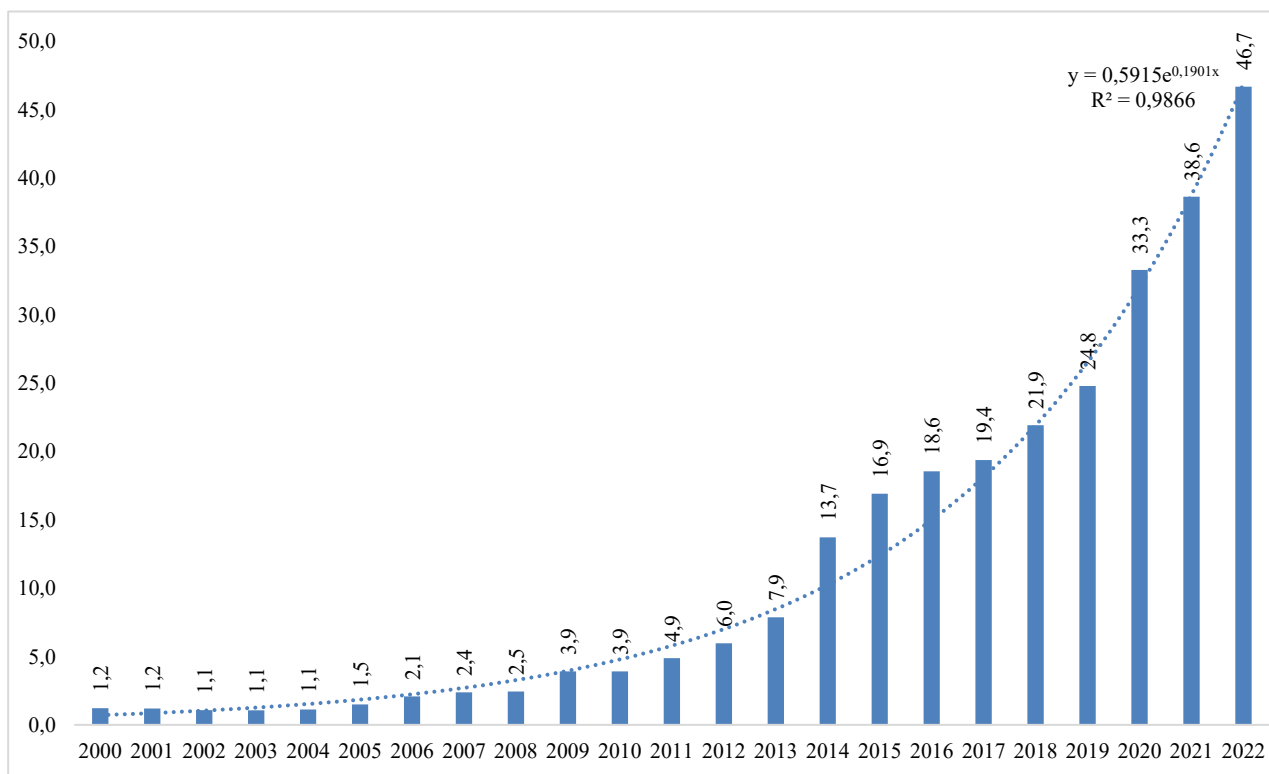


Figure 2. Share of computer services exports in Ukraine's exports of goods and services in 2000–2022, USD million

Table 1

Computer services exports and GDP in Ukraine

Year	Computer services exports, USD million	GDP, USD million	Exports of goods and services, USD million
2014	2042	133504	64873
2015	2105	91031	47880
2016	2310	93356	46023
2017	2760	112091	53943
2018	3473	130891	59209
2019	4331	153883	63449
2020	5181	156618	60802
2021	7107	199766	81281
2022	7521	160503	56909

Source: [6]

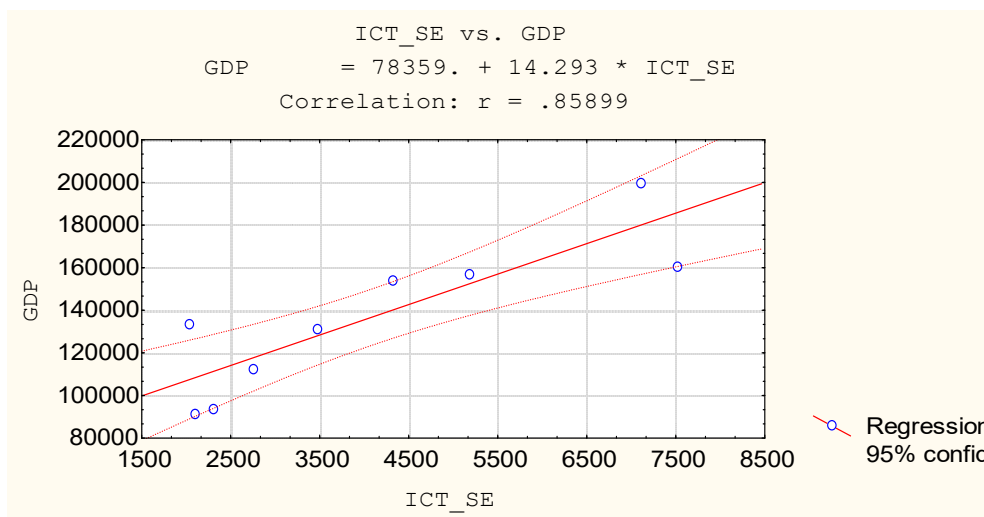


Figure 3. Dependence of Ukraine's GDP on computer services exports

which is 0.86, indicating that there is a close direct relationship between the variables. The determination coefficient shows that 74% of the dependent variable is explained by the independent variable influence. Checking the reliability of the regression model and the correlation coefficient based on the Fisher's criterion gives grounds to conclude that the model is adequate since the observed F-statistic value of 19.7 is higher than the table value at the 0.05 level. The independent variable included in the model is statistically significant (t-statistic value 5.35).

The Durbin-Watson statistic recorded an estimated value of $DW=2.22$, which was compared with critical statistical values for $\alpha = 0.01$, $p = 1$ and $n = 9$; $d_1 = 0.82$ and $d_2 = 1.32$. Therefore the hypothesis about the absence of autocorrelation of residuals is acceptable. Thus we can say that the export of computer services growth will directly lead to the GDP growth.

Let's focus on future trends in IT outsourcing, including the following:

- remote work, which will contribute to the outsourcing growth, the growing interest of companies in attracting talented developers from other countries;
- global competition for developers and competition for personnel, IT specialists with experience in cloud computing, machine learning and software will be in demand in almost every company;
- professionals will choose companies with a high organisational culture, i.e. pay more attention to company values and corporate ethics;
- there will be a shift to R&D centres as cheaper and more profitable, technology

companies will prefer to establish their own centres as an attractive option for cooperation, given the benefits of R&D, including access to a significant talent pool, the ability to shape their own corporate culture and teamwork and control internal work processes;

- the growing demand for programmers from Eastern Europe due to attractive prices for specialist services, high level of technical education and a significant quantity of talented individuals.

The main trends and clear prospects for outsourcing in the future will be associated with the following emphases [7]:

- modern cloud technologies development that allow the exchange of information resources that are available online;
- artificial intelligence and robotic process automation, which allow outsourcing companies to automate internal and external processes and perform a number of simple tasks;
- strengthening cybersecurity to eliminate certain risks to business processes by providing a third party with access to internal company data;
- strategic partnerships as a process of forming a global team to ensure uninterrupted operation;
- remote work and global outsourcing in an environment where a significant number of companies are getting rid of traditional offices and prefer flexible remote working.

Almost all industries use outsourcing for the successful implementation of key projects. In the age of digitalization high technology, modern software and advanced applications development, the outsourcing industry continues

to grow rapidly, demonstrating a high level of flexibility, the absence of geographical boundaries and access to a wide range of specialists and niche areas. Short-term cooperation within a single project or task is one of the competitive advantages of outsourcing that attracts numerous supporters.

The IT sector's transformation into a the national economy strategic sector is currently the main pillar of the strategic course of the Ministry of Digital Transformation – its share in the country's GDP should reach 10% and the institution plans to carry out a large-scale digitalisation of society (all public services will be provided online). Another important measure is to create the most favourable conditions for IT companies to operate and provide various relevant services, where free access to reliable and high-speed Internet plays a significant role, as a result 95% of the population should be covered by such Internet. Today only about 50% of Ukraine's population has access to the Internet. However Ukraine is a leader in terms of Internet accessibility, which creates stable conditions for freelancers.

Strategic and tactical guidelines for the development and implementation of the state regulatory policy for the IT sector development should include:

- creating a favourable investment climate;
- forming a well-thought-out policy aimed at developing up-to-date regulatory and legal support and strengthening the sector's competitiveness;
- adapting personnel training to new market demand requirements, taking into account a set of soft skills, including critical or creative thinking, self-organisation and self-development, and the ability to work together in teams.

Conclusions. IT outsourcing is widely used among all types of outsourcing in the international environment due to the high pace of computer technologies development, especially in the context of the COVID-19 pandemic and war, so the quantity of Internet consumers has increased significantly and almost all companies have started creating websites, promoting goods and providing services through the Internet.

There is a clear trend among Ukrainian IT companies to increase the complexity of their IT projects, which requires continuous training and IT specialists professional development. Ukraine is reasonably considered one of the best territories

for IT outsourcing due to the affordability of development resources. According to the results of 2022 the IT industry brought USD 7,521 million in export revenue to the Ukrainian economy; it generated USD 7,521 million in export revenue and achieved 5.5% growth compared to the previous year. It has been empirically proven that the growth of computer services exports will directly lead to GDP growth.

The main trends and clear prospects for outsourcing in the future will be associated with the following emphases: the modern cloud technologies development, artificial intelligence and robotic process automation, strengthening cybersecurity, strategic partnerships, remote work and global outsourcing. Efficiency, mobility, and flexible adaptability to new challenges allow the IT industry to become a reliable foundation for Ukraine during the war and in the period of post-war recovery. The domestic IT sector has already occupied an important market niche in cybersecurity and military tech internationally and has experience in the public services digitalization.

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