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BUSINESS LEADERSHIP OF IT COMPANIES: IMPACT ON EMPLOYMENT AND SOCIO- ECONOMIC DEVELOPMENT OF THE COUNTRY

ABSTRACT

The relevance of the study is due to the influence of IT companies on the socio-economic development of the country. In the era of dynamic development of information and computer technologies, transnational corporations in the IT business are rapidly scaling up. Creating additional value in the industry due to the high level of education of certified, highly qualified specialists affects the positive economic growth of the country, where the share of IT companies is high. The article reflects the position of the largest corporations in the world, which take first place in terms of brand capitalization and market capitalization. Analysis of corporate income showed a close correlation with the number of the largest personnel. A study of corporations by field of activity showed the greatest specialization of companies in the development of computer programs. The analysis of the EU market reflected a close correlation between the dynamic development of the IT business over the past 10 years and especially in 2020 during the pandemic, but the negative trends of 2014 and 2022 also affected the indicators of IT companies, which after reducing staff in 2022-2023 received negative growth rates. Correlation-regression analysis of the impact of exports of IT products on services, the largest number of personnel reflected a direct correlation with the GDP of the EU country.

Purpose and objectives of the study. The research method in the article is to determine the main trends in the global IT business and identify factors influencing the country's GDP. To identify the goal, the article conducted an analysis of IT by field of activity, geographical segments, an analysis of micro- and macroeconomic indicators of the industry, and the impact of the IT industry on the economic growth of the EU market using the method of correlation-regression analysis.

The scientific novelty of the research results is brought to the identification of a correlation-regression relationship between the export of IT services and products, the main weight of the largest personnel in the industry and their impact on the GDP of the EU country.

The practical significance of the research results lies in the study of the income of IT companies and the patterns of hiring ICT specialists.

The results obtained in the article are formed on the basis of global databases Trade-Map, Eurostat, Statista, Macrotrends, and analytical research by KPMG, which allowed us to reveal the goal and obtain an adequate economic and mathematical model.

Keywords: information and computer technologies, economic growth, market capitalization, ICT specialist

JEL Classification: O33, M15

INTRODUCTION

The global Information Technology (IT) market, valued at USD 10.52 trillion in 2023, is projected to grow to USD 26.93 trillion by 2032, reflecting a compound annual growth rate (CAGR) of 11.0% during the forecast period. This growth is fueled by the rising demand for digital solutions and technologies across various industries as businesses

increasingly rely on IT services to navigate the digital age. Key industry players are responding by investing in innovative solutions to meet these evolving needs, reinforcing the market's upward trajectory.

Technological advancements are also reshaping the market. Advancements in IT infrastructure, cloud computing, and cybersecurity are accelerating adoption as businesses prioritize digital transformation, stronger data security, and flexible remote work solutions. These developments are enhancing productivity and competitiveness while highlighting the essential role of technology in driving modern business strategies. A key trend is the increasing implementation of edge computing, which processes data near its source to minimize latency and enable faster, real-time decision-making. As the number of Internet of Things (IoT) devices continues to surge and the demand for fast data analysis rises, edge computing has emerged as a cornerstone of contemporary IT infrastructure. This trend highlights the industry's push toward more efficient and responsive data processing, signalling a significant milestone in the evolution of the IT market [1].

The triumphs of digital transformation empower modern businesses to confidently face future uncertainties. In fact, 99% of organizations have reported improvements in profitability or productivity due to investments in digital transformation, identifying customer-centric technological strategies as indispensable tools in today's business survival toolkit.

Looking ahead, integrating a modern ecosystem of both in-house and third-party technologies, such as Everything-as-a-Service (XaaS)—an expansion of cloud tools and services—will be crucial. IT leaders who leverage the advantages of a data-driven operational model stand to benefit most from the XaaS ecosystem. Achieving this requires acknowledging that IT functions are best positioned to ensure technological governance and data reliability. Simultaneously, these efforts pave the way for future resilience by addressing cybersecurity threats and supporting enterprise-wide ESG goals.

The dynamic development of the global IT services market is becoming increasingly geographically differentiated by types of activities and diversified across regions. Each year, more countries engage in the provision of IT services, and for some market participants, this sector has already become a key area of specialization within the global economy [2].

Technological advancements in information technology have transformed the nature of solutions and business models, leveraging the intellectual potential of ICT professionals who directly contribute to generating high-added value in the industry.

LITERATURE REVIEW

Over the past five years, from 2020 to 2024, researchers have devoted significant attention to the role of business leadership in IT companies and its impact on employment and the socio-economic development of countries. Key topics include sustainable leadership, digital leadership, entrepreneurial leadership, and the influence of leadership on employee well-being and employment [3].

For example, authors in [4] conduct an in-depth analysis of the impact of the digital revolution on the labour market, focusing on public companies in China's manufacturing sector. Their findings confirm that digitalization significantly enhances stable employment, with a company's financial stability acting as a positive mediator in the relationship between digitalization and employment stability. Digitalization is particularly impactful in strengthening employment stability within low-tech IT sectors and companies.

Another noteworthy study [5], slated for publication in the Scopus database in January 2025, employs a Likert-scale survey to assess perceptions of artificial intelligence by company owners and employees, examining its effects on corporate resilience. The results emphasize that incorporating AI technologies into business operations enhances efficiency while playing a pivotal role in promoting both environmental and economic sustainability. By enabling data-driven insights, these tools streamline resource utilization, minimize waste, and contribute significantly to advancing sustainable development. The authors also emphasize the need to address the ethical and social implications of AI, particularly regarding labour and data privacy.

In [6], the authors identify prerequisites forming the foundations of advanced employer branding in Indian IT firms, which are critical for organizational sustainability and growth. These factors, including rewards and benefits, career growth opportunities, work-life balance, workplace environment, and corporate social responsibility, were identified through bibliometric analysis of 77 scholarly publications from 2010 to 2020 and structural and factor analyses. Such prerequisites play a crucial role in attracting and retaining talented employees in IT companies.

The evolution of digital technologies has transformed leadership roles in IT companies. A study published in the *Journal of Business and Socio-economic Development* (2023) [7] explores how digital leadership capabilities, expertise, foresight,

and vision influence companies. The study demonstrates that effective digital leadership fosters innovation and adaptability, which are essential for organizational success in the digital era.

AIMS AND OBJECTIVES

The aim of this study is to analyze the growth, trends, and economic impact of the global IT market, focusing on technological advancements and their role in sustainable development. It seeks to understand the drivers of IT market expansion and explore how emerging technologies contribute to business productivity and competitiveness.

The study has several objectives. First, it aims to evaluate the factors driving the IT market's growth, including the adoption of digital solutions, cloud computing, and cybersecurity innovations. Second, it seeks to investigate the role of cutting-edge technologies such as edge computing and Everything-as-a-Service (XaaS) in transforming business operations. Third, it focuses on examining the geographical and sectoral diversification of IT services and their economic implications on global markets. Fourth, the study aims to assess the contribution of IT services to achieving environmental, social, and governance (ESG) goals and sustainable development. Finally, it intends to identify the challenges and opportunities faced by IT companies in the rapidly evolving digital landscape.

METHODS

The methods for this study include a combination of quantitative and qualitative approaches to comprehensively analyze the global IT market. The quantitative analysis utilizes statistical data sourced from market reports, such as those provided by Business Research Insights [1], Eurostat [13], and Statista [10]. Key indicators like IT investments, adoption rates, and market growth are analyzed using econometric models to identify significant trends and patterns. Correlation and regression modelling further explore relationships between variables such as IT sector growth, GDP, and employment, providing deeper insights into market dynamics and predictive capabilities. The qualitative analysis involves an in-depth review of academic studies and industry reports. For instance, Makedon and Ilchenko's work on IT services in the context of Economy 4.0 provides insights into regional differentiation and specialization [2]. Additionally, insights from KPMG [14] and Deloitte [15] are used to explore emerging technologies, including edge computing and XaaS, and their impact on business operations.

Comparative analysis examines regional and global variations in IT market development using trade statistics from platforms like TradeMap [11] and recruitment data for IT professionals from Globalization Partners [12], highlighting disparities and opportunities across different markets. The study also incorporates sustainability assessments to evaluate how IT services align with environmental, social, and governance (ESG) goals. This is supported by frameworks from KPMG [14] and World Economic Forum reports [19], emphasizing IT's role in advancing sustainable development initiatives.

By integrating these methods, the study aims to deliver a comprehensive understanding of the global IT market's dynamics, addressing challenges and identifying future opportunities.

RESULTS

Characteristics of trends in the global IT market

The global IT market is a dynamic industry that continuously evolves by introducing new technologies, leading to frequent shifts in market leadership.

A key indicator of trends in the global IT market is the annual Interbrand Top 100 Global Brands ranking, which highlights the most influential companies worldwide. Over the past five years, the leadership positions within the Top 5 brands underscore the dominance of IT companies, with four being American and one South Korean. These trends are depicted in Figure 1.

In 2024, among the five leading companies, only Apple experienced a 3% decline in brand capitalization, while the others saw increases ranging from 8% to 12%. Microsoft, in particular, demonstrated strong growth, solidifying its reputation as an innovative brand through advancements like Microsoft 365 and Azure.

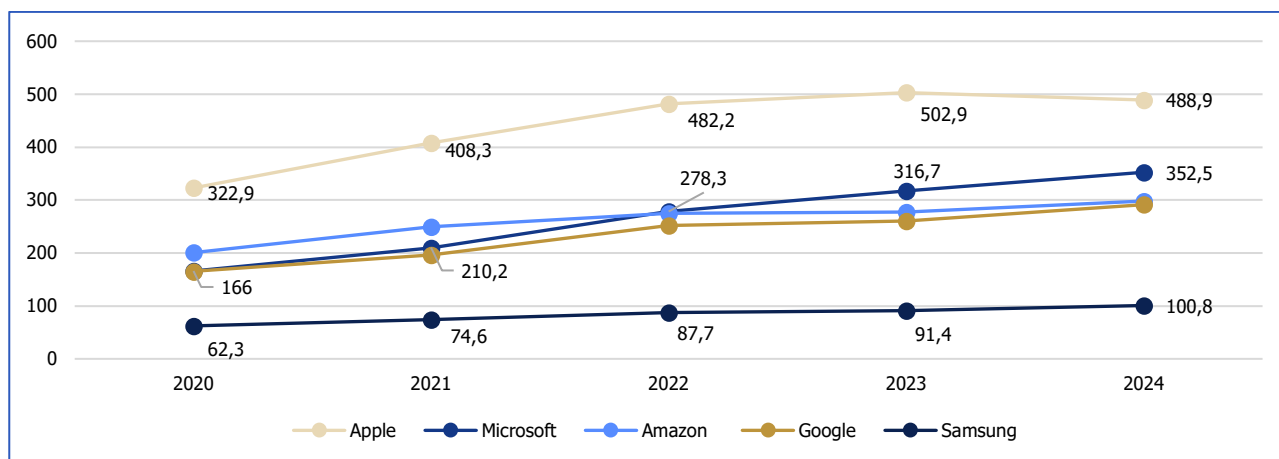


Figure 1. Top 5 Global Brands from 2020 to 2024, USD billion. (Source: Best Global Brands 2024. URL: <https://interbrand.com/best-global-brands/>)

Apple's business is centred on its flagship iPhone, yet its expanding services portfolio has become a major revenue driver. This portfolio includes cloud services, Apple Music, App Store, Apple Pay, AppleCare, licensing, and more. Apple has also gained dominance in the wearable and hearable markets with products like the Apple Watch and AirPods, which have further established its presence in personal health monitoring. Additionally, Apple offers other hardware, such as iPads, MacBooks, and HomePods, all integrated with proprietary operating systems like iOS, macOS, watchOS, and tvOS. Its subscription services include Apple Card, Apple News, Apple TV+, Apple Arcade, and the new Apple TV app and Channels, broadening its reach across diverse markets.

Microsoft remains a global leader in technology, commanding over 80% of the PC operating systems market. The Microsoft 365 suite is a cornerstone of productivity tools worldwide. The company also stands as one of two major providers capable of delivering a comprehensive range of Infrastructure as Platform as a Service (PaaS) and a Service (IaaS) solutions through its Azure platform. Beyond cloud services, Microsoft's offerings span operating systems, server and business solutions, software development tools, cross-device productivity applications, video games, and devices like PCs, tablets, gaming consoles, and phones. Azure enhances Microsoft's capabilities with integrated software, platforms, and content solutions tailored for businesses.

Alphabet Inc., the parent company of Google, operates across diverse technology domains. Its services include web search, digital advertising, mapping solutions, software, consumer content, hardware, mobile operating systems, and enterprise tools. Alphabet's extensive ecosystem supports its continued growth and innovation in the technology sector, with headquarters in Mountain View, California.

Amazon.com stands as a global leader in e-commerce, continually expanding its reach across international markets. Its online retail operations centre around the Prime program, underpinned by a robust distribution network. The acquisition of Whole Foods Market further bolstered Amazon's presence in the physical grocery sector. In addition to retail, Amazon dominates the cloud computing landscape, particularly in the Infrastructure as a Service (IaaS) space, through its highly profitable Amazon Web Services (AWS) division. The company has also gained significant recognition with its Echo devices powered by Alexa. Leveraging artificial intelligence, Alexa not only enhances user experiences but also drives product and service sales. Amazon generates revenue from three primary segments: North America, International, and AWS, catering to three core customer groups: consumers, sellers, and web developers.

Each of the corporations presented has its own specialization or market geography, but all share the common characteristics of scale, transnational business operations, and sustained growth, particularly during the pandemic. Each company utilizes different IT solutions and business models to enhance its competitiveness [9].

According to Macrotrends, we conducted a sample analysis of net income from sales and employee headcount for the Top 10 largest companies across various IT business sectors. The microeconomic indicators for these corporations are summarized in Tables 1-2.

The data provided show that the activities of the five companies are primarily focused on software development, specifically in areas such as databases, operating systems, ERP and CRM systems, and graphic software. Two companies are involved in e-commerce, with Amazon showing the highest growth dynamics, while the negative performance of Alibaba is linked

to Jack Ma's issues with the Chinese government. The negative results of EPAM Systems are due to project losses in the post-Soviet markets.

Table 1. Net sales revenue of the Top 10 largest IT companies, USD million. (Source: <https://macrotrends.net>)

Company	Field of activity	2019	2020	2021	2022	2023	2023 to 2022
Amazon	E-commerce	280522	386064	469822	513983	574785	1.12
Alibaba	E-commerce	56152	71985	109480	134567	126491	0.94
Apple	Computers/Gadgets	260174	274515	365817	394328	383285	0.97
Alphabet	Internet Services	161857	182527	257637	282832	307394	1.09
Microsoft	Software	125843	143015	168088	198270	211915	1.07
Oracle	Software	39506	39068	40479	42440	49954	1.18
SAP SE	Software	30859	31228	32939	32525	33775	1.04
Salesforce	Software	13282	17098	21252	26492	31352	1.18
Adobe	Software	11171	12868	15785	17606	19409	1.10
EPAM Systems	IT Services	2293	2659	3758	4824	4690	0.97

Table 2. Number of personnel of the Top 10 largest IT business companies, people. (Source: <https://macrotrends.net>)

Company	Country of headquarters	2019	2020	2021	2022	2023	2023 to 2022
Amazon	USA	798000	1298000	1608000	1541000	1525000	0.99
Alibaba	China	101958	117600	251462	254419	235216	0.92
Apple	USA	137000	147000	154000	164000	161000	0.98
Alphabet	USA	118899	135301	156500	190234	182502	0.96
Microsoft	USA	144000	163000	181000	221000	221000	1.00
Oracle	USA	136000	135000	132000	143000	164000	1.15
SAP SE	Germany	100330	102430	107415	111961	107602	0.96
Salesforce	USA	35000	49000	56606	73541	79390	1.08
Adobe	USA	22634	22516	25988	29239	29946	1.02
EPAM Systems	USA	32561	41168	58000	59300	53150	0.90

Oracle Corporation is a leading provider of enterprise-level databases, middleware, and application software, with a growing focus on cloud computing in recent years. The company delivers a broad suite of cloud solutions tailored to support diverse deployment models, leveraging open industry standards like SQL, HTML5, and Java. Oracle Cloud offers subscription-based access to platform, application, and infrastructure services, enabling businesses to optimize their digital operations.

Oracle's portfolio of engineered systems showcases cutting-edge solutions, featuring products such as the Exadata Database Machine, Oracle Big Data Appliance, Exalogic Elastic Cloud, Exalytics In-Memory Machine, SPARC SuperCluster, Oracle Database Appliance, Virtual Compute Appliance, and ZFS Storage. These solutions are designed to enhance performance, scalability, and efficiency for enterprise clients, reinforcing Oracle's position as a leader in cutting-edge technology solutions.

SAP SE stands as one of the foremost global providers of enterprise application software, renowned for its leadership in enterprise resource planning (ERP) solutions. Serving businesses of all scales—from small and medium enterprises to expansive multinational organizations—SAP delivers tailored solutions that optimize operational efficiency and strategic decision-making. The company integrates advanced technologies, including the Internet of Things (IoT), machine learning (ML), and sophisticated analytics, enabling clients to derive actionable insights from vast datasets and respond swiftly to dynamic market conditions.

Salesforce.com is a global leader in providing on-demand customer relationship management (CRM) software, integral to streamlining key business functions such as sales and customer service, marketing automation, custom application development, support, analytics, and document management. The company offers a robust technological platform that enables clients and developers to build, deploy, and scale business applications tailored to their needs. Salesforce empowers businesses of all sizes and across various industries to connect with their customers through cutting-edge solutions leveraging cloud computing, social media, mobile technology, artificial intelligence (AI), and the Internet of Things (IoT). This approach enhances customer engagement, improves operational efficiency, and supports strategic decision-making.

Adobe Inc. stands as one of the world's most prominent software companies, generating the majority of its revenue through licensing fees for its innovative products and solutions. In addition to licensing, Adobe offers technical support and training services, which further contribute to its financial performance. The company operates across three core segments, with its Digital Media Solutions segment serving as a cornerstone of its operations. This segment empowers businesses—ranging from small enterprises to global organizations—to create visually compelling and impactful content. Adobe's tools enable clients to deliver their work seamlessly across diverse platforms, including smartphones, tablets, e-readers, and other connected devices while leveraging targeted marketing and data-driven insights to optimize engagement and effectiveness.

Alibaba Group Holding has evolved into one of China's most influential e-commerce powerhouses, transitioning from a traditional online retail platform to a diversified conglomerate spanning logistics, food delivery, cloud computing, and beyond. The company's extensive operations are anchored by its flagship platforms: Alibaba.com, Taobao, and Tmall, collectively commanding more than half of all retail e-commerce sales in China—a market renowned for its rapid growth and dynamic consumer base. Among these, Taobao stands out as a particularly lucrative segment, driving over 80% of Alibaba's sales. This success is largely fueled by the surging demand for high-quality imported brands, reflecting a shift in consumer preferences within China. Tmall complements this growth by catering to premium and international brands, solidifying Alibaba's dominance in the online marketplace. Beyond e-commerce, Alibaba is at the forefront of the "new retail" paradigm, an innovative model that merges online and offline commerce into a seamless ecosystem. This vision encompasses digital payments, e-commerce platforms, food delivery services, and logistics networks, creating a unified framework that enhances customer experiences and operational efficiency.

EPAM Systems, Inc. stands at the forefront of the global software development and IT consulting industry and is renowned for its innovative solutions and expertise. The company offers an extensive portfolio of software product development services, including product research, design, prototyping, development, component design, and integration. EPAM specializes in custom application development, focusing on analyzing business and technical requirements, creating and validating solution architectures, and delivering software components specifically designed to meet the unique needs of its clients. In addition to development, EPAM offers robust application testing services, including software and enterprise IT testing, ensuring quality assurance across various business applications. The company also provides infrastructure management services, covering applications, databases, networks, servers, storage, and systems operations management, along with incident detection and resolution. EPAM serves a wide range of industries, operating in six core verticals: financial services, travel and consumer goods, software and high-tech, business intelligence and media, life sciences and healthcare, and emerging markets. Its extensive client portfolio features numerous global leaders, including many Forbes Global 2000 companies, spanning regions across the world. [9].

The analysis of the hired workforce indicates a sharp growth in personnel during the pandemic period, driven by the increased demand for IT services and products. However, in 2023, six companies experienced a reduction in staff, which can be attributed to the worsening market conditions and the replacement of personnel with artificial intelligence. Around 80% of IT corporations are registered in the United States.

The study of the companies' expenditure on IT products by segment is presented in Figure 2.

According to Figure 2, a significant reduction in IT budgets for software was observed in 2022, which was due to Russia's full-scale invasion of Ukraine and the reduction in client expenditures as a result of project closures, decreased production, and a sharp decline in demand. A similar reduction in software demand was observed in 2015 and 2020, which was a characteristic trend across all markets. Therefore, IT budgets show unstable dynamics, but the growth in demand for IT services, such as the shift to cloud technologies and software subscriptions, remains stable.

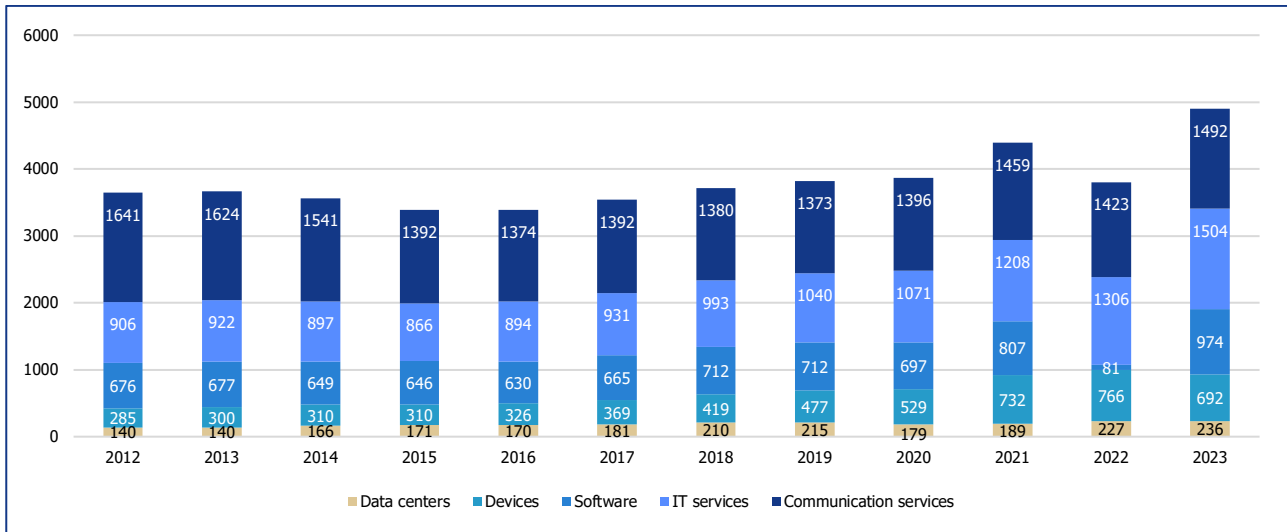


Figure 2. Dynamics of IT spending by segments for 2012-2025, USD billion. (Source: <https://www.statista.com/statistics/268938/global-it-spending-by-segment/>)

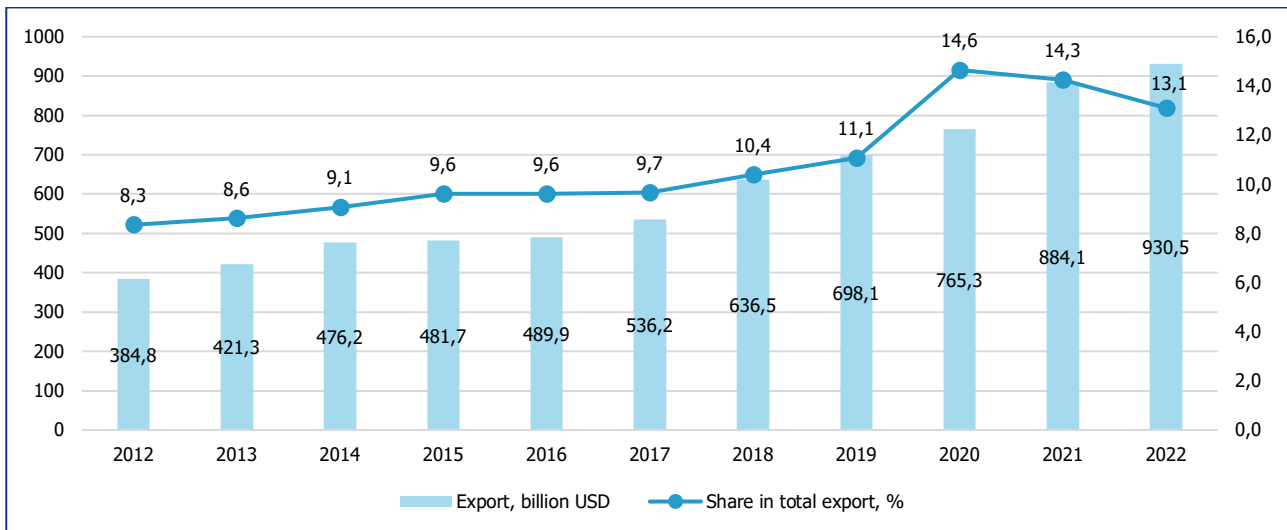


Figure 3. Dynamics of world IT sector exports, USD billion. (Source: https://www.trademap.org/Service_Sel/Service_TS.aspx)

The comparison of company IT budget expenditures (Figure 2) and global IT sector exports (Figure 3) shows that their trends closely align. Overall, the share of high-tech exports in the global total steadily increased until 2021, although absolute export figures also grew in 2022-2023.

In the sectoral breakdown, high-tech exports are represented by information services, telecommunications, and computer services, as shown in Figure 4.

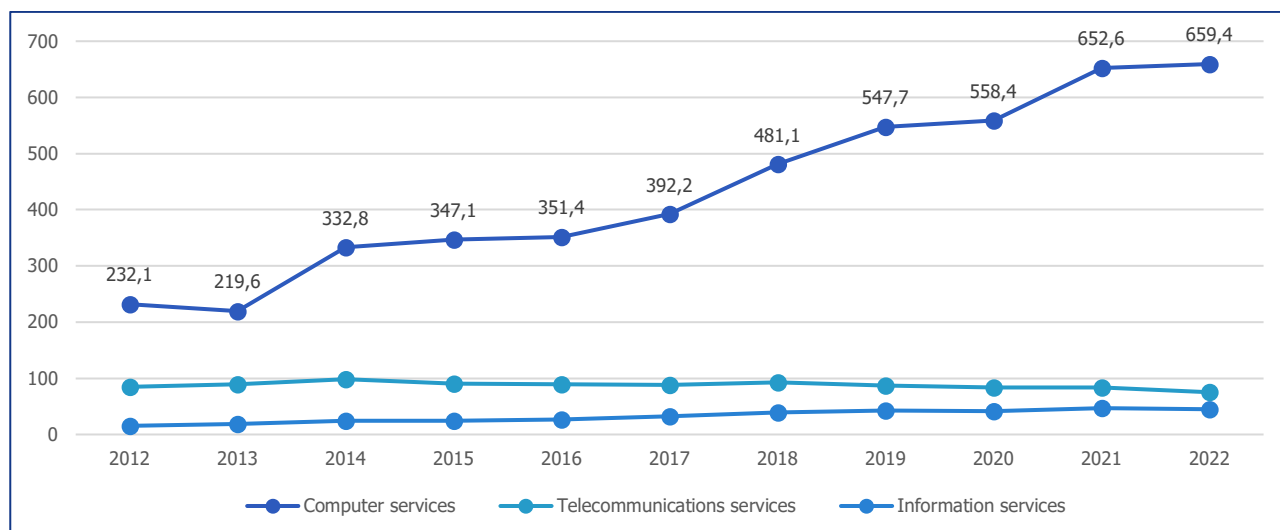


Figure 4. Dynamics of world IT exports by sector, USD billion. (Source: https://www.trademap.org/Service_SelService_TS.aspx)

The global export of computer services, which includes the supply of hardware and software, significantly outpaces the growth dynamics of telecommunications and information technology in terms of growth rate.

In the geographic breakdown, let's analyze the top 5 countries in the IT industry:

- United States.** The IT sector in the United States is substantial and is anticipated to continue growing in the coming years. By 2030, the demand for technical professionals is expected to rise by 13%, outpacing the projected growth for most other professions. IT professionals in the US fill a wide range of roles, including positions in computer hardware, software programming, and more. Currently, there are approximately 844.600 computer support specialists, 141.200 information security analysts, and 199.400 web developers. Salaries for IT workers in the US vary widely based on job role and experience level. On average, the annual salary for those in the IT industry is USD 97.430 (as of 2021), more than double the average salary for workers in other fields.
 - Germany.** Germany boasts one of the strongest economies in Europe, with a high employment rate. As of April 2022, over 45 million people were employed in the country. Germany is increasingly becoming an attractive destination for technical professionals.
 - The German technology sector is highly innovative, with an innovation rate of 85%, and it plays a key role in driving the national economy, generating a turnover of EUR 178 billion. Technical workers, particularly in IT, are in great demand, giving them significant bargaining power when negotiating competitive salaries. It is estimated that around 96,000 IT specialist positions remain unfilled, with the most sought-after roles being IT security specialists, software developers, data processing experts, and application support specialists.
 - Finland.** Finland stands out as a European leader in technology, known for its pioneering innovations and contributions, such as the creation of Linux and the development of the first internet browser. In 2022, approximately 7.6% of the Finnish workforce was engaged in the information and communication technology (ICT) sector.
- In recent years, Finland's technology sector has experienced a notable increase in job openings, attracting tech professionals eager to enjoy the country's renowned work-life balance. Finnish companies, both large and small, are recognized for their advanced digital capabilities, with extensive digitization across both the private and public sectors. The emphasis on digital transformation within Finnish businesses, including startups, has driven a strong demand for IT professionals and accelerated technology adoption nationwide. This focus on digital transformation has created a high demand for IT professionals and fueled widespread technology adoption, resulting in a vibrant talent pool of skilled tech professionals throughout Finland.
- Singapore.** The technology sector in Singapore is experiencing rapid growth, with a significant number of open positions for IT professionals. As companies continue to expand their operations in the country, the demand for skilled tech workers is expected to increase. By 2025, it is estimated that Singapore will need an additional 1.2 million tech workers to meet this demand.

Many individuals in the sector are selective about the job offers they accept and the interviews they attend. Some may reject offers due to low salaries or insufficient benefits. If your company plans to hire in Singapore, it's important to recognize the abundance of talent available and ensure that you offer a competitive compensation package to attract top candidates.

- Canada.** Canada, often referred to as the "Northern Silicon Valley," has become a key hub for the tech industry, with major companies like Meta announcing plans to hire workers nationwide. By the end of 2021, over 1.2 million people were employed in Canada's technology sector. Projections for 2027 indicate strong growth in various IT professions, including a 22% increase for analysts and database administrators, 17% growth for system analysts, 16% for software engineers, and a 15% rise in technical user support services [12].

As we can see, the countries represented geographically are from North America, Asia, and the EU, which are high-tech and innovative both in terms of scientific research and production capabilities.

To determine the impact of ICT specialists on the economic development of a country, let's consider the index of people employed as ICT specialists and define the share of these specialists in comparison with overall employment in EU countries, which are summarized in Table 3.

Table 3. Index of ICT Specialists Employment vs. Total Employment in the European Union (%). (Source: https://ec.europa.eu/eurostat/data-browser/view/isoc_sks_itspt/default/table?lang=en)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
EU-27	3.4	3.5	3.6	3.7	3.8	4	4.3	4.5	4.6	4.8
Germany	3.6	3.7	3.7	3.8	3.9	4	4.7	4.9	5	4.9
Finland	6.3	6.4	6.6	6.7	6.7	6.8	7.6	7.4	7.6	7.6
Ireland	4.8	4.6	4.9	5	4.8	4.9	5.7	6.3	6.3	6.2
Netherlands	4.8	5	5.1	5.1	5.3	5.6	5.9	6.7	7.2	6.9

According to Table 3, the countries with a higher-than-average indicator among the 27 EU countries include Germany, Finland, Ireland, and the Netherlands. The highest share of ICT specialists is observed in Finland, which specializes in ICT technologies.

In 2022, approximately 9 million individuals were employed as ICT specialists across the European Union, representing 4.6% of the total workforce. The largest shares of these professionals were based in Germany, which hosted 22.6% of the EU's ICT specialists (around 2.1 million), followed by France with 13% (about 1.2 million), and Italy with 9.6% (approximately 0.9 million).

Between 2013 and 2023, the number of individuals employed as ICT specialists rose by 59.3%, significantly outpacing the overall employment growth of 10.7%. On average, the annual growth rate for ICT specialists was 3.8% over the decade. While there was steady growth from 2013 to 2019, the period between 2019 and 2021 saw a more significant increase, with employment in the ICT sector growing by 7.1% in 2019 and 6.0% in 2021. In recent years of the decade, progress has slowed somewhat but still demonstrated higher rates than at the beginning of the decade: 5.0% between 2021 and 2022 and 4.1% between 2022 and 2023 [13].

Analysis of problems affecting

The conducted studies based on geographic and sectoral criteria have shown that the US market is highly technological, and we anticipate that the IT sector there has a direct positive impact on economic growth and employment, as large multinational corporations are concentrated there. Therefore, it is more reasonable to examine a market that is geographically closer to Ukraine, as well as the large and multi-country EU-27 market. To determine the impact, we will construct a correlation-regression model: how GDP changes depending on the share of ICT service exports and the growth of IT specialists. The data for the model has been selected based on Eurostat data and summarized in Table 4.

Table 4. Input data for correlation-regression analysis.

Years	GDP, %	Export of computer services, %	Export of information services, %	Export of telecommunications services, %	Growth of IT specialists in the EU, %
	Y	X1	X2	X3	X4
2015	2.3	1.0	3.6	-12.3	2.9
2016	1.9	-2.9	17.2	3.2	2.8
2017	2.8	13.5	36.3	2.5	2.7
2018	2.1	24.4	28.1	3.8	2.7
2019	1.9	14.3	7.9	-11.0	5.2
2020	-5.6	14.0	3.6	-4.7	7.5
2021	6.3	22.5	21.6	5.2	4.7
2022	3.5	0.2	-15.3	-21.7	2.2

As a result of the conducted correlation-regression analysis, the multiple R-value was 0.734636, which is quite close to 1, indicating that the model is adequate. The R^2 value was 0.539689, explaining 53.9% of the trend's characteristic of the global IT market's development. Based on the calculated coefficients, we obtain the equation of the model:

$$Y = 7,9133 + 0,1457x_1 - 0,0758x_2 + 0,0851x_3 - 1,62889x_4$$

The obtained correlation-regression model can be interpreted as follows:

- The GDP of EU countries is directly dependent on the export of computer services (x_1), as an increase in IT budget expenditures leads to higher production costs.
- The export of information services (x_2) has a direct negative impact on the GDP of EU countries, as reducing expenditures on services will lead to a decrease in demand and a reduction in spending on innovative projects.
- The price of products and, accordingly, the creation of added value is directly related to the export of telecommunications services (x_3), as provider services ensure the functioning of Infrastructure.
- The decline in the growth rate of IT specialists in the EU in 2020 from 7.5% to 2.2% indicates a reduction in IT specialists in European companies, which negatively impacted the added value and led to a decrease in GDP from 6.3% in 2021 to 3.5% in 2022.

KPMG experts emphasize that, regardless of the economic climate ahead, IT teams will be engaged in transitioning to a new value proposition and operating model in response to the changing technological landscape. Accelerating the implementation of methods that increase IT efficiency and deliver business results faster will be crucial, as the value proposition of IT is deeply connected to its future ability to drive innovation in collaboration with businesses and supplier partners [14].

The general trends shaping the IT market are characterized by the growth of specialists' competencies, the development of innovative technologies, and the digital transformation of other industries, which leads to increased added value and, consequently, economic growth.

DISCUSSION

The findings of this study align with existing literature, emphasizing the dual trend in the global IT market where large corporations and niche firms coexist. Wang and Xu (2024) highlight how advancements in artificial intelligence (AI) have become pivotal, facilitating innovative applications in sectors such as information science and business. Similarly, Ahmad (2021) underscores the transformative potential of AI in diagnosing medical images, illustrating its wider implications across industries.

Emerging technologies, such as cloud microservices, have played a critical role in enabling scalability and fostering innovation. According to Research Dive (2021), the global cloud microservices platform market is rapidly expanding, driven by the demand for flexible and modular IT solutions. This shift is mirrored in the practices of IT companies leveraging AI and cloud technologies for operational efficiency and enhanced service delivery.

Additionally, McKinsey & Company (2022) point out the significant influence of technological trends on reshaping IT strategies, including the adoption of edge computing, 5G, and quantum computing. These developments are crucial for addressing challenges like market concentration, data governance, and ethical AI implementation.

Future growth of the IT sector hinges on its ability to bridge the skills gap, a concern echoed in this research. Investing in digital readiness and education is critical to ensure equitable participation in the digital economy. By synthesizing insights from these references, this discussion underscores the ongoing evolution of IT companies and their role in global digital transformation.

CONCLUSIONS

The research conducted reflects the concentration of IT technologies in the USA, Canada, Germany, Finland, and Singapore, where American companies such as Apple, Microsoft, and Amazon control significant market shares in their respective segments. At the same time as the market concentration, fragmentation occurs, with small and medium-sized firms emerging in narrow niches capable of offering innovative solutions. As a result, the IT market is growing faster than other sectors, driven by the emergence of new solutions and business models (PAAS, XAAS), as well as the active use of artificial intelligence. The development of telecommunications technologies has made the IT market global, where companies compete for customers across different countries.

IT business has a positive impact on the labour market, as the creation of new jobs occurs due to the rapid development of technologies. As a result, there is an increasing demand for highly skilled specialists in areas such as big data analysis, the Internet of Things, artificial intelligence, blockchain, and cybersecurity.

On the other hand, the development of specialists' competencies leads to revolutionary changes in the digital transformation of industries, creating a multiplicative effect in added value creation and contributing to economic growth. Economic growth is driven by increased productivity in other sectors, which significantly enhances process efficiency and the quality of products and services. At the same time, salaries in the IT sector are rising, creating attractive conditions for business scaling. However, the IT sector, like others, also faces a deterioration of market conditions during periods of intensified military conflicts, which leads to its cyclical development.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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БІЗНЕС-ЛІДЕРСТВО ІТ-КОМПАНІЙ: ВПЛИВ НА ЗАЙНЯТІСТЬ НАСЕЛЕННЯ ТА СОЦІАЛЬНО-ЕКОНОМІЧНИЙ РОЗВИТОК КРАЇНИ

Актуальність дослідження обумовлена впливом ІТ-компаній на соціально-економічний розвиток країн. В епоху динамічного розвитку інформаційних і комп'ютерних технологій спостерігається швидке масштабування транснаціональних корпорацій в ІТ-бізнесі. Створення доданої вартості в галузі завдяки високому рівневі освіти сертифікованих спеціалістів позитивно впливає на економічне зростання країн, де висока питома вага ІТ-компаній. У статті відображена позиція найбільших корпорацій світу, які посідають перші місця за рівнем капіталізації бренду та рівнем ринкової капіталізації. Аналіз доходів корпорацій показав тісну кореляцію з кількістю найманого персоналу. Дослідження корпорацій за сферою діяльності показало найбільшу спеціалізацію компаній у розробці комп'ютерних програм. Аналіз ринку країн ЄС відобразив тісну кореляцію динамічного розвитку ІТ-бізнесу протягом останніх 10 років й особливо 2020 року під час пандемії, але негативні тенденції 2014 та 2022 року також уплинули на показники ІТ-компаній, які після скорочення персоналу у 2022-2023 роках отримали від'ємні показники зростання. Кореляційно-регресійний аналіз впливу експорту ІТ-продуктів і послуг на кількість найманого персоналу відобразив пряму кореляцію з ВВП країн ЄС.

Метою дослідження є визначення основних тенденцій у світовому ІТ-бізнесі та виявлення чинників впливу на ВВП країн. Задля досягнення мети проведено: аналіз ІТ-ринку за сферою діяльності, географічними сегментами, аналіз мікро- та макроекономічних показників галузі та виявлення впливу ІТ-галузі на економічне зростання країн ЄС методом кореляційно-регресійного аналізу.

Наукова новизна результатів дослідження полягає у виявленні кореляційно-регресійного зв'язку між експортом ІТ-послуг і продуктів, питомою вагою найманого персоналу галузі та їх впливом на ВВП країн ЄС.

Практичне значення роботи полягає в дослідженні доходів ІТ-компаній і закономірностей наймання ІКТ-фахівців. Отримані результати сформовані на основі світових баз даних: TradeMap, Eurostat, Statista, Macrotrends – аналітичних досліджень KPMG, що дозволило досягти поставленої мети й отримати адекватну економіко-математичну модель.

Ключові слова: інформаційні та комп'ютерні технології; економічне зростання; ринкова капіталізація, ІКТ-фахівці

JEL Класифікація: O33, M15