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INFLUENCE OF INDUSTRY 4.0 ON STRATEGIES OF COMPANIES ENTERING THE GLOBAL MARKET OF DATA INTEGRATION SERVICES

Purpose. To substantiate the theoretical principles and practical recommendations regarding the formation of the strategy of enterprises entering the market of data integration services in the conditions of Industry 4.0.

Methodology. Research methods based on the principle of the unity of theory and practice were used in the research process, including: the historical-logical method (to study the evolution of market development and its trends); the analytical-statistical one (to determine the dynamics of market volumes); SWOT-matrix method analysis and DROC-analysis (to study the global market development of data integration services and to determine the company's development scenarios in the market in the conditions of Industry 4.0); correlation-regression analysis (to study the dependence of marketing costs on net income of IT market leaders); taxonomic analysis (to systematize strategies used by market players under different conditions); qualitative research method (expert interview to analyze the state of the market and identify trends in its development).

Findings. The state, conjuncture, key trends and drivers of the development of the data integration services market were comprehensively investigated, and the impact of Industry 4.0 was analyzed. The strategies of the leading players and possible scenarios for the development of companies on the market are determined.

Originality. Empirical and theoretical research allowed us to propose directions for the implementation of digital-marketing technologies for enterprises to enter new b2b markets and to substantiate their strategies for entering the market of data integration services; in addition, to take into account the prospects for the development of this market in the post-war development of Ukraine.

Practical value. The research results can be helpful to state authorities and researchers, applied in the functional activities of IT enterprises, namely, conclusions regarding the specifics and prospects for the development of the market of data integration services, its drivers, and their development strategies in turbulent times and the Fourth Industrial Revolution, directions for the implementation of technologies digital-marketing for entering new b2b markets, strategies and tactics for entering the data integration services market, in particular, when researching the global data integration services market and developing hybrid entry strategies.

Keywords: *global service market, international trade, IT, digital marketing, Industry 4.0*

Introduction. Today's economy, which is based on a massive infrastructure of computer networks and the ability of applications to share data, further emphasizes the need for data integration solutions. Cloud computing, big data, artificial intelligence, data lakes, and data warehouses are, without a doubt, well-known buzzwords in the technology field. These new technologies of Industry 4.0 have changed the world and continue to open opportunities for innovation.

The development of the digital economy has become imperative in the modern global world. With the digitization of business processes, organizations receive more data daily. Accordingly, there is a growing need to aggregate them in one place to deliver value to employees, users, and customers wherever they are and to support organizational reporting and business processes. This is made possible by data integration, the link that enables the transformation of raw data into a valuable asset through tools and services such as data consolidation, virtualization, and replication.

The peculiarity of the market of data integration services is the growth of the value of the asset itself – data, and it is necessary to use it correctly to make intelligent business decisions, stimulate growth, increase the profitability and competitiveness of enterprises, the efficiency of services provided by the government, etc. Therefore, it is essential to use data integration as a strategic function to support any business with advanced analytical processes or to create a multidimensional view of customers. In addition, one of the operating condi-

tions of the platforms is the generation of data and the unification of devices in different parts of the world, which opens up numerous opportunities for the growth of companies operating in the market and their achievement of a global presence.

Key players in the data integration services market are paying more attention to opportunities to enter new markets and the development and implementation of international strategies. The development potential of this market, the possibilities of dynamic growth, and the need to develop a plan to achieve the company's global presence indicate the feasibility of conducting this research.

This market is segmented into five notable segments based on offerings, business applications, enterprise size, deployment mode, and vertical. By vertical, the global data integration market is segmented into manufacturing, healthcare & life sciences, IT & telecommunications, media & entertainment, retail & consumer goods, banking, financial services & insurance, energy & utilities, government & defense, and others. All the above segments are divided into tools and services, which are segmented into managed and professional services. By geography, the market is segmented into North and South America, Europe, the Asia-Pacific region, the Middle East and Africa, which also has its distribution. In 2022, North America was expected to dominate the data integration market as countries in the region are the first to adopt and build software and cloud storage for data transfer and interoperability. In addition, American companies are constantly working on technological progress improvement.

Literature review. It is generally accepted that interest in the concept and content of strategies among economists arose at

the beginning of the sixties of the last century, precisely when the work of A. Chandler's "Strategy and Structure" was published, to whose ideas the Harvard School reacted with the works by professors K. Andrew, K. Christensen and others. The development of strategic management began with the works by I. Ansoff. Such scientists as J. Watson IV, S. Weaven, D. Sardana, and R. Palmatier and others devoted their works to studying the strategies of enterprises entering new markets in [1].

The analysis of literature sources showed that one of the most influential strategists in the global data integration market is a hybrid one, which provides an opportunity not just to enter new markets [2, 3], but also to simplify operations, use data as a digital transformation and innovation catalyst [4, 5], strengthen the company position in the market, quickly respond to global changes [6].

Scientists F. Steden and R. Kirchner [7] identified the technologies of Industry 4.0 and studied their impact on the economy. K. Schwab, known as the founder of the World Economic Forum, systematized knowledge about Industry 4.0 in the publication [8], where he described the essence of Industry 4.0, disclosed its components, and justified the benefits for the world economy and the problems that the countries of the world will face during the introduction of the latest technologies. In [9, 10], Industry 4.0 was described as an innovative trend in Ukraine. Kagermann H., Anderl R., Gausemeier J., Schuh G., and Wahlster W. studied Industrie 4.0 in a global context and described strategies for cooperating with international partners as a result of entering new markets in [11]. The problems of forming new types of economies, particularly digital ones, the impact of new technologies, and innovations on outsourcing IT companies' development are actively explored in the scientific literature [12, 13].

Separate studies concern the macroeconomic impact of Big Data on the economy [14], the latest current developments in the world of big data processing systems [15], the proposed taxonomy and detailed analysis of the state-of-the-art in this field, new wave of systems as Big Data 2.0 processing systems [16, 17]. In [18], they investigated and explained the influence of cloud computing, the Python stack, data warehouses, the expansion of SaaS platforms, and other Industry 4.0 technologies on the data integration industry. Profound analysis and disclosure of the global data integration market, especially services, can be found in the research reports of international consulting companies: Gartner, KBV Research [19], Data Bridge Market Research [20], etc., among the authors of which the following scientists should be singled out: T Grosser, L. Iffert, N. Manley, F. Russom, and others.

Unsolved aspects of the problem. The acceleration of digital transformation processes of social life and any company, the most crucial element of which has become Industry 4.0, has provoked a colossal development of the data market, which in turn has affected the importance of integration, and opens up significant growth opportunities for IT companies. Despite the significant results obtained from research on the data integration market, the digital transformation of the economy as a whole, for the development of the domestic economy and its sectors, it is necessary to examine and investigate in more detail modern trends, features, and regularities, mechanisms, and tools for their practical application by subjects of the national and global economy, especially the level of microeconomics. It is also worth performing a deeper analysis of the market situation, dynamics, and elements of influence on transformational processes that stimulate its development, taking into account the risks of the environment and, accordingly, the opportunities for the development of companies, the use of strategies for entering new markets to expand their presence in the world.

The purpose of the article. To discuss the theoretical principles and practical recommendations regarding the formation of the strategy of enterprises entering the market of data integration services and to reveal the influence of Industry 4.0 on the activities of economic entities in this market.

Methods. Research methods based on the principle of the unity of theory and practice were used in the research process, including: the historical-logical method for researching the evolution of market development and its trends; the analytical and statistical one to determine the dynamics of market volumes; the matrix method SWOT analysis and DROC analysis for researching the development of the global market for data integration services and determining the company's development scenarios in the market; a qualitative research method, namely an expert interview to analyze the state of the market and identify trends in its development.

Economic and mathematical methods also occupy an important place, i.e., research using mathematics and cybernetics. To study the relationship between marketing expenses and the net income of IT market leaders, it is appropriate to take into account the correlation theory, which is used to determine and analyze the closeness of the connection between various processes and phenomena.

The regression equation will have the form: $y = 2.3262x - 6964.7$, with the help of which, if we take marketing expenses for x and the net income of companies – for y , we can find out how much the net income of the company will increase when an increase in marketing costs by \$1 million. The calculated correlation coefficient (r) is 0.876586149. The resulting number is greater than 0, which indicates a direct relationship, that is, an increase in the amount of marketing expenses leads to an increase in net income. The correlation coefficient value ranges from 0.5 to 1.0, from which we can conclude a strong relationship and a positive correlation.

To analyze the global and regional markets, as well as the company's position within them, segmentation should be considered, as shown in Fig. 1, which first examines the parent market, namely the global data market, and then examines the data integration market, which is further divided into tools and services, and then further segmented by region [1, 19]. When calculating an enterprise's share of the worldwide data integration market, we first calculate the entire sales volume, then their share from data integration, and finally, the market share.

Results. Data integration was considered a function and area of intellectual curiosity not so long ago. Today it is a necessity. Thomas Friedman offers additional inspiration with his motto: "The world is flat" (Friedman, 2005). In a "flat" world, any product or service can be made up of parts anywhere. For all of this to happen, data needs to be shared appropriately between different service providers, and people need to be able to find the correct information at the right time, no matter where they are. Data integration must be part of this infrastructure. It must mature to the point where it will essentially be taken for granted and fade into the background like other ubiquitous technologies.

The worldwide data integration industry is anticipated to be worth \$22.1 billion till 2027, with an average annual market growth rate of 10.4% [20]. Current events have accelerated the market's development and expansion. The development of adaptive artificial intelligence (AI) systems drives growth and innovation while managing global market swings [16]. The data imperative consists of two mutually reinforcing goals: omniscience – management's ambition to capture the universe important to the organization through digital data – and omnipotence – managers' desire to govern and optimize activities in real-time and throughout the world using the software. Industry 4.0, business process digitalization, the hunt for novel management practices, and other factors influence the direction and rate of market development [8, 14]. Covid-19 has altered the worldwide dynamics of commercial activity. Although the pandemic's outbreak exposed the flaws in various business models, it also provided several opportunities to digitize and expand economic activity in the regions, as the adoption and integration of technologies such as cloud, AI, analytics, IoT, and blockchain increased during the quarantine period. As a result, we may see favorable market growth dynamics from 2018 to 2019 and a decline in growth rates from 2020, according to data from Statista (Fig. 2).

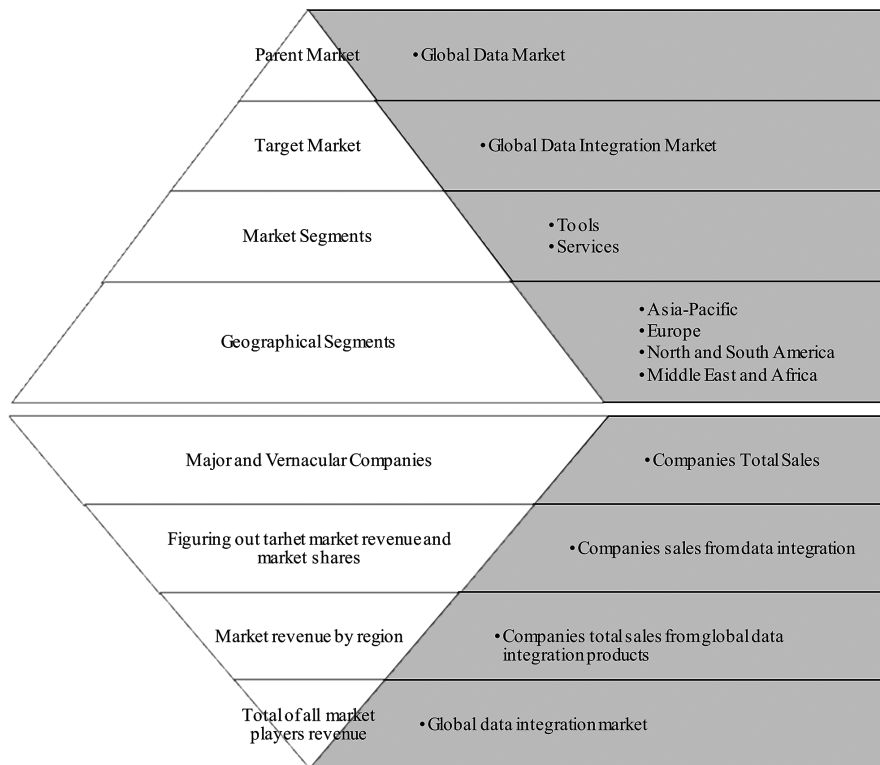


Fig. 1. Analytical Framework of the Global Data Integration Market

If you looked at data integration 15 years ago, when Talend, now a giant in the data market, launched Talend Open Studio, words like drag-and-drop, SQL-based, local, and native Windows interface came to mind. Since then, everything has changed dramatically. This market does not stand still, it is undergoing technological changes and the dynamics of its growth are increasing. The global data integration market is expected to reach \$75,837.00 million by 2029, with a CAGR of 14.3 % during the forecast period 2022–2029 [9]. North America is the fastest-growing market for data integration software manufacturers during the forecast period of 2022 to 2029, with a higher growth rate than other regions, according to data from Statista (Fig. 3). Most market players are aiming to enter the American market and move their headquarters.

“We are seeing the industry move to the cloud, and the adoption of on-premises big data applications is declining... our future success depends on the growth and expansion of this market and our ability to adapt and respond effectively [to it]” – Talend company management, 2020 [10]. To research this trend, a comprehensive assessment of the state of the market, trends in its development, and trend forecasting, a qualitative research method was applied – an expert interview with the management of companies represented in this industry and experts through the survey “Global market of data integration services 2022” in two blocks. It found that 42 % of

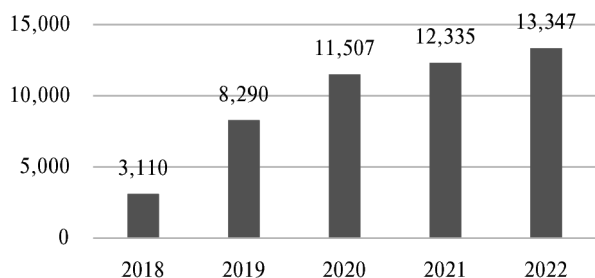


Fig. 2. The volume of the global data integration market for 2018–2022, million US dollars

companies already use cloud-based ELT/ETL platforms, and more than 50 % are ready to invest in data integration platforms. Among the respondents, the North American region is 38.26 %, the European region is 23.41 %, the Asia-Pacific region is 20.92 %, and the Middle East and Africa region is 9.79 %, respectively. According to the results, 42 % of companies already use cloud-based ELT/ETL platforms, and more than 50 % are ready to invest in data integration platforms.

The growing demand for data integration tools and services is mainly due to how pervasive data and the technologies behind it are becoming. New SaaS platforms that help companies manage leads, sales, billing, advertising, investments, user analytics, and more are evolving rapidly [15, 17]. The modern business analyst is tasked with efficiently consolidating this data and extracting actionable insights that influence business decisions, and these tools are up to the task. However, like any new industry, data integration has faced many challenges. Accordingly, it has market drivers and challenges, market opportunities and constraints, which are explored using DROC analysis to analyze market drivers and challenges, market constraints and opportunities (Table 1).

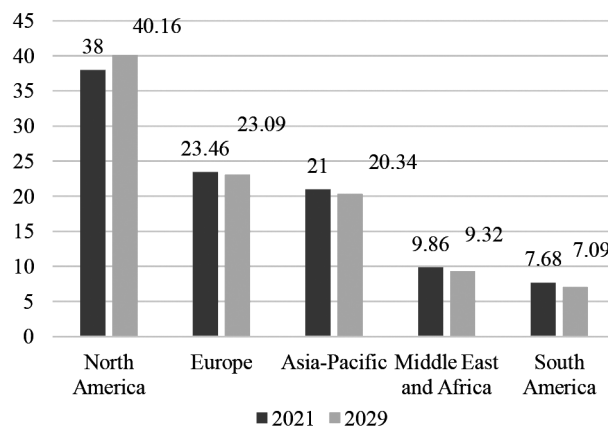


Fig. 3. Market growth forecast for data integration by region in 2021–2029, %

DROC analysis of the global data integration services market

| Market drivers | Market opportunities |
|---|--|
| <ol style="list-style-type: none"> 1. Expanding usage of hybrid data integration. 2. Improving rigorous data integration rules and compliance. 3. Increasing need for data integration software and technologies. 4. Rising interest in application-based integration. 5. The development of big data and cloud computing technologies | <ol style="list-style-type: none"> 1. Increased data integration deployment by multiple departments, such as operations and finance. 2. Application of AI and machine learning in creating data integration solutions. 3. Collaboration with government agencies to receive cash and grants. 4. Increased research and development spending to improve data storage programs. 5. The defense sector is increasingly utilizing data integration software |
| Market restrictions | Market challenges |
| <ol style="list-style-type: none"> 1. High cost of data integration software. 2. Lack of storage capacity in the cloud. 3. Strong competition | <ol style="list-style-type: none"> 1. High complexity of data integration. 2. Threat of possible data loss during their integration. 3. Increasing competition in data storage platform vendors have more security threats. 4. Lack of regulation forcing enterprises to cut software and solution pricing. 5. The number of rivals and issues associated with the data integration platform is growing daily |

Major players operating in the data integration market include Microsoft, IBM Corporation, SAS Institute Inc., SAP SE, Oracle, Software AG, Informatica Inc., Adeptia, SnapLogic, Salesforce, Inc., Precisely, TALEND, Denodo Technologies, Cisco Systems, Inc., Hitachi Vantara Corporation (a subsidiary of Hitachi, Ltd.), Amazon Web Services, Inc., TIBCO Software Inc., Actian Corporation, KPMG LLP, Alphabet Inc. among others. There are also Ukrainian companies in the above list, which should be added: N-iX, DATAFOREST, Roman.ua, ITRex Group, ELEKS, Jelvix, Botodata, and others.

Key companies are engaging in strategic alliances and product development to expand their product and service offerings and gain a strong presence in the global data integration software market. They are market drivers who set market development trends with innovations and novelties. Software vendors have adopted various growth methods to increase their market offerings, including deals and partnerships, new product launches or updates, mergers and acquisitions, and business expansion. In addition, increasing mergers, acquisitions, and collaborations are expected to optimize economic and environmental benefits for market participants by allowing them to share ideas and improve their internal skills and technologies.

It is also worth contemplating the technique of enhancing and building new platforms for worldwide market expansion. Yes, TIBCO Software Inc. upgraded its TIBCO Analytics Forum (TAF) platform for its client base in June 2022. The platform will assist enterprises in connecting, unifying, and precisely forecasting business results. It will also aid in data integration and solution portfolio expansion. This will bring in more new clients for the business. However, according to open-source research findings, partnerships are the key tactic of market participants during this period of rapid development. Companies like SAP SE, Oracle, and IBM are among the market's leading innovators. However, IBM is the most forward-thinking in terms of strategic growth, and the corporation will be one of the most well-known, innovative B2B brands in social networks by 2021. In Fig. 4, a taxonomy of international market entry strategies (hereafter IME) is visually presented based on a firm's simultaneous use of digital and relational approaches that cross high and low levels of digital and relational strategies to define four main categories: traditional, relational, digital, and hybrid [1, 2]. For each kind, specific examples of techniques are offered.

An essential condition for the success of entering new markets and marketing activities, in general, is the percentage of expenses for it. In this case, both digital and conventional advertising also need attention. The Big Five companies, which operate in the B2B and IT market, show results in their field and are market leaders. Under such conditions, we consider it appropriate to find out the importance of marketing costs and their im-

pact on the income of these companies using correlation-regression analysis from the following input data from Macrotrends and Statistic (Table 2). The value of the Pearson correlation coefficient R is equal to 0.876586149, which indicates a strong and direct dependence. That is, with an increase in marketing costs, companies' net income also increases. R^2 is 0.75, which means that net income is 75 % dependent on marketing costs and only 25 % on other factors (Fig. 5). Accordingly, it can be argued that the success of the company and its income depends to a large extent on the marketing activity, namely the expenses for it.

However, according to the research results, the primary strategies market participants followed during its rapid development, namely 2020–2021, are partnerships. Companies such as Microsoft, SAP SE, Oracle, and IBM are among the key innovators in the market. IBM is the most progressive in terms of strategic development. In addition, the company in 2021 is one of the most famous, creative B2B brands in social networks [4, 5], accordingly using a hybrid strategy of development and entry into new markets, which is the optimal choice in conditions of Industry 4.0, so it is worth considering in more detail [6].

Founded in 1911, IBM invented many major products, such as ATMs, floppy disks, and hard drives, that changed the world. The company operates in more than 175 countries. IBM's platform-oriented hybrid cloud and business strategy is implemented in four business segments: software, consulting, infrastructure, and financing.

A SWOT analysis was conducted to determine and understand the main factors influencing the strategic development of the IT market leader (Table 3). This method makes it possible to determine external threats and opportunities and internal strengths and weaknesses. Based on the analysis, it is possible to determine four possible scenarios of the events unfolding, which contain positive and negative factors that influence the company's activities.

The best scenario for the development of events should be expected when combining external opportunities and internal strengths ($S + O$), for the implementation of which it is recommended to choose the market leader's strategy. Forecasting the worst is possible when combining external threats and internal weaknesses ($W + T$). In this case, it is suggested to use the company's competitive advantages in economically unstable times and thus save on scale.

Empirical and theoretical research suggests that despite IBM's strengths and favorable position in the industry, there are significant challenges related to business weaknesses and opportunities and threats in the external environment. For example, a company faces the threat of competition. Some strategic changes need to be made to deliver on IBM's vision and mission statements, which emphasize value and technological

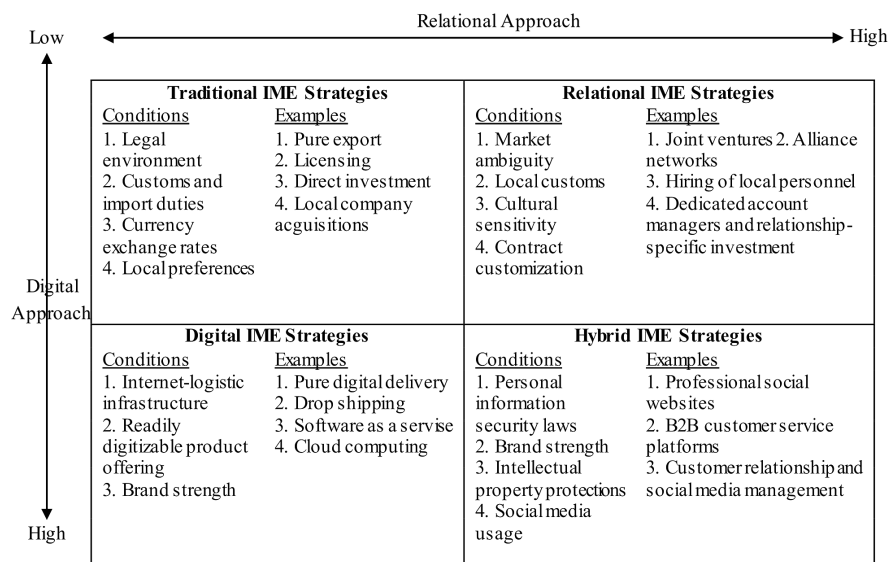


Fig. 4. Taxonomy of International Market Entry Strategies

Table 2

Indicators of marketing expenses and net income of leading IT companies for the period 2013–2021, million US dollars

| Company | Indicator | Year | | | | | | | | | |
|-----------|--------------------|--------|--------|--------|--------|--------|---------|---------|---------|---------|--|
| | | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | |
| Apple | Marketing expenses | 1083 | 11,993 | 14,329 | 14,194 | 15,261 | 16,705 | 18,245 | 19,916 | 21,973 | |
| | Net profit | 37,037 | 39,510 | 53,394 | 45,687 | 48,351 | 59,531 | 55,256 | 57,411 | 94,680 | |
| Google | Marketing expenses | 7253 | 8131 | 9047 | 10,485 | 12,893 | 1633 | 18,464 | 17,946 | 22,912 | |
| | Net profit | 12,733 | 14,136 | 15,826 | 19,478 | 12,662 | 30,736 | 34,343 | 40,269 | 76,033 | |
| IBM | Marketing expenses | 1294 | 1307 | 129 | 1327 | 1445 | 1466 | 1591 | 1509 | 1413 | |
| | Net profit | 16,483 | 12,022 | 1319 | 11,872 | 5753 | 8728 | 9431 | 5517 | 5743 | |
| Amazon | Marketing expenses | 2408 | 4332 | 5254 | 7233 | 1884 | 13,814 | 18,878 | 22,008 | 32,551 | |
| | Net profit | 274 | -241 | 596 | 2371 | 3033 | 10,073 | 11,588 | 21,331 | 33,364 | |
| Microsoft | Marketing expenses | 15,276 | 15,811 | 15,713 | 14,697 | 15,461 | 17,469 | 18,213 | 19,598 | 20,117 | |
| | Net profit | 21,863 | 22,074 | 12,193 | 20,539 | 25,489 | 16,571 | 3924 | 44,281 | 61,271 | |
| Total | Marketing expenses | 27,314 | 41,574 | 44,472 | 47,936 | 46,944 | 51,087 | 75,391 | 80,977 | 98,966 | |
| | Net profit | 88,390 | 87,501 | 83,328 | 99,947 | 95,288 | 125,639 | 114,542 | 168,809 | 271,091 | |

breakthroughs. Such changes should contribute to the constant growth of the company and its competitive advantage.

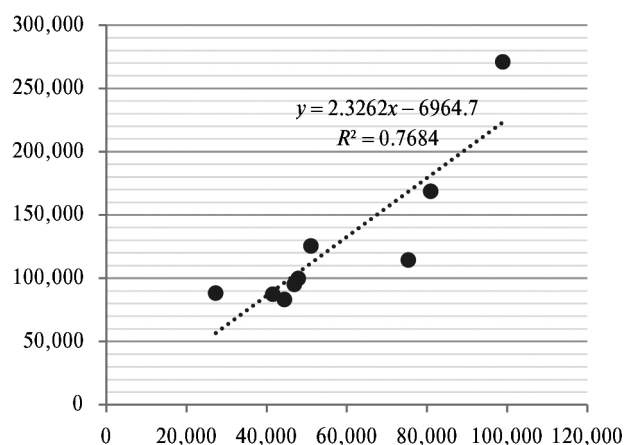


Fig. 5. Dependence of net income on marketing expenses in Big Five companies (million US dollars)

Based on these factors identified in the SWOT analysis, it is recommended that IBM: enter into alliances with firms from other industries to take advantage of technology integration opportunities; diversify the business to distribute and reduce risks in the information technology market; reform innovation processes to enhance product uniqueness and improve products' advantages over imitation and competition [3, 11].

To grow and enter new markets, companies are expanding their IT services portfolio, looking for opportunities to improve, modernize and expand software's functionality. In this context, it is also appropriate to consider Eastern Europe, which for the past two decades has been the largest region for supplying software development services and their services. According to the Daxx report, countries such as Ukraine, Poland, Belarus, and Romania account for 5 % of the global IT outsourcing market. It was also noted that Ukraine is the first on this list.

Ukraine is one of Europe's largest exporters of IT services and has an excellent knowledge base, motivation, and broad opportunities. Ukraine received \$7.35 billion from the export of IT services in 2022. This is almost 6 % more than in 2021 – the industry grew despite a full-scale war. And it even exceeded growth forecasts – in November 2022, it was predicted that exports would reach 7.2 billion dollars, in addition, the amount

SWOT analysis of the IBM company

| | | |
|---|--|--|
| <p style="text-align: center;">EXTERNAL FACTORS</p> <p style="text-align: center;">INTERNAL FACTORS</p> | <p>Opportunities (O)</p> <ol style="list-style-type: none"> 1. Development of new technologies to facilitate production and rapid adoption of new products/ services and delivery processes. 2. Emergence of electronic commerce and digital marketing. 3. Increasing demand for platforms and services for working with data due to the processes of digitalization of society in various sectors of the economy. 4. Growing demand for cloud services 5. Strategic partnership and acquisition. 6. Diversification of business in various industries 7. Alliances with firms from different industries or markets | <p>Threats (T)</p> <ol style="list-style-type: none"> 1. Shortage of skilled labor on the market. 2. Growing number of direct and/or indirect competitors. 3. Deterioration of the economic situation in the world. 4. Strong competition between players in the data integration services market. 5. Imitation of products 6. Cybercrime |
| <p>Strengths (S)</p> <ol style="list-style-type: none"> 1. Strong geographic presence 2. Strong online presence and effective social media management. 3. Diversity of jobs. 4. Strong financial indicators. 5. The first step in the field of cloud computing for enterprises 6. Brand Reputation 7. Diversified business 8. Expertise in production processes and materials management 9. An extensive portfolio of intellectual property 10. High effect of scale 11. Extensive experience in the acquisition | <p>IBM's geographical presence in several locations can assist the corporation in entering developing country markets and targeting a geographically scattered customer base. A strong online presence on numerous social networking sites, as well as a strong brand reputation, can help a company to benefit on the opportunities presented by the expanding e-commerce trend. It is possible to use new revolutionary technologies with a well-developed and efficiently integrated IT infrastructure.</p> <p>Strategy of Market Leader according to F. Kotler</p> | <p>IBM's access to partners that provide lower-cost services and platforms can help it overcome the challenge of growing inflation. Competent and dedicated human capital may overcome the labor scarcity challenge in the market. Through strong cross-cultural knowledge, diversity in the workplace may help a business perceive globalization as an opportunity rather than a danger.</p> <p>Focus Strategy according to M. E. Porter</p> |
| <p>Weaknesses (W)</p> <ol style="list-style-type: none"> 1. Expensive service and software solutions 2. Focus mainly on large enterprises 3. Imitation products 4. Reducing the range of products 5. Low degree of diversification 6. IBM was involved in legal battles | <p>Alliances inside the company and adjacent sectors can be used to capitalize on technological integration opportunities. To boost the product's uniqueness, it is required to improve the product's benefits and reform the innovation process. If the firm is diverse, there is less risk in the information technology industry. This spreads the risk.</p> <p>Differentiation Strategy according to M.-E. Porter</p> | <p>An organization may boost its research investment to combat competitive pressure caused by a rise in the number of indirect and direct rivals. To optimize value for money and overcome the obstacles of deteriorating economic conditions, the pricing strategy might be altered and realigned.</p> <p>Cost Leadership Strategy according to M.-E. Porter</p> |

of taxes paid increased by as much as 16 %, according to National Bank of Ukraine.

Given the high military risks of advancing Industry 4.0 in Ukraine, it is a strategic marker for increasing the technological efficiency of the real sector. A synergy of three factors is needed for rapid implementation: the state apparatus, business, and educational system. The impact of the Fourth Industrial Revolution has several advantages. The Association of Industrial Automation Enterprises analysis indicates the probability of production growth of 7–10 % under the condition of Ukraine's transition to Industry 4.0 [9].

In the modern global economy, the rapid trends of informatization and digital technology systemically affect business processes in the format of the Fourth Industrial Revolution and form new consumer demands [13]. In these conditions, the role and need for IT services are growing. The sensitivity of the export of goods indicates the importance of services in trade and the role of IT services as a leading innovative industry of Ukraine, their use as a strong point, and the possibility of maintaining the country's trade balance during the war and in the post-war period. The modern GDP structure by industry is characterized by a rapidly growing share of the service sector. First of all, this is explained by the availability of solid human potential and the absence of the need for significant startup capital [7]. According to the statistics of recent years, we can conclude about the rapid recovery of this sector. Thus, according to the results of 2020 and 2021, the balance of foreign trade

in goods was negative and amounted to 5,144.3 and 4,727.5 million dollars, respectively, while trade in services had a positive balance with values of 5,563.1 million dollars in 2021 and 5,808.7 million dollars in 2020. The export of services from Ukraine in 2021 amounted to 13,156.5 million dollars, which is 14.2 % more than in 2020. Import of services to the country for the specified period was 32.9 % more compared to the year 2020. Foreign trade operations in 2021 were conducted with partners from 220 countries of the world according to State Statistics Committee of Ukraine.

Revenues from exports of the IT industry amounted to more than 5 billion dollars, while the share of all services exports was 32.2 %, making the IT sector the largest category in 2020. From 2016 to 2020, Ukraine received 16 billion USD from the export of these services. In 2021, the export of IT products was already 6.8 billion dollars, and the share in the total export of services reached 37 %. Annual growth of the industry and revenues from it allows Ukraine to strengthen its position and increase its influence on the global technological market. The largest consumer of Ukrainian IT services is the USA (40 % of exports), Great Britain (10 %), Malta (8 %), Israel (6 %), and Cyprus (4 %) according to State Statistics Committee of Ukraine.

The reason for the permanent development of the Ukrainian market of IT services is the level of income of those employed in the industry and the rapidly growing number of graduates of this specialty, and the extensive labor market. As of 2021, their number in Ukraine has reached 250,000 people.

It is predicted that this indicator will increase with each subsequent year. The demand for Ukrainian specialists is caused by the high level of education of Ukrainians, their command of the English language, and the availability of work experience. Ukraine has many achievements in this field, the most important of which are:

- the emergence of actual software development and virtual reality projects (Mevics);
- the introduction of the Uber Technologies mobile application, which contributed to the improvement of the field of transportation services and the quality of service;
- implementation of Bolt, Nextbike bicycle, and scooter rental projects, which are currently in increasing demand due to rising prices in the fuel market;
- activation of an increasing number of regions of Ukraine in the IT sector;
- the state in a smartphone: the Diya mobile application simplified many procedures and was presented at the Expo-2020 exhibition;
- opening of creative spaces and co-working spaces such as Kyiv Smart City Hub, VDNH Tech, etc., which increase awareness of the IT field and help to understand its specifics;
- supporting the development and creation of new IT parks, such as Innovation District IT Park and UNIT.City;
- 22 IT clusters were created, engaged in IT development, and united leading companies and their partners.

Despite the positive trends in the Ukrainian market of IT services, there are still many promising areas of development, by implementing which, Ukraine will further strengthen its position in the global market and strengthen the development of the country's economy. The mechanism of influence of the Ukrainian IT sphere as a component of international trade in services on the country's economic revival will be the expansion and development of the following areas: IT outsourcing and IT outstaffing; VR and AR reality; startup incubators; "Internet of Things"; B2B development; cryptography; use of IT in medicine and administrative services. Tools for supporting and developing IT in Ukraine can be: improvement of the legal framework to ensure the protection of intellectual property of IT products; reducing taxes for young specialists working in the domestic market to increase the incentive to enter the IT sphere; providing information about the specifics of the IT industry and current legislation; supporting the development of innovative business through the introduction of "cloud technologies"; increasing the presence of IT technologies in various spheres of life; distribution of software for the purpose of support and development of small IT entrepreneurship; partial or complete financing by the state or funds of innovative IT products; creation of a platform for the exchange of information and experience of IT specialists.

Despite the full-scale Russian invasion, Ukrainian IT firms continue to produce high-quality services, support the economy, and maintain high rates of development and continual growth. This industry, which is continually increasing, is still the driving force of the Ukrainian economy. This industry's contribution to the country's GDP is gradually expanding. The Ukrainian IT industry is rapidly increasing and has already become a vital element of the country's economy, contributing more than 4 % of GDP. Officially, there are around 285,000 IT experts in Ukraine, with this number increasing by 25–30 % yearly, and over 5,000 IT enterprises, of whom approximately 1,400 are startups. The majority of companies, namely 86 %, have up to 80 employees, and 11 % of companies have a staff of 80–200 people. So, the IT market in Ukraine is mainly formed by small and medium-sized companies. Regarding the business and development approach, 51 % of organizations are service-based, 33 % provide services while developing their goods, and 16 % are solely product-based. According to the IT Ukraine study, most enterprises offer services in financial technologies, banking, and e-commerce. However, many developers work on logistics, medical and healthcare, education, and retail projects.

Many Ukrainian businesses are involved in artificial intelligence, machine learning, robots, blockchain, cloud technology, and Big Data. The current offering of these IT solutions suggests that the market for data integration services has much room to grow [18]. Furthermore, the Ukrainian government announced plans in February 2021 to establish big data centers with capacities ranging from 250 to 500 MW near nuclear power reactors, which would increase demand for these types of services and goods. The facilities will be utilized for cryptocurrency mining and will demand between 2 and 3 GW of electricity, according to the state energy provider Energoatom. Energoatom NAEC and H2 LLC secured a 700 million US dollar deal in 2020 to build a data center at the Zaporizhzhia NPP. It was also intended to develop a Data Center near the Rivne NPP with a capacity of 250 to 500 MW, with construction set to begin in 2022 [10]. Taking into account Russia's full-scale war on its territories, particularly the occupation of the Zaporizhzhia region and the situation at the Zaporizhzhia nuclear power plant, the development process has been called into question; therefore, there is a need to continue exploring the possibilities even under such conditions, to find solutions and to respond quickly to threats to prepare for this market's full functioning, rapid development a priority. In this case, it is also important to note that not only is this industry progressive and has the potential for development on the Ukrainian market, but it also meets the Sustainable Development Goals, and its development may be critical in post-war development, given the high level of interest from foreign companies and countries. Enterprises that follow sustainable development concepts and engage in this sector become market leaders, building more effective interactions with employees, partners, consumers, regulators, and investors [12]. Accordingly, Ukrainian firms that implement this plan will have the possibility for rapid growth and competitive positions. Pandemics, climate change, and regional or global conflicts are all real concerns. As a result, all economic enterprises must develop and implement sustainability strategies.

In times of crisis, technology must be part of the solution. Data and its integration have never been more critical for risk assessment and planning and for improving digital transformation strategies to ensure resilience to current and future crises. The development of the data integration services market and the data market as a whole will have a directly proportional influence and depend on the pace of digitalization of society in the country, which will collectively trigger the process of stabilization and economic growth.

Conclusions. The specificity of the functioning and development of the global market for data integration services lies in the growth of demand and supply in the market in connection with the continuous digitalization of business and the growth of data value for all economic entities. Analyzing global and regional markets and the company's place in them, the segmentation algorithm is reduced to: a study on the parent market, a survey of the data integration market (tools and services), and distribution by region. The market under investigation is divided into major segments based on offerings, business applications, enterprise size, deployment mode, vertical, and regions.

The dynamics of the global market for data integration services tend to increase gradually. Industry 4.0, digitization of business processes, the search for innovative management methods, and other imperatives determine the direction and pace of its development. North America is expected to dominate the global data integration services market in 2022, with the United States accounting for 16.4 % of the global data integration software market, followed by Europe, with a global market share of 9.8 %. Leader countries in this region include Ukraine, one of the largest exporters of IT services and has potential in the data market. Its companies are included in the list of key players. The global market drivers are Microsoft, IBM, Oracle, Informatica Inc., and others. The tools segment is projected to dominate the global data integration services market with a market share of 55.22 % and reach USD 41,437.80 mil-

lion by 2029, with a CAGR of 14.1 % during the forecast period. IT and telecommunications have the highest values among other verticals due to the growth of digitalization processes.

Over the past decade, an analysis of leading companies in the market of data integration services has shown that the main strategies followed by market participants during its rapid development are partnerships. IBM is the most progressive in terms of strategic development, in addition, the company in 2021 is one of the most famous, creative B2B brands in social networks, using a hybrid development strategy and entry into new markets. The results of the correlation-regression analysis indicate the importance of marketing costs because 75 % of the net income of large IT companies depends on them. The relationship between the two variables is strong and direct, that is, as marketing costs increase, so does the net income of companies. The conducted SWOT analysis indicates that one of the effective methods for entering the market with obtaining know-how, a team of IT specialists, a customer base, partners, and other materials and connections are the purchase of an already existing company, partnerships, and participation in alliances.

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Вплив Індустрії 4.0 на стратегії виходу компаній на глобальний ринок послуг інтеграції даних

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Мета. Обґрунтувати теоретичні засади та практичні рекомендації щодо формування стратегії виходу підприємств на ринок послуг з інтеграції даних в умовах Індустрії 4.0.

Методика. У процесі дослідження були використані методи, що базуються на принципі єдності теорії та практики, серед яких: історико-логічний метод (для дослідження еволюції розвитку ринку та його тенденцій); аналітико-статистичний (для визначення динаміки обсягів ринку); матричний метод SWOT-аналіз і DROC-аналіз (для дослідження розвитку глобального ринку послуг з інтеграції даних і визначення сценаріїв розвитку компанії на ринку в умовах Індустрії 4.0); кореляційно-регресійний аналіз (для дослідження залежності витрат на маркетинг від чистого доходу лідерів ІТ-ринку); таксономічний аналіз (для систематизації стратегій, застосованих гравцями ринку за різних умов); якісний метод дослідження (експертне інтерв'ю для аналізу стану ринку й виявлення тенденцій його розвитку).

Результати. Комплексно досліджено стан, кон'юнктуру, ключові тенденції та драйвери розвитку ринку послуг з інтеграції даних, проведено аналіз впливу Індустрії 4.0 на стратегії основних гравців і визначені можливі сценарії розвитку компаній на ринку.

Наукова новизна. Емпіричний аналіз і теоретичні дослідження дозволи запропонувати напрями імплементації технологій діджитал-маркетингу підприємствам для виходу на нові ринки b2b та обґрунтувати стратегії їх виходу на ринок послуг з інтеграції даних, крім того, врахувати перспективи розвитку даного ринку у повоєнній відбудові України.

Практична значимість. Результати досліджень можуть бути корисними органам державної влади, дослідникам, а також застосовані у практичній діяльності ІТ-підприємств, а саме висновки щодо специфіки й перспектив розвитку ринку послуг з інтеграції даних, його драйверів і їх стратегій розвитку в турбулентні часи та Четвертій промислової революції, напрями імплементації технологій діджитал-маркетингу для виходу на нові ринки b2b, стратегії і тактик виходу компанії на ринок послуг з інтеграції даних, зокрема, при дослідженні глобального ринку послуг з інтеграції даних і розробки гібридних стратегій виходу на нього.

Ключові слова: глобальний ринок послуг, міжнародна торгівля, ІТ, цифровий маркетинг, Індустрія 4.0

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