

# Features of the International Activities of Digital Companies

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**Abstract**—The article is devoted to the study of digital companies and the identifying the features of their international activities. The article gives a classification of companies, analyzes the scale of their activities and geographical distribution. The study revealed the features of transnationalization in the activities of digital companies, which, first of all, include the following: a change in the role of foreign direct investment, since the digital economy allows companies to work on a global scale and operate in foreign markets with virtually no physical presence, the need for a limited amount of foreign assets for doing business, the concentration of investments of digital companies, their parent companies and foreign branches in several developed countries, primarily in the United States. The introduction of digital technologies leads to a change in the content of international commercial operations: completely new multinational business models emerge, a radical transformation of international operations takes place, as a result the digitalization fundamentally changes the nature of international activities of companies.

**Keywords:** digital companies, transnationalization of companies, digital economy, FDI lightness indicator

## I. INTRODUCTION

The digital economy is becoming an integral part of global economic processes. It is turning into one of the main drivers of growth and development of companies. There has even appeared such a category of business entities as digital companies, digital transnational corporations (TNCs), digital multinational enterprises (MNE). First of all, we will figure out which companies can be attributed to this category.

In accordance with the simplest approach, we can distinguish companies that are fully digital, and those that can be called partially digital [5, 9]. Completely digital companies are such, as a rule, from the moment of their formation, they work in digital form and produce their products that are delivered in digital form. Examples of such companies are commonly referred to as Internet search engines (e.g. Google, Yahoo), social networks on the Internet (Facebook, Instagram, LinkedIn, Twitter, WhatsApp, YouTube, etc.) and Internet sharing platforms (e.g. Airbnb, Uber, Dropbox). The companies that can be called partially digital are embedding digital technology in their existing production processes and production lines. They can be either digital consumers or digital producers, or they can be both. The new technologies are expected to have a

significant impact, primarily on the supply chain, for these partially digital companies. The new forms of intercompany collaboration based on cloud computing and open source platforms are emerging. Supply chain cooperation will presumably shift towards collaboration on a platform such as joint procurement and information-gathering services and the sharing of vehicles and storage facilities.

## II. TYPES OF DIGITAL COMPANIES

A fairly detailed version of the classification of digital companies is presented by UNCTAD (United Nations Conference on Trade and Development), where all the firms are divided by their function or role in the digital economy [16]. First of all, all digital multinational companies are divided into two groups: ICT firms (information and telecommunication technologies) and true digital companies (Fig. 1). ICT firms are divided into high-tech and telecommunications. High-tech IT companies producing hardware and software are by far the most dynamic among the largest global corporations. These companies include manufacturers of hardware - information technology devices (e.g. IBM, Apple, Samsung Electronics, Nokia, Sony, HP, Dell Technologies, Lenovo Group, Acer) and components (Toshiba, Hon Hai Precision Industry, Taiwan Semiconductor Manufacturing, ZTE, Flextronics, etc.). The high-tech group also includes software companies and IT service providers, service companies (for example, Microsoft, SAP, Oracle, Accenture, Adobe Systems, Qualcomm).

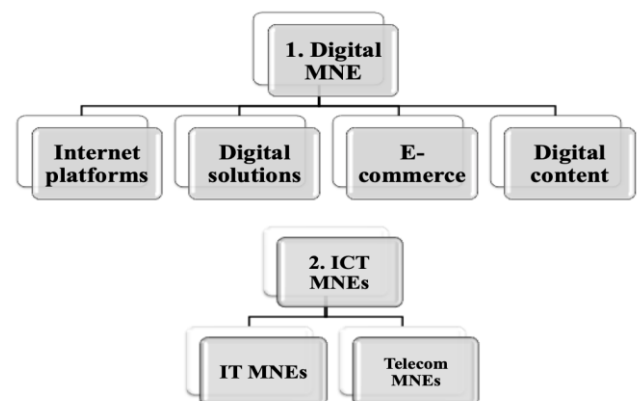


Fig. 1. Classification of digital MNC

The second group is telecommunications companies, that is, providers of telecommunications infrastructure and the ability to connect to it (AT&T, Vodafone Group, Deutsche Telekom, Nippon Telephone and Telegraph, Telefonica, BT Group, etc.).

Truly digital companies are divided into 4 groups: Internet platforms, digital solution providers, e-commerce companies, and digital content producers. The first two of these groups can be called fully digital companies, since the Internet plays a central role in their business model, and they work in the fully digital environment. Internet platforms include search engines, social networks and other platforms, for example, for sharing (Google, Facebook, eBay, Yahoo, Twitter, LinkedIn, etc.). Companies related to the supply of digital solutions include those that deal with, for example, cloud hosting and computing, web hosting and email services, electronic and online payments, as well as digital solutions for business management and financial applications (fintech) (e.g. PayPal, VMware, Salesforce, NASDAQ, Citrix Systems).

The following two groups of firms use mixed business models in their activities: in addition to the main digital business, there are also its physical components, which contribute primarily to the delivery of goods and services. E-commerce companies are represented by online platforms that provide commercial transactions, including online stores (for example, Amazon, Alibaba or Rakuten) and online travel agencies. Moreover, the delivery of goods can be both digital (if the content of the transaction is digital), and physical (if the content is tangible). The companies providing digital content include manufacturers and distributors of digital goods and services, including manufacturers and suppliers of media (music, video, e-books and online magazines, online courses), games (classic video games, online games, mobile games, multiplayer interactive games), as well as the provider Big data, marketing information, customer information, economics and business information (e.g. Time Warner, Comcast, CBS, Viacom, Thomson Reuters, Netflix, Moody's). Digital content can be delivered over the Internet, as well as through other channels (such as cable television).

### III. THE STUDY OF THE SCALE AND GEOGRAPHICAL DISTRIBUTION OF DIGITAL COMPANIES

According to the 2018 Internet Trends Report by the well-known analyst and venture investor in Silicon Valley Mary Meeker, published in May 2018, the total market capitalization of the 20 largest high-tech companies in the world amounted to approximately 5.9 trillion dollars, with 75% of this value accounted for by the US companies, and 25% - by the Chinese. At the same time, the top 6 corresponded to 81% of the total market capitalization of rating companies. These are companies: Apple, Alphabet, Amazon, Microsoft, Tencent and Alibaba. According to experts, high-tech companies are becoming the main part of the US business: in April 2018, they accounted for 25% of the country's market capitalization. But it is noted that China has recently become the center of the largest Internet companies in the world. At present, 9 of the 20 largest Internet companies are located in this country and 11 of

them are in the USA. And 5 years ago, only two such companies were based in China, and nine in the USA.

Digital companies also occupy a significant place in the ranking of the 100 largest non-financial MNEs in the world, published annually by UNCTAD in the world investment reports. This rating is compiled on the basis of the assessment of the volume of foreign assets of companies and for 2018 it included 13 high-tech and 7 telecommunication corporations [14]. Since 2012, the number of high-tech companies has more than doubled. The leading positions among them were taken by Apple Computer Inc, Amazon.com (USA), Microsoft Corporation, Samsung Electronics Ltd (Republic of Korea), SAP SE (Germany), Intel Corporation (USA), Oracle Corporation (USA) and Tencent Holding Ltd (China).

Over the past five years, the contribution of MNCs working in the field of information and communication technologies to international production has grown significantly. These companies are growing faster than the firms in all other industries; their assets have increased by 65%, and sales and the number of employees have increased by about 30% against the backdrop of almost complete stagnation in other Top 100 corporations.

In the 2017 UNCTAD report, the ranking of the 100 largest ICT companies and 100 digital MNCs was presented for the first time. The analysis of this rating reveals the peculiarities of the geographical distribution of companies in this sphere according to the countries and continents. If the largest automobile, pharmaceutical, energy companies, retailers, etc. are most often scattered around the world, this cannot be said about the fast-growing technology industry.

There is a concentration of digital companies in several large countries. Studies have shown that 75% of the companies in this ranking are based in three countries. 63 of the 100 digital MNCs are US companies, followed by the MNCs of Great Britain and Germany (Fig. 2). This concentration is even more pronounced among Internet platforms: 10 of the 11 largest digital MNCs are based in the United States. The presence of the largest digital companies in developing countries remains small: only 4 out of 100 are based in developing countries.

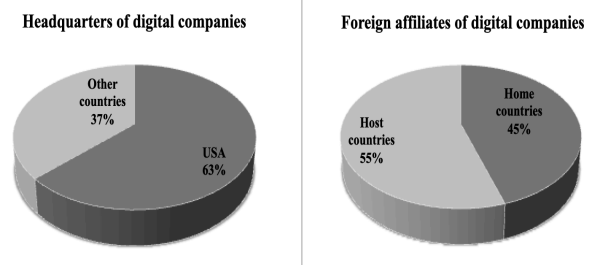


Fig. 2. Description of the geographical distribution of parent companies and foreign affiliates of digital companies

The peculiarity is that a significant number of the branches of such companies are located in the countries where their headquarters are based: their share is 45%, in contrast to 22% for MNCs of other industries. Thus,

approximately two-thirds of the parent companies of digital MNCs and 39% of their subsidiaries are located in the United States; for comparison, only 21% of the parent and subsidiary companies of other large corporations are located there. In the 100 largest digital MNCs, only 13% of branches are based in developing countries and countries with economies in transition, compared with 30% in all international corporations.

Digital companies are often considered less complex, more flat in terms of their organizational structures, than traditional companies. Judging by the analysis of such companies (for example, Alphabet, Apple, Microsoft), this may be mainly due to the fact that they are younger and have not yet managed to develop their ownership chains to the same extent as traditional MNCs. However, digital companies are clearly not using less complex elements than the traditional ones, given the particularly frequent confrontations between them and government agencies. Digital MNCs have more opportunities to develop financial and financially optimal ownership structures, almost unlimited by physical operating structures. The recent corporate restructuring of Alphabet, which is a holding structure over Google’s business, is further evidence that the same approaches are applied by both traditional and digital MNCs.

In October 2019, Forbes published its rating of the 100 largest digital companies [18]. The rating was compiled on the basis of the data on sales, profits and assets, as well as market capitalization of companies as of September 27, 2019.

The leading place in this rating belongs to companies in the USA, China and Japan (Fig. 3).

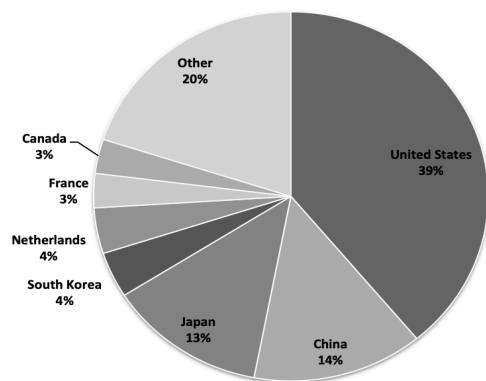


Fig. 3. Distribution of the 100 largest digital companies by country (2019)

The first place in the ranking of the 100 largest digital companies according to Forbes 2019 was taken by Apple, followed by Microsoft. In the third place there is Samsung Electronics. Alphabet and AT&T are fourth and fifth respectively, followed by Amazon, Verizon, China Mobile,

Walt Disney and Facebook. That is, the top ten digital companies included 9 American companies and one Chinese. Not a single Russian company is represented in this list.

The structure of the rating of digital companies by industry is given in Table 1.

TABLE I. DISTRIBUTION OF THE 100 LARGEST DIGITAL COMPANIES BY INDUSTRY

Industry	Share of companies in the ranking, %	Examples of major companies
Telecommunications services	26	AT&T, Verizon Communications, China Mobile, Softbank, Nippon Telegraph & Tel, Deutsche Telecom
Semiconductors	15	Samsung Electronics, Intel, Taiwan Semiconductor, Broadcom
Computer Services	11	Alphabet, Facebook, IBM, Tencent Holdings, Accenture, Tata Consultancy Services
Software & Programming	7	Microsoft, Oracle, SAP, Adobe
Computer Hardware	7	Apple, Dell Technologies, HP, Lenovo Group
Internet & Catalog Retail	6	Amazon, Alibaba, Netflix, eBay
Business & Personal Services	6	Booking Holdings, Recruit Holdings
Electronics	5	Hon Hai Precision, Kyocera
Other	17	PayPal, Walt Disney, Naspers, Cisco Systems, Nokia, Ericsson

#### IV. FEATURES OF THE INTERNATIONAL ACTIVITIES OF DIGITAL COMPANIES

The fundamental research question in this article is the question of how the strategy of transnationalization of the activities of digital and traditional multinationals in the digital economy is changing. In general, it can be argued that digitalization is changing the role of foreign direct investment, since it allows MNCs to operate on a global scale and operate in foreign markets with virtually no physical presence [1, 3, 12].

To work in foreign markets, digital and high-tech companies do not require large assets and large staff. Unlike other MNCs included in the UNCTAD Top 100 ranking, in which the ratio of foreign assets, foreign sales of products and foreign personnel is on average balanced, high-tech and digital corporations, having only 41% of their assets outside the host countries of the parent companies, receive 73% of sales abroad [16].

Let us analyze in more detail the features of transnationalization of the activity of certain categories of

digital companies (Table 2). For the analysis, we will use the FDI lightness indicator, which is calculated as the ratio of the share of the company's foreign sales in its total sales to the share of foreign assets to the total value of the company's assets [2].

TABLE II. DESCRIPTION OF THE TRANSNATIONALIZATION OF DIGITAL COMPANIES AND ICT MNCs, 2015

Company	Share of foreign sales (%)	Share of foreign assets (%)	FDI lightness indicator
Digital MNEs:	40	27	1,39
Internet platforms	50	19	2,63
Digital solutions	32	17	1,90
E-commerce	42	38	1,11
Digital content	36	32	1,14
ICT MNEs	63	43	1,48
IT devices & components	75	39	1,91
IT software & services	63	46	1,38
Telecom	42	46	0,92
The world's top 100 non-financial MNEs	65	62	1,05

*Compiled by: World Investment Report 2017 - Investment and the digital Economy, United Nations (UNCTAD), New York and Geneva, 2017.*

Purely digital MNCs, including online platforms and digital solution providers, show the biggest difference between foreign assets and foreign sales. These are companies that work almost completely in a virtual environment. Their foreign assets in foreign markets are often limited to company offices and data-processing centers. So, the share of foreign sales of the largest Internet platforms is 2.63 times higher than the share of their foreign assets, and in companies - suppliers of digital solutions - by 1.9 times. None of the MNCs related to Internet platforms has a share of foreign assets above 40%, and most of them do not exceed 20% (for example, Alphabet - 24%, Facebook - 21%, eBay - 7%, Yahoo - 6% etc.).

Mixed-use digital MNCs, including e-commerce companies and digital content providers, also show a higher FDI lightness indicator than traditional companies, but this index is much closer to unity. Both groups of companies, as noted above, combine the main digital business with its physical components that facilitate the delivery of goods and services to the consumer. For example, Amazon or Alibaba Group, whose marketing and business activities are available on the Internet, require real logistics assets for shipping operations. Amazon, in particular, has invested in the following assets: in its own truck fleet, delivery service, warehouse complexes with robotic equipment and its own aircraft. These investments have made the company much more "tangible". So, the company's total assets in 2018 compared to the previous year increased by 1.24 times, and the foreign ones even by 2.63 times, as a result of which Amazon rose in the ranking of 100 largest companies in the world from the 89th to the 26th place.

Digital content providers include major media

companies such as 21st Century Fox, Time Warner, Sky, 21st Century. These companies operate in a digital environment with digital products and digital technology. However, they still deliver their products in traditional ways, for example, via cable or satellite TV.

In contrast to all the categories of digital companies presented above, high-tech MNCs are significant in terms of foreign assets. Nevertheless, the share of foreign assets in total assets is much smaller compared to their foreign business, measured by the share of foreign sales, which leads to a higher value of the coefficient of lightness of foreign direct investment. A significant share of foreign assets is observed in these companies, but the ratio between the share of foreign sales and the share of foreign assets is almost the same as that of purely digital MNCs (for example, in 2018, Apple's FDI lightness factor was 1.5, and in Samsung Electronics - 2.21, in Sony - 2.95, in Alphabet Inc - 2.35, etc.). Some smaller and more specialized IT manufacturers, suppliers of IT components from East and Southeast Asia, place their production facilities in the company's home country, where production costs are lower and then export their products. This clearly contributes to the high value of the FDI lightness indicator.

Finally, this indicator is the lowest for telecommunication MNCs. These companies demonstrate a high share of foreign assets compared with foreign sales. They are usually characterized by a tangible presence in foreign countries where they operate, which is an integral part of their business model. Moreover, it should be noted that it is the physical presence in the foreign market that is the critical condition for such companies.

Of particular interest is the comparison of the ease of FDI index of digital companies and traditional MNCs. The highest level of this indicator is demonstrated by digital and high-tech companies. They are followed by MNCs in the automotive industry and aviation (in 2015, their FDI lightness factor was 1.3), which usually resort to the conclusion of production contracts for the most labor-intensive operations. The lowest level of the index characterizes the companies in the industries that are based either on local infrastructure (telecommunications and utilities) or on natural resources (in 2015, the FDI lightness factor in mineral extraction was 0.9, and in oil refining - 0.8).

Studies show that the analyzed MNC group is characterized by a smaller number of foreign affiliates belonging to them compared to traditional transnational corporations. So, for each of the Top 100 digital companies, on average, there are 227 branches; for each of the 100 MNCs of ICTs there are 280, while for 100 traditional companies, on average, there are 570 branches.

Speaking about the digital economy, it is necessary to keep in mind not only the high-tech sector and digital companies, but also the production chains in various sectors of the global economy as a whole. It can enhance the competitiveness of a wide range of industries, provide new business opportunities and open new channels of access to foreign markets and global electronic value chains.

Information and communication technologies (ICT) are one of the most important catalysts for the growth of international production [6, 10].

Digital technologies can be applied at all stages of value creation, including the sphere of material and technical supply, production, coordination of activities within the framework of production unit networks, external logistics and customer relations. The digital economy gives MNCs wide opportunities for restructuring processes and distribution channels, as well as reforming the management mechanisms in global production networks, leading to the formation of completely new models of international business and the transition from traditional global companies to virtual MNCs, the international consequences of which are completely different.

The digital economy is fundamentally changing the nature of the production and sale by companies of their goods and services abroad [4]. Multinational corporations using digital technologies can maintain contacts with foreign customers and sell them their products without major investments in physical infrastructure in foreign markets. In the field of international production, there is a gradual shift from international commercial operations with the export of capital in the form of FDI to operations based on contractual conditions. This makes their economic impact on the host countries less tangible, the role of which in the process of generating productive capacity and creating jobs is much more difficult to notice.

The incorporation of digital technology into global production chains across industries has a profound impact on international manufacturing. Various scenarios that affect the centralization or decentralization of production, the nature of international production and the results of international production activities are possible. Depending on the preferences of specific industries and MNCs, this can lead to a reduction in large investments in centralized, large-scale production projects, as well as to the development of more flexible, decentralized production. The tendencies to return production to the home country of the parent company and at the same time outsource services can be developed. The reason for the return to the home country of certain production processes transferred to foreign contractors may be the increased role of technology and intellectual property in the process of creating value. In addition, the configuration of supplier relationships in host countries may change and new partnership opportunities may open up. The tendency to abandon the services of intermediaries as a result of the development of the digital economy may lead to the fact that some types of enterprises in the host countries, for example, retail suppliers and distributors, will remain out of work. At the same time, new partnerships will be formed in the distribution sphere, opening up opportunities for the provision of new types of services with high added value. Digital technologies are accelerating the transformation of the economy into a service economy, which may lead to an increase in the presence of foreign branches in this sector, as well as a transition to subcontracting and relations not connected with the participation in capital [7, 8].

In the context of the digital economy, the competitive advantages of the countries that attract FDI are changing dramatically: multinational corporations rely less on factors such as cheap labor, being more focused on the availability of qualified personnel and cheap energy. First of all, this becomes a challenge for developing countries, as it is in them that fewer jobs will be created. The ability of the high-tech and digital companies to operate in the global market with small investments will lead to their concentration in several large developed countries. The most important motives for the transnationalization of companies are knowledge-based FDI, as well as financial and tax incentives.

## V. CONCLUSION

Summing up the study, we can distinguish the main features of the transnationalization of digital and high-tech MNCs:

- the need for a limited amount of foreign assets to conduct business abroad: the more actively MNCs build their production processes on the basis of the Internet, the greater the gap between foreign income and foreign assets;
- the emergence of a completely new multinational business model and the radical transformation of the international commercial operations of many MNCs;
- the concentration of investments of digital companies, their headquarters and overseas branches in several developed countries, especially in the United States of America.

Today, digital technologies have not yet had a serious impact on the international positions of traditional MNCs (foreign assets, sales volume and number of employees), however, the tendency to switch to the models of international production that do not require expensive assets and alternative management methods is already gaining momentum. The introduction of digital technologies fundamentally changes the nature of the international activities of MNCs and the influence of their foreign branches on host countries. The nature of the companies selling their goods and services abroad, as well as the nature of production, is changing. Using international technologies, international corporations are able to contact foreign consumers and sell their products to them without serious investments in real infrastructure in foreign markets.

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