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COMPETITION IN THE GLOBAL MARKET OF INFORMATION AND COMMUNICATION TECHNOLOGIES

Competition in the information and communication technologies (ICT) sector acts as a catalyst for innovation, technological progress and improved consumer welfare, encouraging ICT companies to invest in R&D, leading to technological breakthroughs and enhanced productivity [1, p. 4].

In 2010–2022, the global information and communication technologies (ICT) market generally became more competitive and was characterised by a low degree of concentration due to the emergence of new global players, increased innovation, and a more diversified market landscape (Table 1). It is worth noting that the largest suppliers in the global ICT services market in 2022 were: Ireland with a share of 22.2% (USD 206.6 billion), India – 10.7% (USD 99.2 billion), China – 8.9% (USD 82.9 billion), the United States – 7.1% (USD 66.2 billion), and the United Kingdom – 4.6% (USD 42.6 billion) [2]. At the same time, the largest suppliers in the global ICT goods market in 2022 were: China with a share of 20.2% (USD 586 billion), Hong Kong – 11.4% (USD 330.5 billion), Singapore – 5.5% (USD 159.7 billion), the Republic of Korea – 5.5% (USD 159.5 billion), the United States – 5% (USD 145.2 billion), and Malaysia – 4% (USD 116.8 billion) [3].

In addition, during the period under review, there was an increase in the level of concentration in the global ICT goods market (the value of the HHI index increased by 218 points compared to the beginning of the period analysed), while the global ICT services market saw a decrease in the level of concentration (the value of the HHI index decreased by 416 points compared

to the beginning of the period analysed). In addition, the value of the HHI index for the global ICT market as a whole decreased by 323.9 points.

Table 1

The Herfindahl-Hirschman index of the global information and communications technology market*

№	Indicator	2010	2014	2018	2019	2020	2021	2022	Type of concentration in 2022
1	ICT services, including:	543.3	517.2	616.5	672.9	719.4	786.3	761.4	low
1.1	Computer services	749.8	676.7	804.2	863.6	832.9	894.5	857.9	low
1.2	Telecommunication services	310.2	402.8	342.9	311.7	326.2	291.2	276.3	low
1.3	Information services	1,499.4	1,413.2	1,213	1,193.4	1,031.5	924.5	915.2	low
2	ICT goods, including	1,081.5	1,292.6	1,244.8	1,220.4	1,238.1	1,404.2	665.5	low
2.1	Computer and peripheral equipment	1,801.9	1,889.3	1,775.3	1,687	1,794.2	1,955.5	1,678.3	moderate
2.2	Communication equipment	1,373.6	1,863.7	1,937.8	1,779.6	1,757	2,259.8	898.8	low
2.3	Consumer electronics	1,112.7	1,445	1,471.7	1,358.3	1,481.3	1,709.4	1,746.4	moderate
2.4	Electronic components	958.6	1,056.8	1,103.6	1,098	1,135.8	1,250.1	1,195.8	moderate
2.5	Other	1,021.4	1,029.2	956.3	995.5	1,037.8	1,155	1,019.4	moderate
3	ICT market total	848.4	946.3	913.7	880.2	883.1	986.7	524.5	low

Source: calculated and compiled based on [2–3]

* the latest relevant data is provided

According to the calculations [2–3], on average, during the period reviewed, the following components of the global ICT market were the most concentrated:

1) the market of computer and peripheral equipment received an HHI value of 1,797.3 points (in 2022, the largest supplier countries in the world were China, Hong Kong, the United States, Mexico, Taiwan, Germany, the Netherlands, the Republic of Korea, Singapore and Malaysia);

2) communication equipment market – 1,695.7 points (the world's leading supplier countries were China, the USA, the Netherlands, Hong Kong, Taiwan, Mexico and Germany);

3) consumer electronics market – 1,475 points (the largest global supplier countries were China, Mexico, the USA and Germany);

4) information services market – 1,170 points (the top supplier countries in the world were the United States, the United Kingdom, the Republic of Korea and France);

5) electronic components market – 1,114.1 points (the world's major supplier countries were Hong Kong, Taiwan, China, Singapore, the Republic of Korea, Malaysia, the United States and Japan);

6) the market of other ICT goods – 1,030.7 points (the leading global supplier countries were the Republic of Korea, China, Taiwan, Hong Kong, the USA, Malaysia and Germany);

7) computer services market – 811.4 points (the largest supplier countries in the world were Ireland, India, China, the USA, Germany, the Netherlands and the United Kingdom);

8) telecommunication services market – 323 points (the world's top supplier countries were the United Kingdom, the United States, Italy, France and the Netherlands).

Finally, the US-China trade and economic wars, COVID-19, and geopolitical conflicts (e.g., the war in Ukraine and the Middle East) have an indirect impact on the competitive environment of the global ICT market, specifically:

(1) create disruptions due to rising production costs, supply chain challenges and temporary delays in production;

Thus, the ongoing Russia-Ukraine war is affecting the global information and communication technologies industry in terms of an increase in the number of cyberattacks, higher requirements for due diligence and audit (impact on the continuity of ICT companies' operations, supply chain risks, changes in national and international legislation, solvency risks, changes in national and international legislation, etc.), a large-scale migration of talents against the background of a shortage of ICT specialists, a rising demand for technological services in Europe and for funds to overcome the shortage and relocation of qualified ICT personnel, as well as the search for alternative ICT infrastructure [4, p. 6]. Another example of the negative impact of geopolitical conflicts is the case of the semiconductor industry: Ukraine produces approximately 70-80% of the world's neon output (used in deep ultraviolet lithography), while Russia accounts for, approximately,

35–40 % of the world’s palladium output (used for plating applications in semiconductor production and essential in catalytic converters) [5, p. 1]. In particular, industry experts point out [5, p. 2] that in the long run, increased tariffs and stronger trade barriers may lead to the closure of production lines, higher prices, and lower revenues and profits of manufacturing companies.

(2) motivate leading ICT companies to relocate their divisions to more stable regions in order to compete in safer ‘zones’ (e.g., leading US companies are gradually moving their production facilities from China to Vietnam, Thailand, Malaysia, Indonesia, Mexico, India and some Eastern European countries);

(3) motivate the transfer of innovative activities of leading ICT companies, as well as research institutions (and, accordingly, investments) to stable and ideologically compatible regions;

(4) cause ‘technological disintegration’, in which parallel technological ecosystems (in particular, the American and Chinese ones) have been formed;

(5) contribute to the gradual development of new trade routes and scientific and technological partnerships, in particular through offshoring (transfer of business processes, production or suppliers abroad), onshoring (the practice of transferring business operations or searching for suppliers back to the country of base) nearshoring (outsourcing to geographically close countries or regions, usually within the same continent or time zone) and rightshoring (using an optimal balance of onshoring, offshoring and nearshoring based on cost, quality, lead time and risk mitigation).

The global information and communication technologies landscape presents a mix of hurdles and prospects. Organisations that adeptly manage internal and external factors will be poised to excel in the digital era. By prioritising innovation, enhancing cybersecurity measures, investing in workforce development, pursuing international expansion, and championing sustainable practices, companies can fully leverage the ICT sector’s capabilities and foster future progress. Given the ever-evolving character of the ICT industry, a forward-thinking and flexible strategy is essential for businesses to tackle new challenges and capitalise on the upcoming opportunities.

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