International Journal for Quality Research 16(2) 395–416
ISSN 1800-6450

Yana S. Matkovskaya[1]
Ksenia V. Ekimova
Nikolay V. Kuznetsov

Article info:
Received 10.04.2021.
Accepted 11.11.2021.

UDC – 005.336.3:330.341.1
DOI – 10.24874/IJQR16.02-05

THE INFLUENCE OF THE DIGITAL ECONOMY ON THE QUALITY OF THE REGION'S DEVELOPMENT AND ON SOLVING THE PROBLEMS OF UNEVEN REGIONAL DEVELOPMENT

Abstract: *The goal of this article is to assess the quality of the current stage of the digitals economy development , as well as is to investigate whether the development of digitalization processes will solve the problem of regional asymmetry in the development of the World Economy, and the hypothesis for this paper was the assumption that the economic relations implemented in the digital space affect the overall quality of the digitalization of the economy and can contribute to solving the problem of uneven regional development and will also reduce the gap between developed and developing countries. The methodology of work is based on a combination of methods of statistical, logical, graphical and regional analysis, it is also due to the application of general scientific methods and a comparative approach. The result of this paper is the conclusion that the Digital Economy creates the conditions for the quality development of regions.*

Keywords: *Quality of Regional Development; Digital Economy; Innovation; Regional Innovation Development; World Economy*

1. Introduction

The beginning of the era of the digital economy is one of the main trends in the development of the modern economy and the system of socio-economic relations in it. The actualization this trend has been the major subject of discussion in the 20th century, and N. Negroponte is considered to be the generally recognized author of this concept (Negroponte, 1995), whose works have thus become probably the most quoted ones. However, a more significant event, in our opinion, is the awareness of the fact of occurrence and the official recognition and the of the existence of the digital economy and its structuring made by the World Bank (Cifrovy`e dividend, 2016), as well as K. Schwab's statement at the WEF in Davos on the launch of the Industry 4.0 Development Program (AI: Government pledges billions aimed at bringing Germany up to speed, 2019). Of course, the problems of development of the digital economy have already been covered in many papers, although the first discussion was started by scientists R. Bucht and R. Hicks (Bukht &vHeeks, 2018). E. Brynjolfsson and B. Kahin (Brynjolfssonv & Kahin, 2000), J. Manyika et all (2014), but these publications (primarily the World Bank) made the digital economy officially recognized and made it possible to involve a wide range of experts for discussing it. At the same time, they have identified the range of problems for its research that should not be limited to describing individual processes, but should

[1] Corresponding author: Yana S. Matkovskaya
e-mail: yana.s.matkovskaya@gmail.com

have a methodologically sound basis, shape the system of ideas and allow for the implementation of essential functions of economic cognition, related to the study of socioeconomic and digital phenomena, forecasting and planning, including its regional and quality context. It should be noted that the study of the digital economy must be based on fundamental economic science, the potential of which can create a basis for understanding the depth and quality of ongoing digital transformations, affecting, just as in case with digital technologies, the entire system of socioeconomic relations. Apparently, this is exactly why the concept of the digital economy is not authored by the representatives of fundamental economic science. In turn, economic science (or rather its prominent representatives), forecasted this transformation throughout the 20th century (which we currently refer to as the digital economy), defining its essence and nature when formulating ideas about the post-industrial economy, Information society, commercial economy, etc.

In the meantime, we should be clearly aware today that digital technologies as such are only a technological basis which transforms the nature and the quality of specific (particular) economic relations, but with the increase in the extent of digitalization, digital impact increasingly transforms economic relations, affecting at least two sets of relations, the first of which is determined by the replenishment cycle (production, exchange, distribution and consumption) and the second is determined by area of their application: technical and technological, economic, production, financial and economic, socioeconomic, as well as communication, psychological-social, social and ethical (etc.) relations.

The above determines the presence of the methodological problem of a conceptual general nature. However, there is also anothers problems. First problem of them the first is the study of quality problem. The quality problem consist in, firstly, in the quality of the digital economy in a fundamental sense, as a set of characteristic attribute of the digital economy. Secondly, we need in assessing the influence of the digital economy developments on the quality of development to the socio-economic systems of world and counties. Thirdly, the advantage of the digital economy is consist in its opportunities to progress in the quality of lifehood (as generated by the of digital technologies). These and a number of other aspects additionally allow arguing the need to study the problem of the fundamental quality of the digital economy, as well as the quality of its impact on the development of spheres of economic and social life. And the problem of quality it is very important problem.

The second problem – the problem of further development of digital economy (from this point on, the concept of the digital economy shall be understood to mean that the modern economy is the digitizing economy and is characterized by a rapidly growing segment of production and consumption of benefits created by the digital segment of the economy). One the most important economic socio-problems of the digital economy is its mega-significance of a global nature its qualitity influence for humanity development. Those in our opinion, one of the most important economic socio-problems of the digital economy is its mega-significance of a global nature. It is determined by the nature of the digital economy, which, being implemented in the virtual space, has unique potential, utilization of which could bridge the gap between economically developed and underdeveloped regions, allow to overcome underdevelopment, to reduce the social strain resulting from the existing proportions of regional distribution of wealth and improve the quality of life. Still, is this possible? Is it possible that the digital economy is beginning to immediately address these pressing issues even as we speak?

2. Theory

The problem of disparity of the regional development for the digital economy has several aspects. The first of them consists in the fact that digital benefits are created nonuniformly, and the second consists in the fact that these benefits are also both distributed and consumed nonuniformly from in tersm of regions (geography); moreover, the focus of the territorial vector for both aspects can be both positive and negative due to the presence of internal problems of development of territories in different countries. It should be pointed out that the presence of this problem is characteristic of most countries, including developed countries. There is a well-known problem of disparity of the regional development of the United States, Germany, France, Italy, Spain, is characteristic of the PRC, not mention to developing countries, where these problems are more acute. Therefore, the qualitative influence of the digital economy on the development of the economy of souverains selected regions of World is also differ.

However, in the context of studying "the digital economy", the fact of the regional disparity sounds paradoxical, since the digital space is virtual. According to its specific character, the digital economy is not attached to the physical world (the world of things); therefore, it should lead through its development to neutralizing problems of disequilibria of the regional development that have emerged in a pre-digital age. It was this potential of digitalization (though it would be more accurate to say electronization) that had previously determined expectations according to which the problem of disparity of the development regions of the world (and at the domestic level) will be resolved with the development of digital technologies. However, these expectations have not been justified due to physical reasons, since the development of digital technologies requires an even greater concentration of resources within the economically developed area, which should have its own energy, water, climatic and other resources forming the basis for the production of digital benefits. Thus, we can say that the qualitative impact of the digital economy on modern socio-economic development is still unevenly distributed, and in a number of regions it is insufficient and subtle. At the same time, the hierarchy of digital resource systems (given their fundamental qualities) differs from the hierarchy of analog systems: knowledge (technology) integrated with intellectual labor, as well as capital invested in fundamental and applied science and development come first (with a long-time lag of return on investment). In this regard, production factors that are required for the development in this territory, are differentiated into production factors with a hierarchy for the digital economy (new hierarchy) and production factors with ranking for the economy conventional analog (according to the definitions of the World Bank (Cifrovy`e dividend…, 2016) (conventional hierarchy), operating in this region. And if everything is preserved within the proportions of the industrial era (labor, land, capital, technologies and entrepreneurship) in the latter case, the first case requires a fragmentary combination of two or more factors from among traditionally distinguished production factors: priority has been given to the correlation of factors of labor and technologies – intellectual labor, as well as the combination of capital, technologies and entrepreneurial resource – previous investment in fundamental science, in the development of digital benefits. That said, the factor of land is quite important as well – in the context of generation of electric power that is required for the operation of servers, for which cheap energy is one of the most important criteria. in addition, the resource potential of the last-mentioned factor can be used as a source for the development of underdeveloped countries in the process of development of the digital economy (due to a number of factors, the electricity price in developing countries is

lower than in developed countries under given development conditions). That said, of course, there should be significant progress in the development of the "entrepreneurial resource" in the digital economy, which, according to the ideas of P. Drucker, should make our modern economy commercial (Drukker, 2007, p. 45) that is, create conditions for a qualitative transformation of economic and market processes.

As can be seen from various sources including the analytics presented below, the level of disparity of the regional development (both the regions of the world and the regions of individual countries) in terms of development of digital technologies, their qualities and the rate of commercialization of innovations, is not prone to reduction; furthermore, all other conditions being equal, the gap with high probability will grow as a result of the progress of some countries against the background and as a result of permanent state (and maybe even recession) of other countries. The assumption "otherwise equal conditions" which we used in this context means that a significant quantum leap in the methodology of regional management is required to bridge this gap, although no significant progress in this regard has yet been observed, despite the fact that the economic community is aware of cases of qualitative transformations, thanks to which several postcolonial countries managed to take the lead in terms of the rate of economic growth and development, exactly owing to development of digital technologies (Malaysia, Singapore, other countries).

A number of existing socioeconomic and political conditions, which allowed these countries to overcome underdevelopment and assume the status of leading countries in terms of a number of parameters, cannot become for other states a "tracing paper" which could be used in a similar way to resolve the development problems. In addition, it is important to consider to what extent the theoretical tools and practical technology of bridging the gaps are applicable in a digital age when a number of competitive positions have already been utilized by others. Therefore, modern scientists are faced with the task to develop approaches and a system of measures to develop different countries and macroregions and resolve the problem of disparity (not only digital, but also socioeconomic on a global basis). However, as before, in the study of disparity of the development of regions, the works of those scientists who studied the interaction of the center and provinces, concepts of the world-system relations by J. Arrighi (Arrighi,1990). I. Wallerstein still prove their relevance (Wallerstein, 1979, 2008a, 2008b); in our opinion, they are largely based on the historical research of F. Brodel (Brodel, 1992; 1993) and ideas of I.G.von Tünen.

The works of G. Friedman (Friedman, 2010; Friedman, 2010), W. Christaller (Christaller, 1972), as well as B. Kagarlitskiy (Kagarlitskiy, 2010), A. Fursov (Fursov, 2018) have unquestionable theoretical and methodological potential, and due to specifics of development of digital technologies, when it is necessary to develop regional innovative potential, the ideas set out in the works of P. Cooke (Cooke, 1992), B. Asheim and A. Isaksen (Asheim & Isaksen, 2002), B. Carlsson (Carlsson, 2006), E. Von Hippel (Hippel, 2002), M. Kastells (Kastels. 2000) et al. are of great importance.

Given the concentrated nature of the formation of growth points of the digital economy, there is a highly relevant cluster approach of M. Porter (Porter, 2003; Porter. 2006) who studied the logic of cluster formation, as well as the approach of L. Turou (Turou, 1999), the author of the work "The Future of Capitalism" who studied the dynamic processes of the capitalist system of management, comparing its progress with geological processes – "tectonics of economic plates - economic surface of the Earth, that is, the distribution of income and wealth" and rightly pointed to the chances of a "technological shift towards an age of

domination of industry based on Artificial Intelligence" (Turou, 1999).

3. Data and Methods

Theoretical concepts and the works of classics of economic science described above, publications of contemporary scientists in the top-ranked scholarly journals, as well as statistical data produced by international organizations, think tanks, English and foreign rating agencies have been used as data for writing this work.

In order to systemize information related to the analytics of ongoing digital, discovering the quality of development of regions of the world presented below, were used as the methods of analysis and synthesis, ascent from abstract to concrete and from concrete to abstract. Its allowed formulating the hypothesis and testing its implementation at the general and specific level, as well as the generalization method, statistical methods (finding the mean value, median value, plotting trend charts), logical method, grouping method, comparison method (comparative analysis), a complex of special methods of analysis. The calculations were performed using the Microsoft Excel software.

4. Subject-matter of research

In order to study the issue of development of the digital economy, we should proceed from the fact that the processes of its development are directly related to the development of innovations. And in order to form a system of ideas of the geographical distribution of innovative technological activity and create digital technologies, in this paper, we will carry out a study of quantitative indicators and co-measurements, which determine the concentration of innovative forces. Moreover, a side note should be made here: according to the popular point of view, the main centers of location of digital technologies are PRC, Malaysia, Taiwan, and the United States. They are followed by European countries and the English Federation. If such proportions are preserved, it would mean that the digital model of the world would be little different from the industrial-post-industrial model that was developed in an age of creation of sovereign states and can be described at present and in the future within the framework of concepts of the interaction of the center and provinces, as was described in the papers of the abovementioned scientists.

As a universal and most popular development indicators is the study of the degree of development of the Internet in various countries (broadband access). According to the World Bank, the volume of global traffic has increased from 100 GB a day in 1992 to 46,600 GB in 2017, and it is expected to increase more than three times by 2022 (Digital Economy Report, 2019). Figure 1 shows the distribution of the number of broadband Internet access subscribers based on the data of the state statistics service, based in international data for all countries except Russia on data of the International Telecommunication Union.

The indicator of the level of broadband access is a qualitative characteristic, parameter which is quite sufficiently reflective of the differentiation of countries according to the level of digital development; however, it is insufficient in our opinion, since digital development also requires scientific reserves owned by countries. One of the most popular ways to describe innovation activity as it has recently developed in countries, is the ranking of countries by the level of activity in research studies. This scientometrical indicator imposes a high bureaucratic burden on scientists and is inherently controversial, but acts on the international stage as an important indicator of the research potential of this region (country). Relying on the data of the US National Science Foundation and according to the latest research (Science and Engineering Indicators 2018), the correlation of scientometrical indicators was such as it is

shown in Figure 2–6, which we used to compare it with the volume of GDP for the same countries. The sample was drawn as follows: group 1 – top-20 countries with the highest research activity (Figure 2), and by individual regions with a view to avoiding mean values, the sample was drawn as follows: each group has included equal number of countries at the top of the ranking in terms of scientometrical indicators for a particular region, and those at the bottom (Figures 3–6). The sample does not include minnow states (including minnow insular states) with 0-8 publications in scientometrical databases.

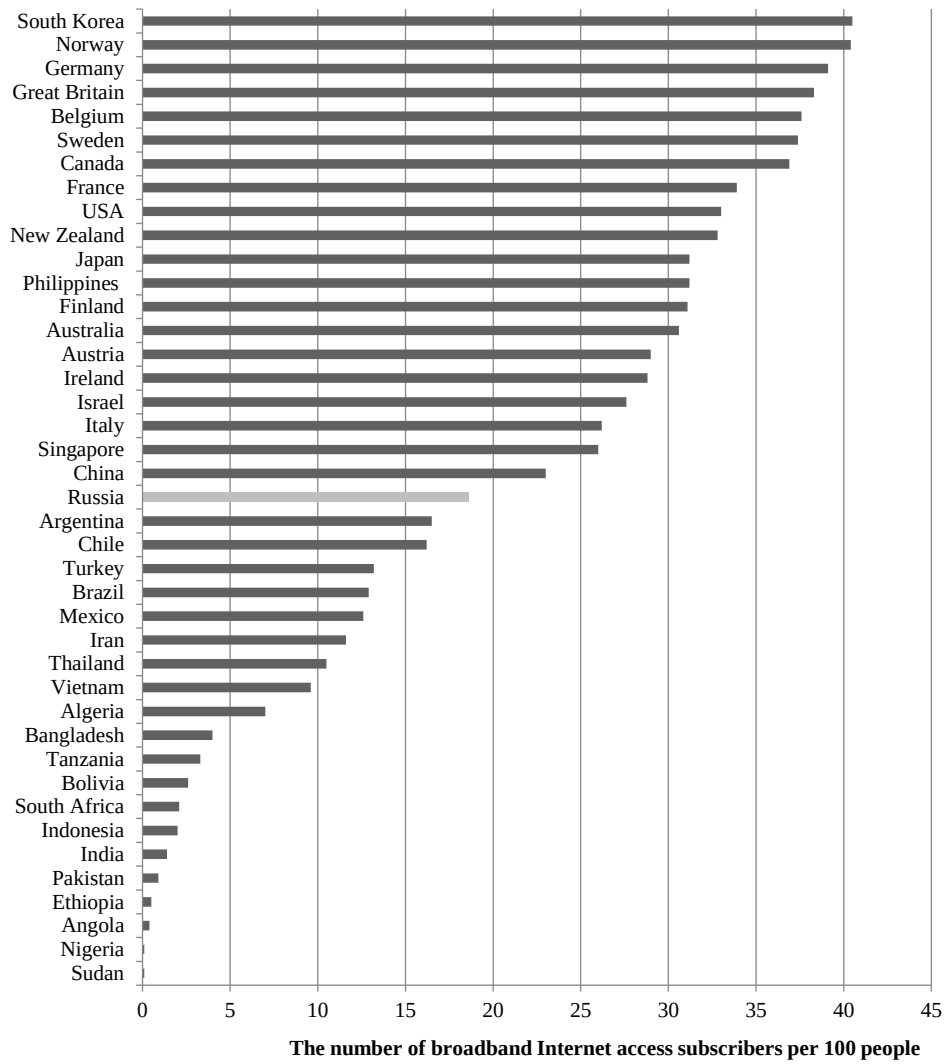

Figure 1. The number of broadband Internet access subscribers per 100 people (fixed broadband Internet access subscribers) in 2016

Compiled by the authors based on: (Rossiya i strany` mira, 2018, pp. 278-279)

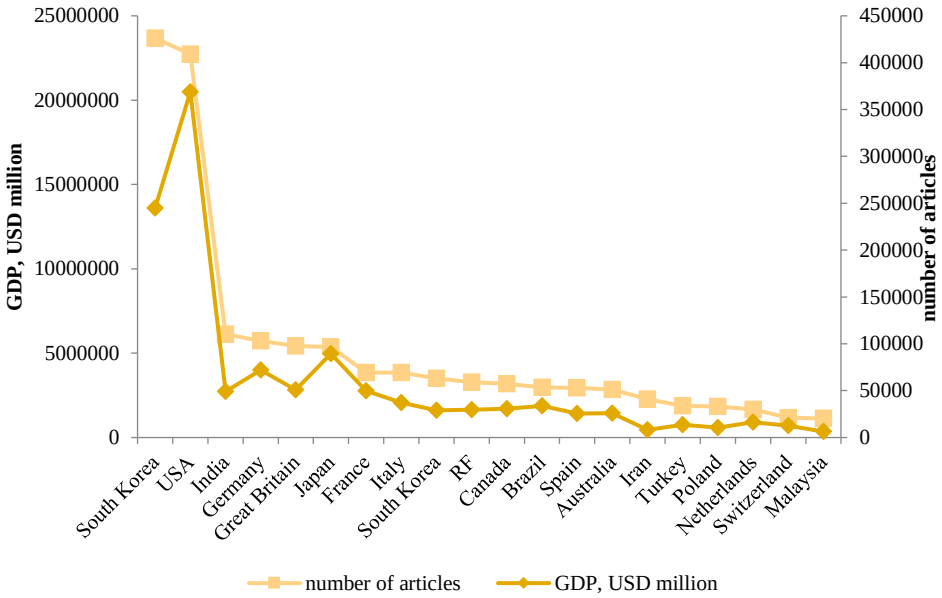

Figure 2. World's leading countries in terms of the number of positions (right scale) in comparison with the volume of GDP (left scale)
Compiled by the authors based on: (Science and Engineering Indicators, 2018; Gross Domestic Product, 2019).

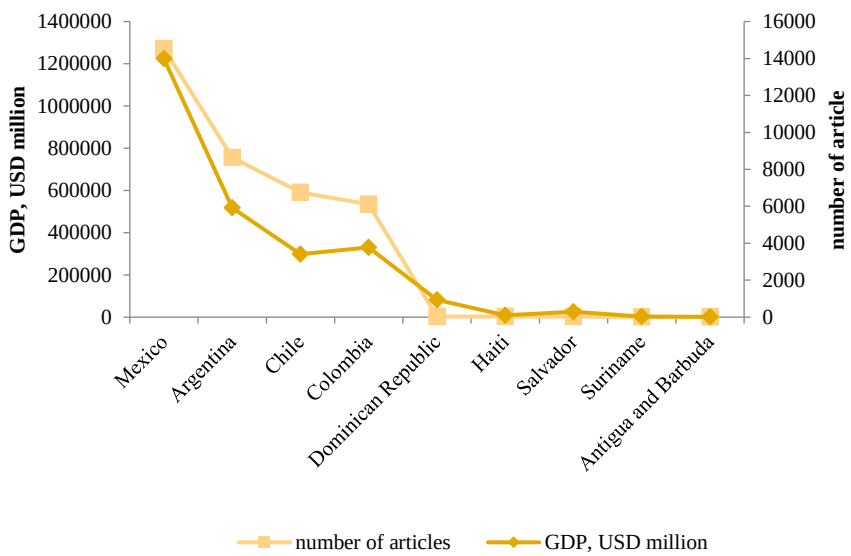

Figure 3. Comparison of the number of positions with the volume (right scale) with the volume of GDP (left scale) for the region of Latin America.
Compiled by the authors based on: (Science and Engineering Indicators, 2018; Gross Domestic Product, 2019).

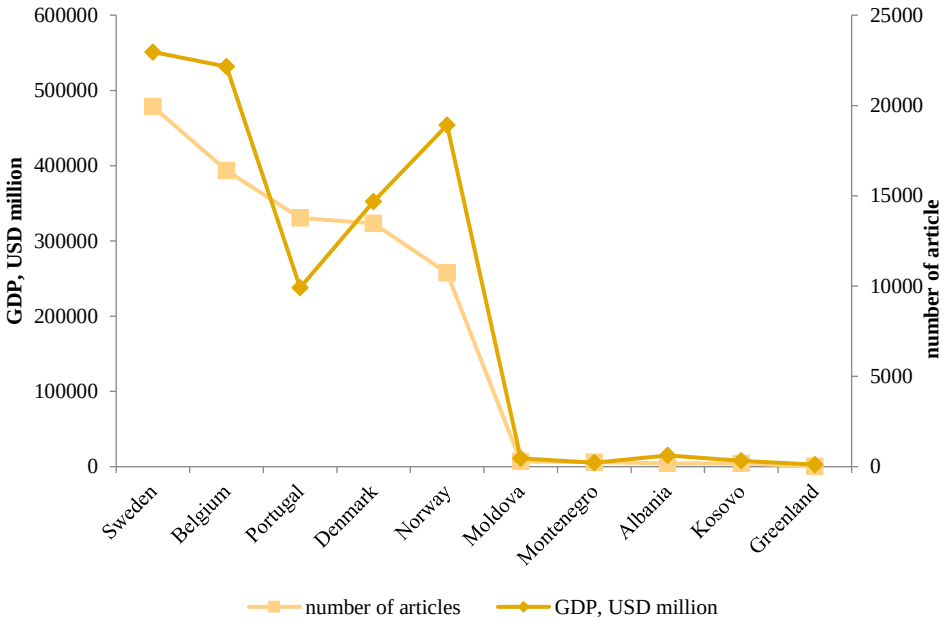

Figure 4. Comparison of the number of positions with the volume (right scale) with the volume of GDP (left scale) for the region of the EU

Compiled by the authors based on: (Science and Engineering Indicators, 2018; Gross Domestic Product, 2019).

Figure 5. Comparison of the number of positions with the volume (right scale) with the volume of GDP (left scale) for the region of Middle East and Western Asia

Compiled by the authors based on: (Science and Engineering Indicators, 2018; Gross Domestic Product, 2019).

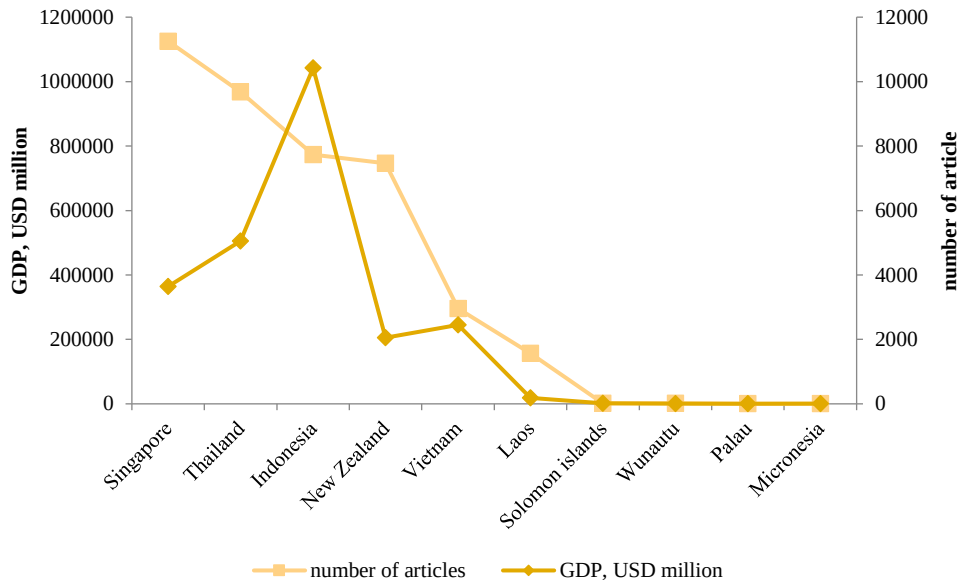

Figure 6. Comparison of the number of positions with the volume (right scale) with the volume of GDP (left scale) for the region of Africa
Compiled by the authors based on: (Science and Engineering Indicators, 2018; Gross Domestic Product, 2019).

As we can see from the Figures, in most cases there is a clear correlation between the level of GDP in these countries and their scientometrical indicators that does not require a correlation-regression analysis.

Based on another ranking and following the similar logic of the formation of the first sample, we compared the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample of 20 leading countries (right scale). It should be noted however that Russia is not ranked among leading countries, but it was included in this ranking for comparison (Figure 7): according to the Global Competitiveness Index, our country ranks 43rd in the world (66.7) and according to the Human Capital Development Index it ranks 49th (0.824). The Figures below (Figures 8–13) depict the correlation of these same values by regions.

Another conclusion from this statistical and graphical analysis is that there is a clear dependence between competitiveness and the Human Development Index. But the main conclusion is, first of all, that there is an extremely serious gap between the development of the digital economy in developed and developing countries.This is a very significant indicator reflecting the qualitative impact of digitalization processes on the economy.

Several factors, such as the changes in value added of the ICT sector in the GDP depending on the country which we made based on the data from the review of the World Bank for 2019, demonstrate disparity of the development to an even greater extent. The research procedure was as follows: several samples were drawn – by regions of the world, by types of countries, a separate sample of countries with the highest and the lowest levels of investment of the value-added sector in the ICT sector in the GDP for the examined period of 8 years.

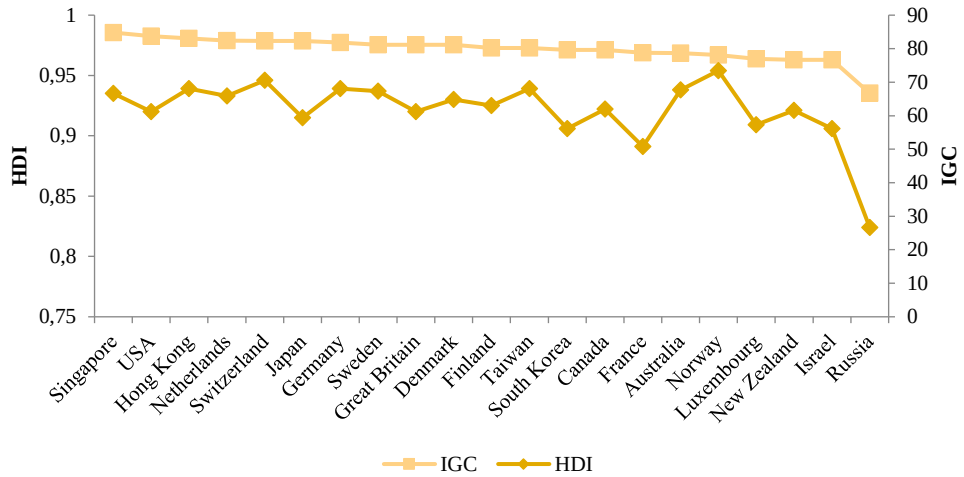

Figure 7. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample of 20 leading countries and Russia (right scale (Global Competitiveness Index base) in 2019

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

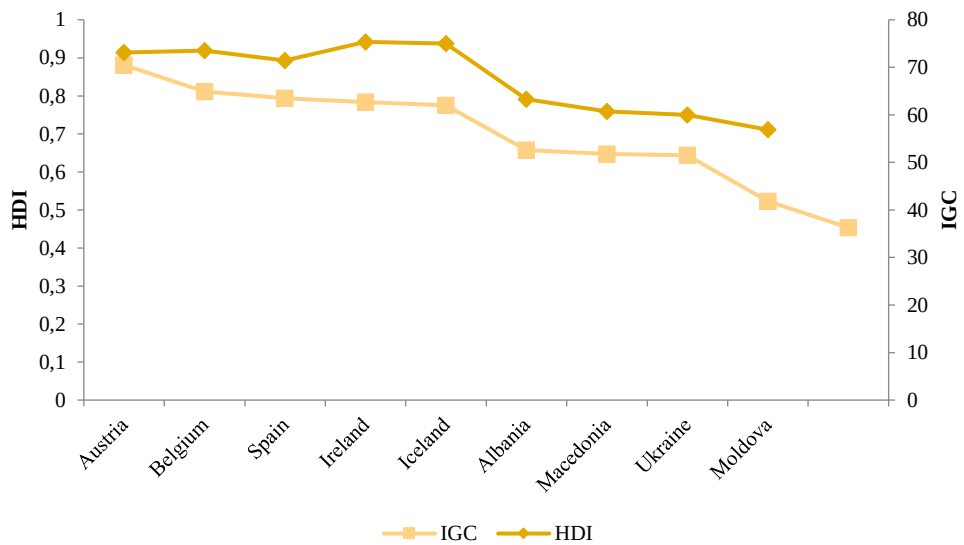

Figure 8. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index (right scale) in 2019 for the region of the EU

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

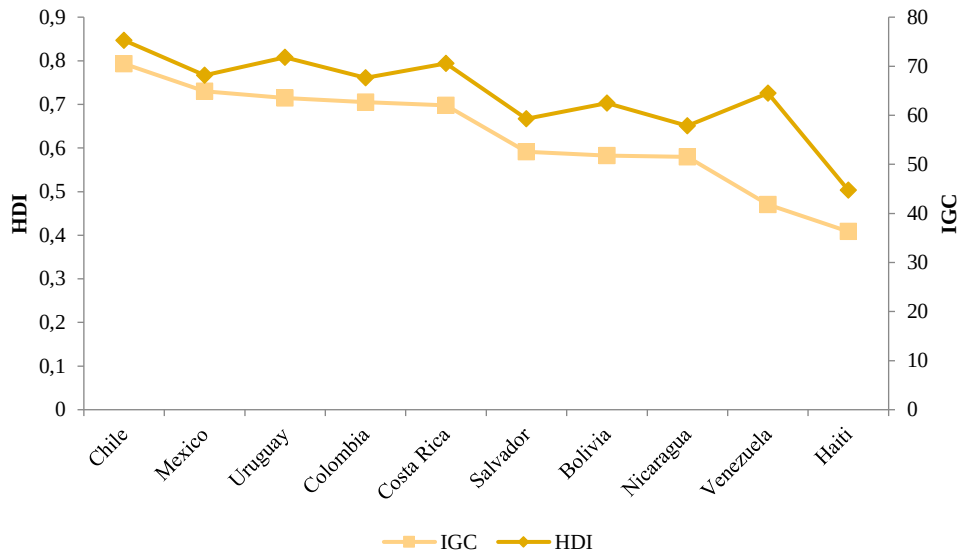

Figure 9. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample of 20 leading countries and Russia (right scale (Global Competitiveness Index base) in 2019

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

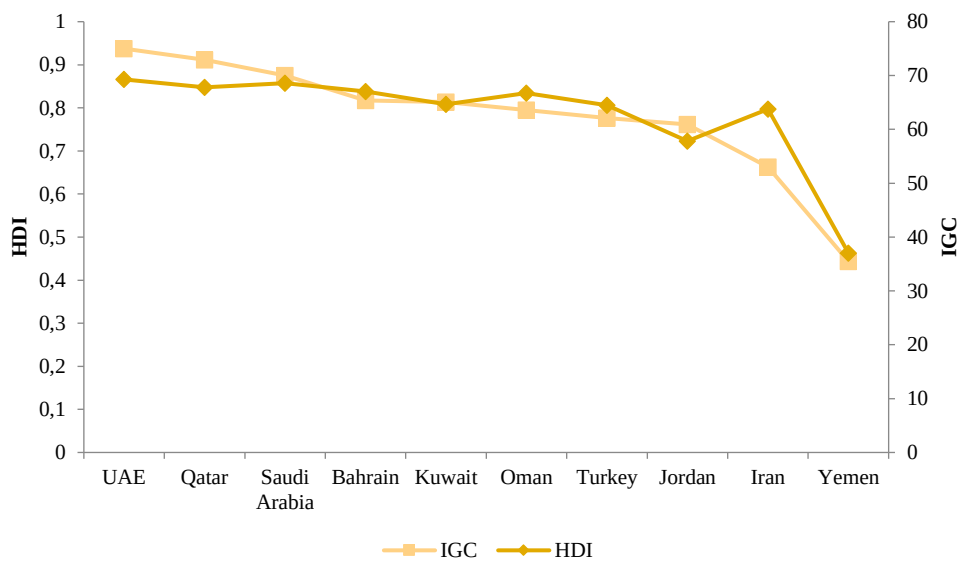

Figure 10. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample for the region of Middle East, Western Asia and South-Western Asia (right scale) in 2019

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

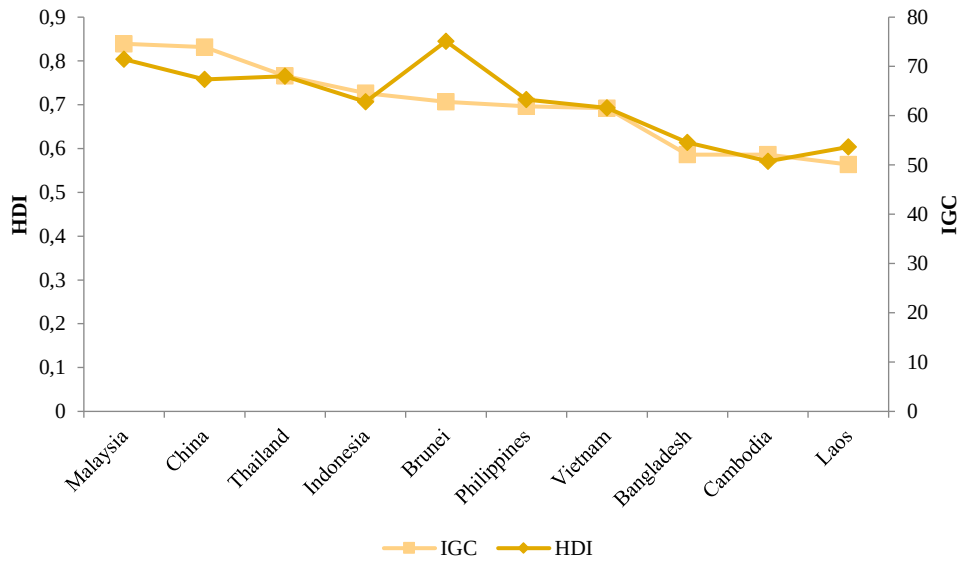

Figure 11. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample for the region of South-East Asia and Pacific Islands (right scale) in 2019

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

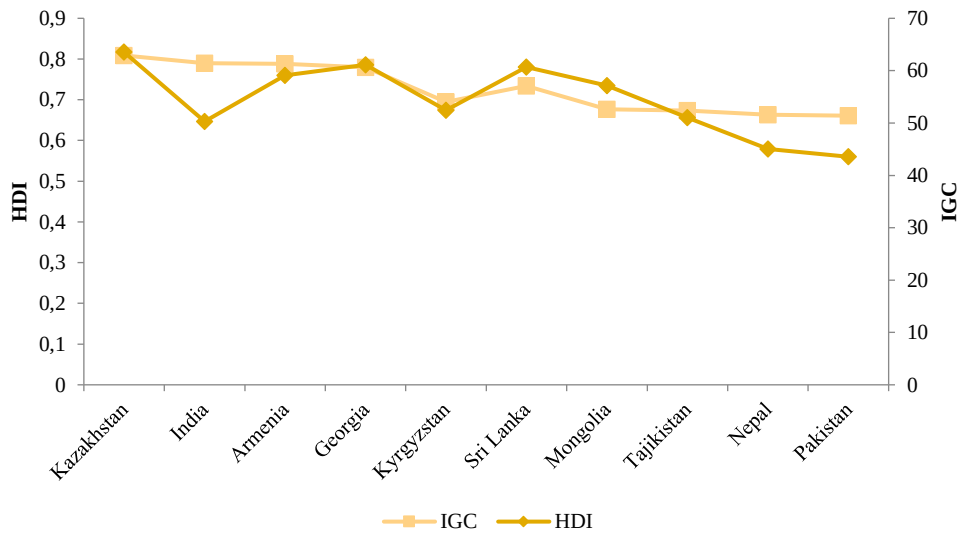

Figure 12. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample for the region of Central Asia, including Middle Asia and Trans-Caucasian region (right scale) in 2019

Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

Figure 13. Comparison of the Global Competitiveness Index (left scale) and the Human Capital Development Index based on the sample for the African continent (right scale) in 2019
Compiled by the authors based on: (The Global Competitiveness Report, 2019; Human Development Index Report 2019).

It should be further emphasized that according to the World Bank, not all countries provide this data on a regular basis. In this regard, in order to obtain the missing data about countries which do not provide or do not have complete information about the changes in value added, mean values for the three years preceding the last date were calculated (it would be incorrect to use the indicator for a greater number of years due to objective reasons that are explained by stages of the scientific-and-technological advance in the field of digital technologies which have become more intense since 2012-2014). In addition, an assumption was admitted, according to which this indicator will maintain its value in the following missing years (mainly 2017). Arithmetic mean values and median values were calculated for each sample for the entire period for each country, and the deviation of these values did not exceeded 0.1%, which is insignificant (between the median value and the arithmetic mean value), as well as similar values for all groups of countries, for each sample and for each year under study, as well as for the global economy in general. The results are presented in Figures 14-20.

Apart from confirmation of hypothesis, this research allowed revealing a number of new facts, which, first, figures of Ghana giving cause for optimism, as well as low figures of investment in value added of the ICT sector in the GDP in the Russian Federation, which topped the list of 8 leading countries among underdeveloped countries according to the level of value added of the ICT sector in the GDP, along with the Republic of South Africa, having shown the values below those of post-socialist European countries, including Belarus. Taiwan was the absolute leader, since it left its closest competitor – Ireland – behind by 5 percentage points, as well as the United States which are at the bottom of the list of the leading countries – by 10 percentage points. In most BRICS countries, except the Russian Federation and the Republic of South Africa, the studied indicator is equal to mean value of 4.2 %.

In order to draw a logical conclusion, we will cite some additional data obtained from another source of the ICT Development Index by countries in 2017.

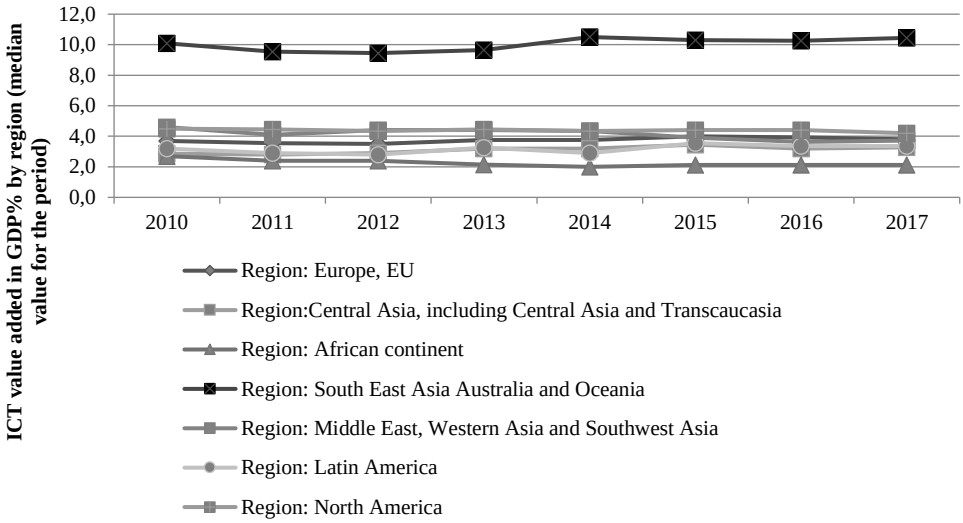

Figure 14 a). The level of value added of the ICT sector in the GDP in 2010-2017 by regions (median values)

Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

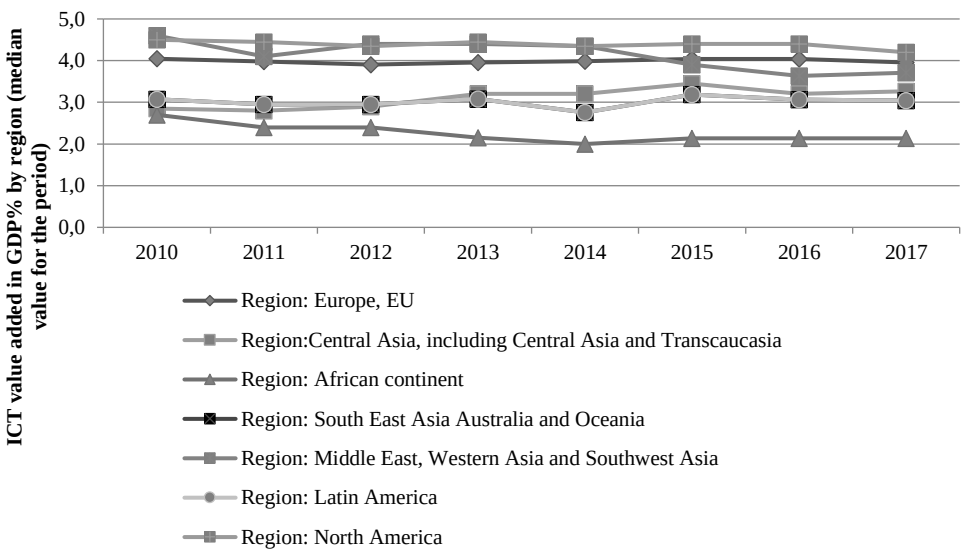

Figure 14 b). The level of value added of the ICT sector in the GDP in 2010-2017 by regions (mean values)

Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

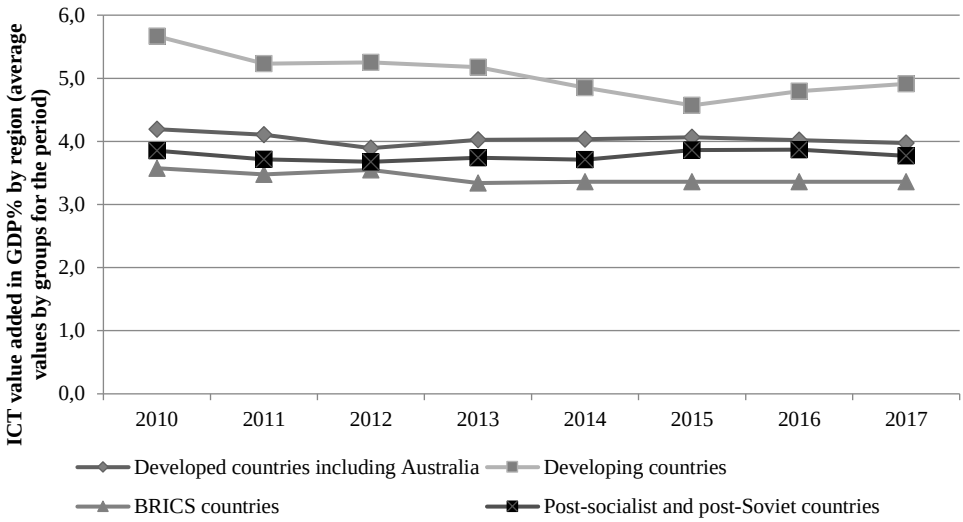

Figure 15. The level of value added of the ICT sector in the GDP in 2010-2017 by groups of countries (mean values)
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

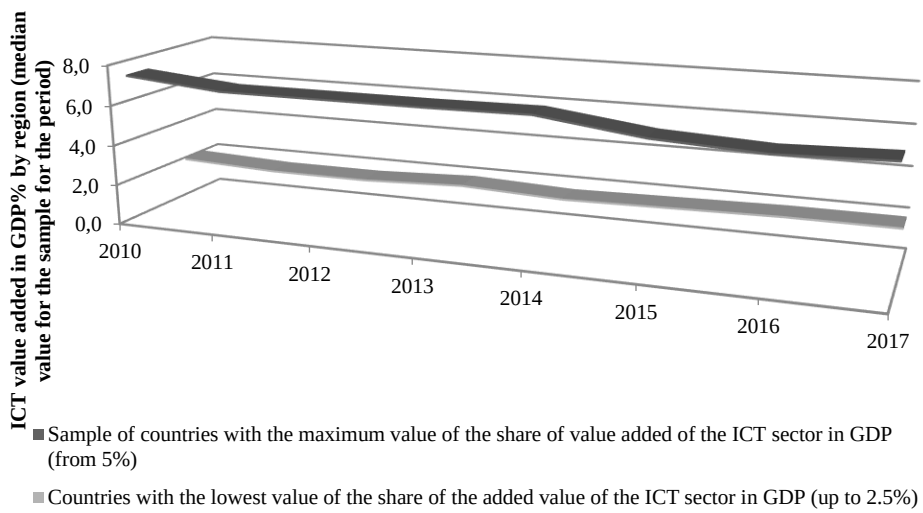

Figure 16. Comparison of countries with the highest (5% and above) and lowest (2.5% and below) share of value added of the ICT sector in the GDP (according to median values)
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

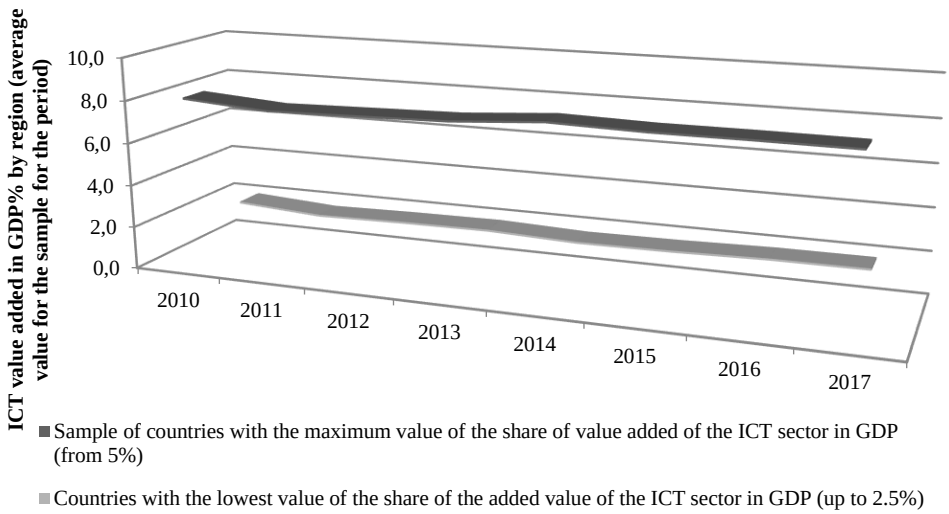

Figure 17. Comparison of countries with the highest (5% and above) and lowest (2.5% and below) share of value added of the ICT sector in the GDP (according to mean values)
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

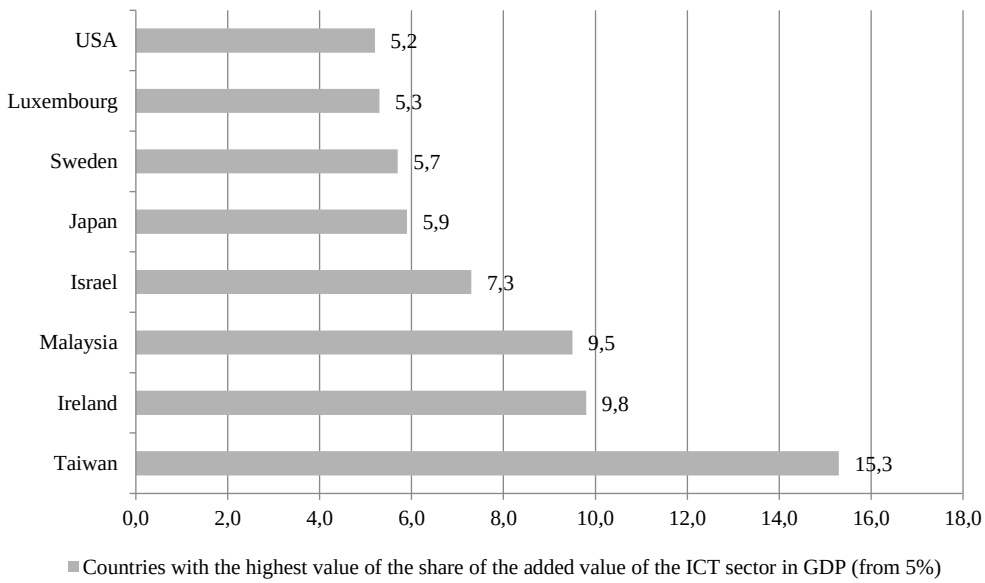

Figure. 18 A group of leading countries in terms of value added in the ICT sector in GDP in 2010-2017 by average annual value (from 5%)
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

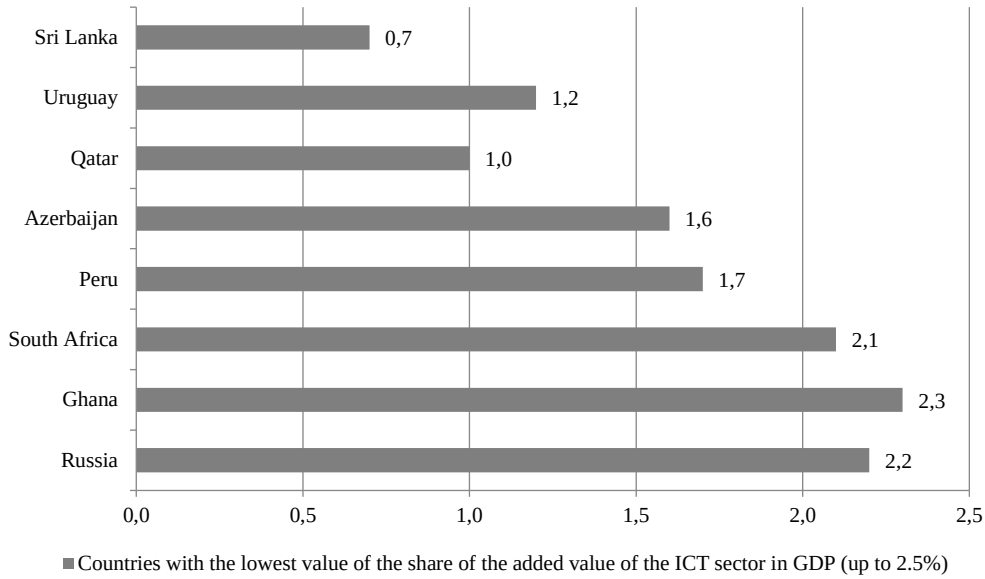

Figure 19. Group of leading countries in terms of the level of value added of the ICT sector in the GDP in 2010-2017 according to the annual average value (5% and above)
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

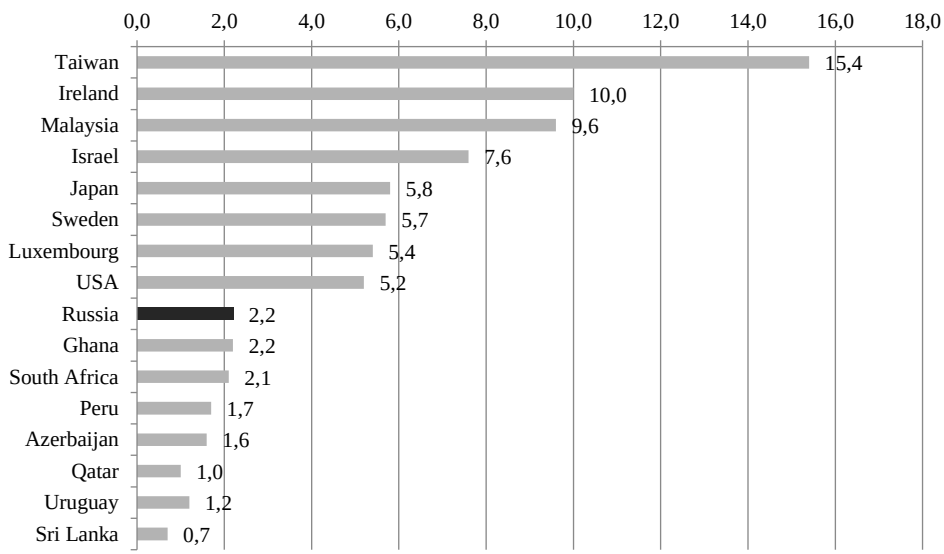

Figure 20. Leading countries and underdeveloped countries in terms of the level of value added in 2010-2017, median values
Compiled by the authors based on: (Cifrovy`e dividendy`, 2016, pp. 74-77).

A strong argument for the acuteness of the problem of disparity of innovative activities determining the development of the digital economy, is also the indirect proof consisting in the fact that a set of statistical data of the World Bank did not included several countries of Africa, Latin America, South-East Asia, which usually are ranked among underdeveloped countries, which is evidence not only of the lack of appropriate statistical data in these countries, but also the miserly amount of investment of value added of the ICT sector in the GDP in these countries, at least until 2018, which is evidence of even higher acuteness of the problem studied in this paper.

5. Results

As we can see, the hypothesis for disparity in development of the digital economy and the existence of its qualitative influence on the development of regions in various countries has been verified. The main problem in this case is not so much digital benefits, but the lack and weakness of the investment-intelligent basis which is required for the commercialization of digital technologies and the quality of economic development. But the proof of this apparent fact did not determine the heart of the problem addressed in the paper. The major problem was, first, determination of the extent of disparity of the development, and second, opportunities for solving this problem. As we can see, some countries with past colonial heritage managed to become the leaders in terms of a number of indicators, including and by indicators of quality of life and development of digital processes, although all this takes place against the backdrop of increasing regional disparities of digital and socioeconomic development.

It is important to note that one of the major findings from the World Bank reports (for the digital economy) is the search for opportunities to overcome the concentration of wealth in some countries and to scale up a more “equitable distribution of digitalization” (Cifrovy`e dividendy`, 2016). This point of view should be divided, since digital benefits should be distributed more evenly a priori to promote qualitative development of regions. However, in our opinion, the thing is not just to achieve even distribution of the digital progress with respect to the countries, but also uneven distribution of resources at the domestic level in these countries. Of course, the creation of quality digital benefits requires significant investments, but they should be made either way. Any country has its own domestic sources for the development of national innovative systems. P. Drucker rightly noted that: “The statement of the “scarcity of capital” is nothing else but a recognition of the fact of being unable to manage it... There are no such countries in the world that lack capital. What we really lack is the effective demand for capital” (Drukker, 2007, p. 115). And, for example, the paper by B.Songwe, the Executive Secretary of the UN Economic Commission for Africa, announces very positive prospects for further development of digital innovations on the African continent, which, though, can only be implemented if macroeconomic stability is maintained (Songve, 2019); in general, the people of the African continent as the region with the largest number of countries which have no innovation and technological potential and are economically and technologically underdeveloped, are characterized by adaptive models of innovations; we have given consideration to some of them (Matkovskaya, 2020).

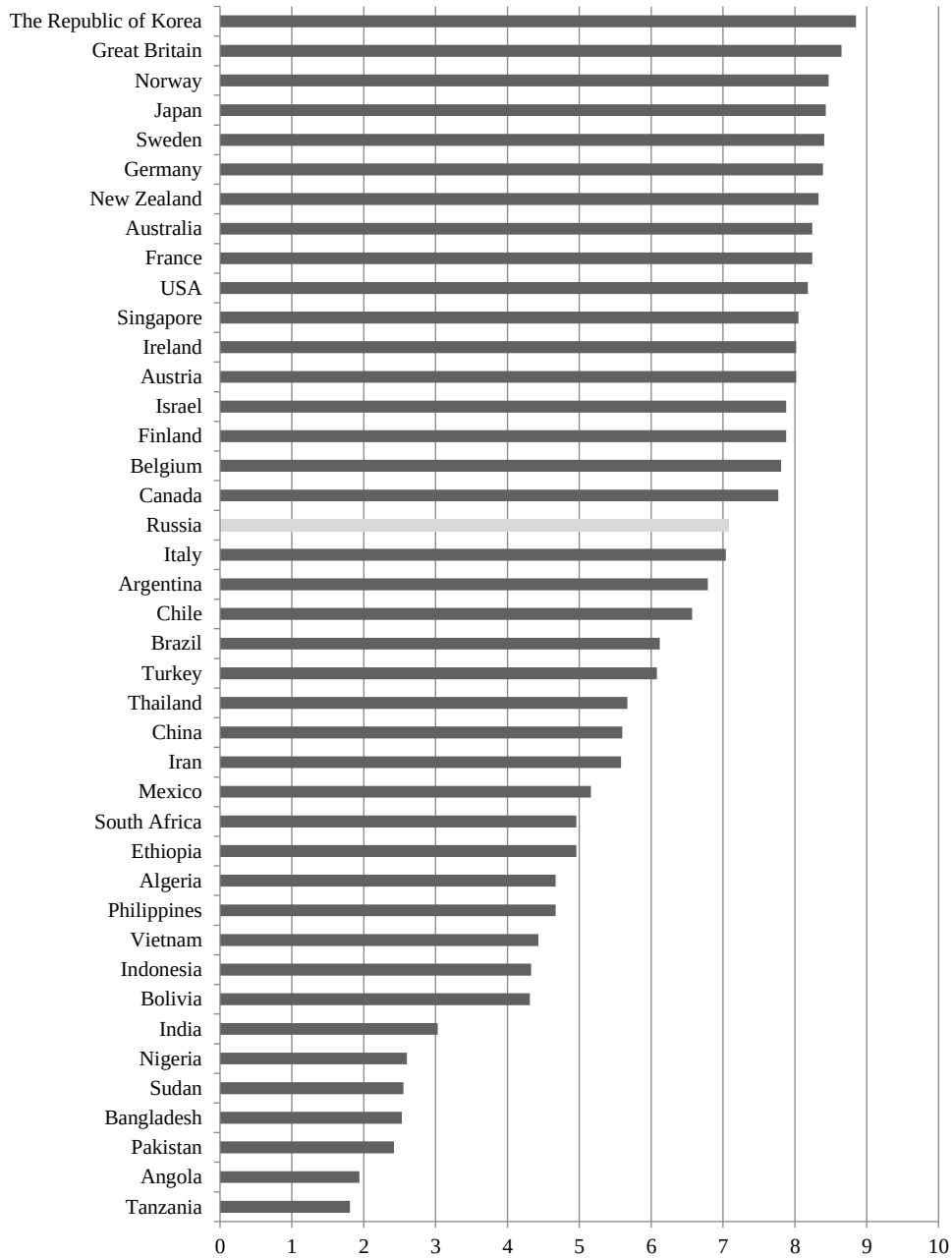

Figure 21. ICT Development Index by countries in 2017
Compiled by the authors based on: (Rossiya i strany` mira, 2018, pp. 282-283).

6. Conclusion

Despite some benefits demonstrated by those developing countries that are referred to the group of "new industrial countries", the overall situation remains difficult, especially considering the well-founded statement of J. Arrighi who pointed out that the gap between developed and developing countries had been consistently increasing throughout the second half of the 20-th century, and in the 80-s there was "a complete collapse in the income"of the "the Third World countries" (Drukker, 2007). Therefore, it can be summarized that, on the whole, there have been no significant improvements so far. Not only remains, but also the growing technological gap between developed and developing countries brings us to disappointing conclusions. The conclusion to be drawn from this paper is that without a specially designed methodology for the formation of a digital foundation in the country, without overcoming the asymmetry of knowledge creation and consumption, without in-depth work at the domestic level to build up the sustainable intelligent and technological development potential, with the advance of digital technologies, the gap in the social and economic development of countries across the world will be further increased and will not lead to high-quality economic development. We believe that in order to bridge this gap, the interest in the digital development of these countries should come directly from the countries and societies of those countries, which should be supported in terms of methodology by international organizations such as UNCTAD, UNDP, as well as on the part of transnational corporations. And this is not just about creating conditions for the development of their socially responsible behavior or forcing the latter (transnational corporations) to invest in research and development in this country, but also the fact that only by developing consumer literacy, which currently includes the digital literacy of population, the market outlets can be developed, which promoted to qualitative development of regions. With the digitalization of the economy, the underdeveloped populations of developing countries will not be able to purchase their products and function in the digital space as a buyer of benefits or a seller of labor force. Therefore, the task of digital development for transnational corporations is primarily the care of stability of their development.

Hence, the task of reduction of the increasing disparity of the digital development is a task of developed economic entities rather than a global problem of disparity of the development, althrow the disparity of development of the digital economy with a breakdown into regions is also a limiting factor of development of the digital economy in the world economy generally.

References:

AI: Government pledges billions aimed at bringing Germany up to speed (2019) [Electronic source] Retrieved from https://www.dw.com/en/ai-government-pledges-billions-aimed-at-bringing-germany-up-to-speed/a-46296320 (Date of access 20.01.2021).

Arrighi, G. (1990). The Developmentalist Illusion: A Re-conceptualization of the Semiperiphery. Martin W.G. (Ed.). Semiperipheral States in the World-Economy, Greenwood Press, Wesport, CT. pp. 11-42. [Electronic Source] Retrieved from https://pdfslide.net/documents/1990-arrighi-developmentalist-illusion.html. (Date of access: 30.03.2021).

Asheim, B., & Isaksen, A. (2002). Regional Innovations Systems: the Integration of Local "Sticky" and Global "Ubiquitious Knowledge". *The Journal of Technological Transfer*, *27*(1), 77-88.

Brodel`, F. (1992). *Vremya mira. Material`naya civilizaciya, e`konomika i kapitalizm XV-XVIII vv.* [Time of peace. Material civilization, economics and capitalism XV-XVIII centuries]. T. 3. Moscow: ‘‘Progress’’ Publishers, 680p., (In Russ.).

Brodel`, F. (1993). *Dinamika kapitalizma* [The dynamics of capitalism]. Smolensk: “Poligramma” Publishers. 128 (In Russ.).

Brynjolfsson, E., & Kahin, B. (2000). *Understanding the Digital Economy.* Cambridge, MA: MIT Press.

Bukht, R., & Heeks, R. (2018). Defining, Conceptualising and Measuring the Digital Economy. *International Organisations Research Journal, 13*(2), 143-172. doi: 10.17323/1996-7845-2018-02-07.

Carlsson, B. (2006). Internationalization of innovation systems: a survey of the literature. *Research policy, 35*(1), 56–67. [Electronic Source] Retrieved from https://www.researchgate.net/publication/222566174_Internationalization_of_innovation_systems_A_survey_of_the_literature. (date of access: 06.02.2021).

Christaller, W. (1972). How I discovered the theory of central places: A report about the origin of central placcs. In P W. English & R. C. Mayfield (Eds.), *Man, space, and etl'irorurctrt: Concepts in cr.tntemporary lruman geograpftl'*(pp. 601-610). New York: Oxford University Press.

Cifrovy`e dividendy`. Obzor. Doklad o mirovoj razvitii, 2016 (2016) [Digital dividends. Overview. World Development Report 2016 (2016) [Electronic resource]. Retrieved from http://data.gov.ru/doklad-o-mirovom-razvitii-cifrovye-dividendy-2016-obzor-vsemirnogo-banka-2016-god. (Date of access 20.01.2020).

Cooke, P. (1992). Regional innovation systems: competitive regulation in the new Europe. *Geoforum, 23*(3), 365-382. doi: 10.1016/0016-7185(92)90048-9.

Digital Economy Report 2019. United Nations Conference on Trade and Development. Value creation and capture: Implications for Developing Countries (2019). [Electronic Source] Url: http: un.org/publications. (date of access: 06.02.2020).

Drukker, P. F. (2007). *E`poxa razry`va: orientiry` dlya nashego menyayushhegosya obshhestva* [The Age of Gap: Guidance for our changing society]. Moscow: OOO “I.D. Vil`yams” Publishers. (In Russ.)

Fridman, J. (2010). *Sleduyushhie 10 let* [The Next 10 Years]. Moscow: E`ksmo Publishers. 320 (In Russ.).

Fridman, J. (2010). *Sleduyushhie 100 let: Prognoz soby`tij XXI veka* [The Next 100 Years: Forecasting 21st Century Events]. Moscow: E`ksmo Publishers. 336 (In Russ.).

Fursov, A. I. (2018). *Vodorazdel. Budushhee, kotoroe uzhe nastupilo* [Watershed. Future that has already come]. Moscow: Knizhny`j mir Publishers, 352 (In Russ.).

Gross Domestic Product (GDP), 2019. (2019) [Electronic source] Retrieved from http://www.worldbank.org (Date of access: 16.02.2020).

Hippel, E. (2002). *The sources of Innovation.* NY, New York: Oxford University Press, Inc. doi: 10.1016/j.respol.2005.08.003.

Human Development Index Report 2019. (2019). United Nations Development Programme (UNDP). [Electronic source] Retrieved from http//:hbr.undp.org/. (Date of access: 16.02.2020).

Kagarliczkij, B. Yu. (2010). Ot *imperij – k imperializmu* [From empires to imperialism]. Moscow: Izdatel`skij dom Vy`sshej shkoly` e`konomiki. Publishers (In Russ.).

Kastels, M. (2000). *Informacionnaya e`poxa: e`konomika, obshhestvo, kul`tura* [The Information Age: Economics, Society, Culture]. Moscow: GU VShE` Publishers. (In Russ.).

Manyika, J., Bughin, J., Lund, S., Nottebaum, O., Poulter, D., Jauch, S., Ramaswamy, S. (2014). Global flows in a digital age: How trade, finance, people, and data connect the world economy. McKinsey Global Institute. [Electronic Source] Retrieved from https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Globalization/Global%20flows%20in%20a%20digital%20age/Global_flows_in_a_digital_age_Full_report%20March_2015.pdf. (Date of access: 30.03.2021).

Matkovskaya, Ya.S. (2020). Innovacionnoe sotrudnichestvo severoamerikanskih i afrikanskih kompanij Afrika v usloviyah formirovaniya policentrichnogo mira. M, Institut Afriki RAN, pp. 170-177 (In Russ.).

Negroponte, N. (1995). *Being Digital*. NY: Knopf.

Porter, M. (2003). *Konkurenciya* [Competition]. Mosvow: Izdatel`skij dom "Vil`yams" Publishers. 496 (In Russ.)

Porter, M. (2006). *Konkurentnoe preimushhestvo: Kak dostich` vy`sokogo rezul`tata i obespechit` ego ustojchivost`* [Competitive advantage: How to achieve a high result and ensure its stability]. 2 ed. Moscow: Al`pina Biznes Buks Publishers. 715 (In Russ.).

Rossiya i strany` mira. 2018. (2018): Stat. sb. [Russia and the the World. 2018: Stat. Collection]. Moscow: Rosstat Publishers, 375. (In Russ.).

Science and Engineering Indicators 2018. (2018) [Electronic source] Retrieved from http://www.nsf.gov/statistics/. (Date of access: 06.02.2020).

Songve, V. (2019). Cifrovaya Afrika Texnologii mogut stat` tramplinom dlya bolee by`strogo i inklyuzivnogo rosta [Digital Africa Technology Can Become a Springboard for Faster and Inclusive Growth] Finansy` i razvitie, June, 27-29, (In Russ.).

The Global Competitiveness Report, 2019. (2019) [Electronic source] Retrieved from http://weforum.org (Date of access: 16.02.2021).

Turou, L. (1999). *Budushhee kapitalizma.[* The future of capitalism]. Novosibirsk: Sibirskij xronograf, Publishers, 430, (In Russ.)

Wallerstein, I. (1979). *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. NY: Academic Press, pp. 229-233.

Wallerstein, I. (2008a). Modernizaciya: mir praxu ee [Modernization: Peace be upon her] *Sociologiya: teoriya, metody`, marketing, 2*, 21-25 (In Russ.).

Wallerstein, I. (2008b). *Istoricheskij kapitalizm. Kapitalisticheskaya civilizaciya* [Historical capitalism. Capitalist civilization]. Moscow KMK Publishers, 176 (In Russ.).

Yana S. Matkovskaya
V.A. Trapeznikov Institute of Control Sciences of the Russian Academy of Sciences,
Moscow, Russia
yana.s.matkovskaya@gmail.com
ORCID 0000-0001-9183-1202

Ksenia V. Ekimova
Plekhanov Russian University of Economics (PRUE),
Moscow, Russia
ekimovak2003@yandex.ru;
ORCID 0000-0002-2445-1346

Nikolay V. Kuznetsov
State University of Management,
Moscow, Russia
nkuznetsov@outlook.com;
ORCID 0000-0001-9897-1531