
Peculiarities of the Process of Digitalization of Economies in the Eurasian Economic Union States

Voronina T.V.,¹Yevchenko N.N.,² Yatsenko A.B.,³Madiyarova D.M.⁴

Abstract:

The article reveals the structure and peculiarities of digital economy of the Eurasian Economic Union (EAEU) states. Different scale of economies and level of maturity of institutions of national economic systems and differences in the pace and priorities of reforms in the sphere of information and communication technologies (ICT) are highlighted as peculiarities.

Based on assessment of the ICT sphere development in the EAEU countries, the conclusion was drawn that the integration association states have a reasonably developed digital economy and have formed a positive trend of its development at a level higher than the world average.

It is established that the need for bridging the digital divide of the EAEU states dictates the priority of coordinated efforts, since only the integration interaction as a whole can provide synergy for the entire association in comparison with the implementation of national digitalization Programs and Strategies, and Digital Single Market maximizes the national potentials of the EAEU countries in the sphere of ICT.

Keywords: *Digital economy, digitalization, common digital space, information and communication technologies.*

JEL Classification Codes: F15.

¹Doctor of Science (Economics), Professor, Head of Chair of “World Economy and International Relations” of Southern Federal University, Rostov-on-Don, Russian Federation, e-mail: t.v.voronina@mail.ru

²Doctor of Science (Economics), Professor of the Department of “World Economy and International Relations” of Southern Federal University, Rostov-on-Don, Russian Federation, e-mail: natayevch@yandex.ru

³Candidate of Science (Economics), Associate Professor of the Department of “World Economy and International Relations” of Southern Federal University, Rostov-on-Don, Russian Federation, e-mail: ashkhen@list.ru

⁴Doctor of Science (Economics), Professor of the Department of Economics of Eurasian National University after L.N.Gumilev, Astana, Kazakhstan, e-mail: mdm-diana@mail.ru

1. Introduction

Currently, the processes of digital economy formation and development are the focus of attention throughout the world. Digital economy is an objective reality of today, the worldwide trend determining the immediate future prospects, including economic future. Digital technologies – the Internet, mobile phones and all other means of collection, storage, analysis and exchange of information in digital form – spread rapidly in the world.

Digital technologies provide the sources of competitive advantages of the states and their groups and business entities due to changes in the traditional ways of carrying on international trade, reduction of costs of providing cross-border services and inclusion of enterprises in global and regional value chains. National states, as well as the countries included in the world integration associations, include clauses pertaining to stimulation and regulation of the digital economy sphere in the texts of their trade agreements in order to improve competitiveness and strengthen positions in the global world (Anureev, 2017; Akopova and Przhedetskava, 2016).

The Eurasian Economic Union (EAEU) as a successful integration association also requires digital transformation of economy through the establishment of the digital single market corresponding to the economic union stage. It is important to emphasize that stimulation of the ICT development is closely linked with the growth in non-resource exports of the EAEU states. This being the case, the importance of the digital economy for management on the national level is obvious. In this regard, the aim of this article is to justify the peculiarities of the process of digitalization of the EAEU states' economies based on the analysis of their digital economy state and development strategies.

2. Methods

The methodological basis of research is a comparative analysis of the digital transformation in the EAEU, which was made for two management levels: member states (Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia) and supranational level – EAEU. The data of the Eurasian Economic Commission (EEC) and certain indicators and rankings of international organizations using indices reflecting the digital aspects of development of the countries of the union during the period of 2008-2017 and expert reviews were used as the empirical base for the evaluation of the state of development of the EAEU countries' digital economy. National Programs and Strategies of development of the EAEU countries in the field of digital economy and “Main Areas of the Digital Agenda of the EAEU up to 2025” served as the regulatory environment of the research. Following the logics of the article, the authors justify the importance of the digital economy development for the EAEU countries and formulate their research goal in its first part. The following section outlines the methodology and empirical and regulatory environment of research. In

the third section, main research results are formulated, which are then discussed in the fourth section of this article. The article ends with conclusions.

3. Results

High digitalization rates during the period of 2008-2017 are peculiar to the Eurasian Economic Union countries as a whole. However, the degree of digital economy development in the EAEU countries varies due to their economic differentiation. At the same time, the weakness of coordination mechanisms at the level of the EAEU leads to under-utilization of opportunities of the national economies' digitalization. Unlike national Programs and Strategies, joint coordinated efforts of the EAEU countries at the supranational level can ensure greater cumulative effect for all states of the Union, as common digital space provides synergetic effect for the development of the EAEU as an integration association. The coordinated elimination of barriers to electronic commerce and investment in the digital sectors combined with a unified regulatory and legal framework and coordinated ICT sphere funding mechanisms as well as control mechanisms can create significant economic and social benefits for each integration association state.

4. Discussion

A review of the scientific literature suggests that there are a lot of publications addressing the issues of essence and trends of the digital economy transformation and its impact on the economic growth of national economies. This being the case, there has been relatively little research pertaining to digital economy development in integration associations and its peculiarities during the formation of their digital single markets. Almost no publications related to this topic exist in the EAEU as well.

Digital economy research foundations were laid in the 60-70s of the twentieth century by D. Bell, who associated the development of post-industrial society with the expansion of the service sector in economy and the increasing dependence of economy on science as a tool for innovation and organization of technological changes in society (Bell, 1999). Revolution in computer science and active spread of digital technologies in business and society introduced the "digital economy" definition for scientific use. However, so far there is no single interpretation of this notion, and it continues to be a subject of discussion for economists.

Zimmermann defines the digital economy as the economy based on information digitization and its respective information and communication infrastructure (Zimmermann, 2000). Guo, Ding and Lanshina define the digital economy a little restrictively, interpreting it as a series of economic activities or social behavior based on the information and communication technologies (ICT) and via the Internet (Guo *et al.*, 2017).

The majority of authors note that digital economy contributes to the rapid promotion of goods to markets and development of service sphere through the exchange of digital information and online trade. In this regard, there are three principles on which the digital economy is based: support (equipment, software, telecommunications, networks, etc.), e-business (processes which an organization conducts through computer networks) and e-commerce (online purchase of goods) (Mesenbourg, 2001; EUJCIC, 2015).

A number of studies point to dissimilarity of the digital economy and digitalization. Digitalization is treated as a digital transformation of economy, achieved through the interaction of digital technologies, such as cloud computing, artificial intelligence and Internet of Things with the physical infrastructure of ICT (Banga and Velde, 2018). A similar conclusion is made by Walwei, according to whom, digitalization is the production and use of digital logic circuits and their derivatives, including a computer, smartphone and the Internet (Walwei, 2016).

According to the authors of this article, such differentiation is fair. If the digital economy is some attained state of economy, digitalization means trends of its further developments affecting the structure, hardware, technology and their dissemination rates.

It is obvious that cooperation in the digital sphere is an important tool for economic integration. Therefore, publications of experts from international organizations focus on the potential of the digital economy for intensification of integration in regional integration associations (EU, ASEAN, MERCOSUR, etc.). Thus, on the one hand, it is feared that in the conditions of technological differentiation of the ASEAN countries digitalization will exacerbate their economic inequality. At the same time, there are opportunities for the least digitally advanced ASEAN member states to make technological leaps forward with the help of more advanced integration partners (The Asean Post, 2018). World Economic Forum analysts note that Internet access is already insufficient to strengthen the integration in the ASEAN countries. Priorities include harmonization of rules and liberalization of the IT sector, as well as joint efforts to modernize the education systems of all ASEAN states (WEF, 2016).

Exploring the potential of development of the ICT in Latin America and the Caribbean countries, ECLAC and Development Bank of Latin America (CAF) experts indicate the importance of the joint development of the digital infrastructure and services for various integration associations of Latin America and the Caribbean, as well as benefit from implementation of the best practices of the EU in this sphere. Digital integration in MERCOSUR is regarded as a tool for achieving the goals of the integration association in the sphere of business, mobility of population and customs cooperation (EEC, 2017).

The European Commission understands the digital single market in the EU as a barrier-free space within 28 countries providing economic entities with access to digital and online technologies and services safely, legally and at an affordable cost to improve the living standards of citizens and simplify business (The EU and the digital single market, 2017). The authors of the article agree with this interpretation and acknowledge it as best of all reflecting the essence of the digital single market as a result of the integration interaction corresponding to the stage of economic union.

In 2016 EAEU began developing proposals on forming the common digital space of the integration association. The priorities were identified as follows: development of the regulatory and legal framework of the EAEU and harmonization of member states' legislation; increased use of ICT to improve the effectiveness of cross-border interaction between economic entities at all levels; development and implementation of joint projects and programs aimed at the digital transformation of economies of the countries of the Union (EEC, 2017). Attention of the EAEU countries to digital economy development is stipulated by its direct influence on the structure and dynamics of the GDP and foreign trade (table 1).

Table 1. *The share of ICT in the GDP, imports and exports of the EAEU countries, %⁵*

Country	Share of ICT in the GDP, %	Share of ICT goods in the country's imports, %, 2015	ICT goods exports (% of the goods exports), 2015	ICT services exports (% of the services exports), 2016
Armenia	4.0	3.512	0.285	11.4
Belarus	5.1	3.168	0.564	23.6
Kazakhstan	3.9	5.985	0.843	8.8
Kyrgyzstan	No Data Available	2.215	0.056	14.4
RF	2.9	7.885	0.797	32.0

Table 1 shows that Kazakhstan and Russia have the best parameters in respect of the share of ICT goods exports and Russia and Belarus are far ahead of other countries regarding ICT services exports, which is correlated with the ICT sphere development results presented below in table 3. Data on the proportion of ICT in the GDP of the countries, in our view, lack reliability and comparability, as they are obtained from various national sources, and calculation methods may vary. However, one can still make a conclusion that these figures presently are low enough for all countries. But within the framework of the digital transformation this parameter should be equal to about 20-30% for the EAEU countries by 2025 (EEC, 2017). It is obvious that if the countries of the Union do not synchronize their efforts

⁵Compiled by the authors according to the data of the Global Statistics Library, 2018; IT Armenia, 2016; KAIT, 2018; IT Belarus, 2017.

with respect to the digital agenda implementation, its contribution to the GDP growth will be much lower.

National Strategies or Programs of the digital sphere development are adopted in all the EAEU countries starting from 2016. Main areas of the digital development of Armenia, according to the “Digital Agenda of Armenia 2030” Strategy (2017), include: creation of the digital government, enhancing cybersecurity, private sector development, institution-building and formation of digital skills and infrastructure.

Digital development of Belarus in line with the Informatization Development Strategy for 2016-2022 (2015) and Decree “On the Digital Economy Development” (2017) is aimed at: creating conditions for attracting global IT companies, production of competitive IT products; investing in the future (IT-personnel and education); introduction of new financial instruments and technologies and removing barriers to the introduction of new technologies.

Kazakhstan, following the Third Modernization Program and “Digital Kazakhstan” State Program for 2018-2022 (2017), relies on the digitalization of branches of economy; transition to digital state; implementation of the digital Silk Road; developing human capital and establishment of the innovation ecosystem.

Kyrgyzstan chose the following as the priorities of the National Sustainable Development Strategy for 2018-2040 and “Taza Koom” State Informatization Project (2017): building a world-class digital infrastructure; creating an enabling environment for sustainable innovation development; creating digital opportunities for all segments of the population; involvement of citizens in the country management through digital technologies; formation of the open digital society; creation of a regional hub of the digital Silk Road for IT-business and IT innovations.

Russia, implementing the “Digital Economy” National Program for the period up to 2024 (2017), relies on statutory regulation; human resources and education; forming research competences and technical capacities; information infrastructure and information security.

Table 2. *Anticipated results of digital development in the EAEU countries⁶*

Country	Anticipated result
Armenia	- 100% digitalization in relations between state and business and 80% in respect of services for citizens; by 2030: - 50% reduction of the administrative costs; - be included in the Global Competitiveness Index Top 30;

⁶ *Compiled by the authors according to the data of EEC, 2018*

	<ul style="list-style-type: none"> - be included in the Global Talent Competitiveness Index Top 30; - be included in the E-Government Development Index Top 20.
Belarus	<ul style="list-style-type: none"> - provide Internet access to 82% of households; - ensure the number of wireless broadband Internet subscriptions – 90 units per 100 people by 2020; - IT sector export revenue growth from 1 billion US dollars in 2017 to 4.7 billion US dollars by 2030; - the increase in the number of people employed in IT sector from 30 thousand to 100 thousand people by 2030.
Kazakhstan	<ul style="list-style-type: none"> - proportion of Internet users – 82% of the population; - ranking among the 30 of the most developed countries of the world by 2050; - creation of 300 thousand jobs by 2022; automatization of 80% of public services; - 49.8 % productivity growth in the processing industry; - GDP growth up to 30% from 2025.
Kyrgyzstan	<ul style="list-style-type: none"> - share of Internet users – 75% of the population; - Internet availability for 100% of households; - 100% provision of access to Internet to rural population; - be included in the Top 50 countries in the UN E-Government Development Index; - be included in the Top 50 countries in the Information Society Index (according to the methodology of the WCO)
RF	<ul style="list-style-type: none"> - 25% growth of the information technologies in management by 2020, and 50% by 2025; - share of households with broadband access to the Internet by 2020 – 50%, and by 2025 – 97%; - share of electronic government services from the total number of services provided by 2020 – 50%, and by 2025 – 80%; - reduce the amount of commercial electrical energy losses in comparison with 2017 down to 5% by 2025
EAEU	<ul style="list-style-type: none"> - additional EAEU GDP growth up to 1% a year; - 66.4% employment growth in the ICT sector and 2.46% additional increase of total employment; - additional growth in ICT services exports up to 74%.

Unfortunately, it should be noted that national Strategies and Programs are implemented, in the first instance, on the basis of their own resources, so by virtue of economic differentiation, different digitalization target indicators are chosen as benchmarks (Table 2), also possible opportunities and synergy of integration are poorly taken into account. National documents of the EAEU countries pay little attention to coordination of Digital Development Strategies with similar documents of integration partners.

In this regard, we'd like to note that dynamically developing integration groups and emerging mega-alliances recognize the leading role of digital technologies in ensuring their competitive advantages, so the importance is assigned to joint efforts in the development of ICT. Experts estimate that thanks to the joint efforts of the

ASEAN countries, digital economy will grow by 500% by 2025 and will reach 200 billion dollars. (The Asean Post, 2018). At the initiative of the USA, 24 articles on digital economy regulation, including the issues of security and confidentiality of personal data, e-commerce of digitized goods and services, copyright, etc., were included in the documents of Trans-Pacific Partnership (TPP). Regional Comprehensive Economic Partnership (RCEP) widely discusses proposals made by China on e-commerce, rules on cross-border data privacy within APEC and cyberspace security.

CARICOM endorsed not only the “Road Map” on harmonization of ICT at the regional level, with emphasis on development of a regional broadband infrastructure up to 2019, but also the budget for promotion of these activities.

Additional Protocol to the Agreement for the Pacific Alliance (TA) includes 2 chapters on telecommunications and e-commerce. To stimulate the latter, e-commerce facilitation procedures are stipulated, including customs procedures; unification of rules of Internet advertising, protection of the rights of consumers and their personal data and recognition of digital signature are proposed (Regional digital market. Strategic aspects, 2018).

However, the European Union advanced more than any other integration association in the implementation of the focus on formation of the digital single market. According to the authors of this article, the experience of the EU on forming the digital single market is most valuable and serves as an example for the existing integration associations. Standards of protection of personal data and electronic payments and steps for streamlining e-commerce procedures are developed and implemented with support from the European Commission and through the efforts of all EU member states (Malstrom, 2016). The importance of the information sector for the EU lies in the fact that it creates almost 5% of the EU GDP, it accounts for ¼ of the total costs for business, and investment in ICT make a provision for 50% of the total productivity growth in Europe. Digital Single Market, fully functioning in the European Union, may provide the EU budget with 415 billion euro of additional income per year; create hundreds of thousands of new jobs; save 11 billion euro for consumers when they are shopping online; and for small business savings can be up to 9,000 euro for each market thanks to the common legal regulations and coordinated legislation; as well as improve access of the population of 28 countries to information (EU, 2017).

EAEU is so far inferior to other world integration associations in coordination of the digital development of member states. Nevertheless, the outlines of a common vision of digitalization at the level of the Eurasian Union are already approved in “Main Areas of the Digital Agenda of the EAEU up to 2025” (2017). They include: ensuring high quality and sustainable economic growth; transition to new technological paradigm; synchronization of digital transformations of member states; use of new business processes, creation of digital assets and encouraging and

supporting new digital initiatives. However, Main Areas do not stipulate any mechanisms for their financing, deadlines, control of performance indicators pertaining to the digitalization progress, as well as their evaluation indicators. In this connection, the relevant tasks of the Eurasian Economic Commission as a supranational body of the EAEU should be: 1) coordination of national strategies for digital development of the EAEU countries; 2) monitoring the statutory and regulatory convergence in the field of ICT; 3) development of standards for providers and consumers of IT services, including security and international roaming issues; 4) development of indicators of digital development convergence at the level of the EAEU.

The development of digital technologies opens up new opportunities for cooperation of the EAEU countries on the basis of the single network infrastructure, shared digital platforms and new digital solutions that reduce distances, bridge over the borders, create new jobs and develop non-existing earlier areas of business activity. To implement these objectives, the existence of a powerful technical basis in member states, which would combine their efforts towards creating a common digital space of the EAEU, is necessary.

Analyzing the data of international organizations relating to broadband Internet access, availability of computers and distribution of Internet technologies required for intensive development of a common digital space of the Eurasian Economic Union countries, it is necessary to take into account the heterogeneity of the socio-economic development of states, which directly affects the level of their digitalization (Table 3). The figures in Table 3 indicate that broadband Internet capabilities vary considerably in the EAEU countries. The RF has the highest absolute indicator (almost 31 million), as to the relative indicators – Belarus (33.41 per 100 people) and Russia (21.44 per 100 people) are the leaders.

Table 3. Indicators of development of the ICT sphere in the EAEU countries and other states of the world, 2016.⁷

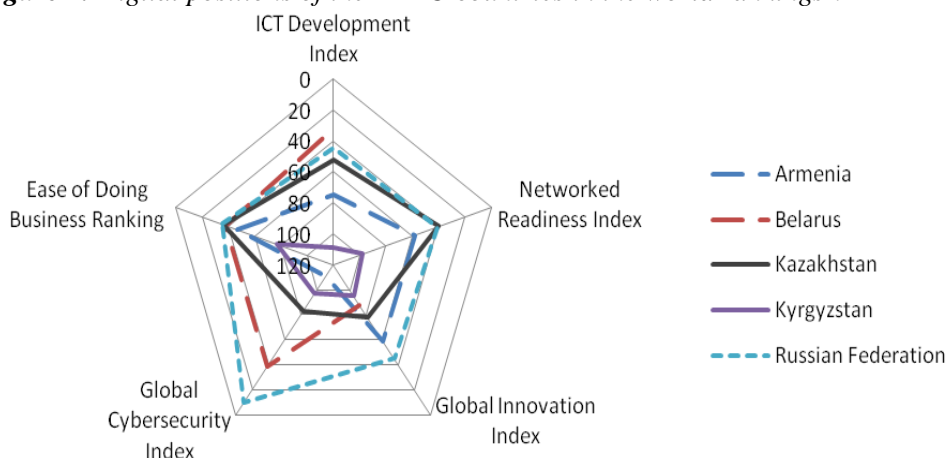
Country	Fixed-broadband subscriptions		% of users		
	thous.	per people 100	Computer	Internet	Mobile phone
Armenia	315	10.76	67.9	64.3	~100
Belarus	3 163	33.41	71.6	71.1	96.0
Kazakhstan	2 573	14.14	73.9	74.6	89.5
Kyrgyzstan	258	4.27	-	30.3	-
RF	30 872	21.44	70.9	73.9	~100
Maximum value	378 540 China	50.25 Gibraltar	98 Kuwait	98.2 Iceland	100% Qatar Bahrain

⁷ Compiled by the authors according to the data of Noravank Foundation, 2018.

However, in comparison with the world leaders as per the noted indicators (China and Gibraltar), the EAEU countries' positions are quite modest. With regard to the spread of computers for personal use, there is a slight gap between the EAEU countries (except for Kyrgyzstan, the indicators for which are not available), which ranges from 67.9 per cent in Armenia to 73.9 per cent in Kazakhstan. Data on the use of Internet technologies also vary slightly: 74.6% – Kazakhstan, 73.9%, – Russian Federation, 71.1% – Belarus, 64.3%, – Belarus, Kyrgyzstan – no data available. But they lag behind the global leader – Iceland, with its rate of 98.2%. The level of usage of mobile phones is quite high and is about 100% in the Russian Federation and Armenia. When analyzing the availability of ICT resources, a substantial difference of Kyrgyzstan from all other states is observed, which of course, will significantly restrain its involvement in the process of creating a common digital space of the EAEU.

Comprehensive picture of the level of development of digital technologies is provided by different international rankings, allowing for comparative analysis of the states' positions based on them (Figure 1). The data presented in Figure 1 confirm that there are significant differences in levels of development of the ICT among the EAEU countries. Notably, these differences relate mainly to their economic development levels. In particular, Kyrgyzstan is lagging behind. However, this lagging behind can be seen as underused market potential which can be used by investors and entrepreneurs in a favorable institutional environment.

Figure 1. *Digital positions of the EAEU countries in the world rankings*⁸.



⁸ Compiled by the authors according to the data of the ICT Development Index, 2017, 2015), Global Cybersecurity Index, 2017, Ease of Doing Business Ranking, 2018, IMD World Digital Competitiveness Ranking, 2018.

Comparative analysis of resulting indicators of the process of establishment of the digital economy of the EAEU member states was held according to the data of the rankings of international organizations and professional associations for 2008-2017 (Table 4).

Table 4. Comparison of the ICT of the EAEU and worldwide average level (ICT Development Index, 2017)

	2008	2010	2011	2012	2013	2015	2016	2017	2017/ 2008, %
Average ICT index* for the EAEU	3.53	4.60	4.94	5.46	5.71	5.88	6.11	6.31	178.75
Worldwide average ICT index	3.32	3.94	4.15	4.60	4.77	5.03	4.94	5.11	153.92
EAEU ICT deviation from the worldwide average ICT, percentage points	0.21	0.66	0.79	0.86	0.94	0.85	1.17	1.20	571.43
EAEU ICT deviation from the worldwide average ICT, %	6.45	16.75	19.13	18.74	19.62	16.98	23.64	23.44	363.41

Analysis of the decade (2008-2017) dynamics of digitalization of the economies of states within the EAEU characterizes the integration association as a stable system with a positive trend of development in the field of digitalization in relation to worldwide average indicators (table 4). The increase of the ICT index difference pertaining to the average EAEU indicators is stipulated both by its high primary (above average) level, and successful integration strategies of national states. As a result, the speed of exceeding the world average level reached 5.7 times.

4. Conclusion

Thus, despite the existence of the established in the research digital divide in the positioning of the ICT sector in the EAEU states during the period of 2008-2017, exceeding the world average rate of digitalization growth is characteristic for the Eurasian Economic Union as a whole. However, the peculiarities of the integration association revealed in the research, including different scale of economies and level of maturity of institutions of national economic systems, differences in the speed and depth of reforms in the field of ICT, weakness of coordination mechanisms at the level of the EAEU, as well as the priority of digitalization national programs and

strategies lead to under-utilization of digitalization integration capabilities of national economies.

World experience shows that the strategy of integration associations in the development of digital technology, including the elimination of barriers to electronic commerce, stimulating investment in the digital sector, combined with the use of a uniform regulatory and legal framework and coordinated funding mechanisms of the ICT sector and uniform monitoring mechanisms promote synergetic effect and obtaining significant economic and social benefits for each nation state – its member.

It is obvious that Digital Single Market is able to maximize national capacities of the EAEU countries in the sphere of ICT. Taking into account the infrastructural and institutional nature of the process of digitalization of economies, coordinated efforts of the EAEU countries in this sphere should be prioritized, as in general only integration interaction can provide greater effect for all the states of the Union in comparison with the implementation of their own national Programs and Strategies.

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