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Marketing ensuring of the competitiveness of the Republic of Kazakhstan regions in the transition to the digital economy

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A B S T R A C T

Transition to the digital economy determines the readiness of the national economy complex for the emergence of new industries, forms of economic cooperation, and general development of the regional economy on the whole, both for a separate region and for the entire country. Authors determine the possibility of application of digital transformations in regional development. This is due to the fact that the Republic of Kazakhstan is a country with widely differentiated regional development. This means that regional development should be proceed not only from the application of digital technology directly within the regional economy, but also from the introduction of digital technology in certain sectors of the industrial complex. The novelty of the study lies in the determination of the possibility of implementing digital technology as an integral part of the economy and the possibility of clustering individual industries on the basis of digital platforms and communication technology. The authors provide mathematical justification of the integration model for digital complexes within various economy sectors of individual regions. Authors propose using the developed mechanism for structuring the current situation of regional economic development. The practical significance of the study is determined upon designing regional development programs. This will facilitate the increase of position of Kazakhstan in the ratings of world development and economic comfort of living in the state.

1. Introduction

Economy digitalization is regarded as a fundamental factor of economic growth, innovation and competitive environment, employment creation and social progress in general. The key factor of digital economy is the digital data, which multiply the scope of processed information, reduce the time for its analysis and significantly boost its efficiency for the production of technology, goods, and service enhancement (Hoontrakul, 2018). The digital economy ecosystem has several aspects of transformation of the traditional processes, namely:

- reorientation of economic structure, transformation of market concepts and market relations, change of understanding of managerial and social environment, penetration into each of the given aspects of new information technology;

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- fundamental change of the economy structure due to more efficient virtual structures and consequential modernization of economic processes;
- the leading part in the economy management belongs to the institutions based on the innovative digital models and information processes.

The economy digitalization facilitates many positive social and economic effects. The main economic advantages of the digital economy include more rapid economic growth, advancement in SME development, increased efficiency of business processes, increased employment in the information technology industries. The social effects of the economy digitalization are: increased availability of financial services, education cost reduction through its virtualization, healthcare quality improvement through patients' data digitalization, reducing the negative impact on the environment.

2. Literature review

The defining trend of the world economy development in the 21st century is the spread of information and communication technology, resulting in formation of the so-called "digital economy" and introduced such concept as "digitalization" into scientific discourse (Bogoviz *et al.*, 2019). Application of digital technology had the most significant impact on the financial sector, in particular, it made significant changes in the organizational process of circulation and trade of financial instruments (Braccini *et al.*, 2011). Despite significant advantages facilitated by technological progress and fintech innovations, the economy digitalization bears risks and threats of its own (Bounfour, 2016). A comprehensive study of the impact of digitalization on the functioning of the financial sector, identification of potential threats and their consideration upon designing an economic development strategy will ensure the stable functioning of the financial system (Rebiazina, 2018).

Factoring in the potential positive impact of digitalization on national economies and public welfare, ICT development issues are considerably addressed by the global community (Kusakina, 2019). The development of digital technology plays an important part in strategic documents of the European Union such as Europe 2020 and Digital Agenda for Europe (Novikov & Belov, 2019). Digital Agenda for Europe is to be implemented in four main areas: digital society (training and employment, healthcare and pension protection, utilities, cyber security and confidentiality, emergency support line, "smart" solution for quality of life, Internet-trust); research and development (innovation, digital infrastructure, new technology, components and systems, open science, robotics, consultants in scientific research); access and communication (broadband access in Europe, telecommunications and open Internet); digital economy (start-ups, databases, cloud technology, the future of the Internet, consultants) (Fedotova *et al.*, 2019). Horizon-2020 (2014-2020) is a European Programme aimed at achievement of similar goals and focuses research and development financing on the following three complementary priorities of Europe-2020 Programme, including frontier science, industrial leadership and societal challenges (Przhedetsky, 2018).

The volumes of the EU digital economy in 2017 amounted to over 285 billion EUR, i.e. almost 2% of EU GDP (Hanna, 2018). Over the year, the cost created by this sector increased by 5%, amounting to 300 billion EUR in 2018. Provided that political and legislative conditions are favourable, including encouragement of ICT investment, the digital economy in the EU is forecast to grow to 739 billion EUR in 2020, or up to 4% of the entire EU GDP. According to the experts, by 2025, over 30-50% of the GDP of most countries, which entered the information age, will be implemented within the digital economy ecosystem. In other words, the bulk of all economic and business processes will be implemented through cutting-edge information tools and virtual platforms (Filatova, 2018). For the Republic of Kazakhstan, the economy digitalization is significantly connected with the necessity of reducing the regional development differences (Mizintseva and Gerbina, 2018). This is due to the continual historical development of the central regions only (Ismagilova *et al.*, 2017). At the same time, subsequent to the collapse of the USSR, the tendencies only rose (Benzerga *et al.*, 2018). Hence the necessity of digitalization of regional economic systems.

3. Material and Methods

From the standpoint of methodology for analysis of digital economy enterprise clustering efficiency and digital economy cluster performance, the use of economic and mathematical modelling is of considerable interest (Breznitz, 2011). The cluster of the digital economy objects, as a modelling object, represents a system, the complexity of which is determined by the number of its elements (enterprises, organizations, subjects of socio-economic, scientific and technical purposes, etc.), relations between them, including relations with the external environment (Berg and Wilts, 2018). Associative integration of elements in the cluster implies common goals and interests. With that, cluster elements have their own goals and strive to achieve them (Pang *et al.*, 2014). The composition of the cluster elements, the ways of their association and their correlation determine the cluster structure as an economic system, including its performance (Kozlova, 2019). A key element in cluster forming for the digital economy objects is the justification of the optimal composition of cluster members and, particularly, the participation of certain enterprises as the key element of the cluster's "core" (Blaschke *et al.*, 2017). Subsequently to the study of analytical methods, which help to model the enterprise clustering efficiency, it appears prudent to employ precisely the simulation modelling for the solution of the specified issue (Cyberspace Studies…, 2019). The stages of modelling the digital economy clustering efficiency and the digital economy cluster performance are provided in the main part of the study.

4. Results and discussion

To highlight the indicators of digital economy clustering efficiency and digital economy cluster performance, the author selected tasks to determine the said indicators, according to which a questionnaire was designed and a survey was carried out among experts. Analysis and data grouping were performed for 89 questionnaires, proceeding from which four groups of indicators of digital economy clustering efficiency and digital economy cluster performance were singled out. Each group contains five indicators most often pointed by respondents, with similar indicators being merged (Table 1). Expert assessment of the singled out indicators of digital economy clustering efficiency and the digital economy cluster performance. On the basis of the first survey, a second survey was carried out among experts to assess the importance of the specified indicators, and to forecast their dynamics for three years. The survey specified 20 indicators of enterprise clustering and digital economy cluster performance mentioned by the overwhelming majority of respondents of the previous survey. The experts were to assess each of the indicators on the scale from 0 to 9 points in ascending order of priority. Furthermore, upon taking the current value of the indicator for 1 (100%), the respondents could predict its expected growth (decrease) over the first three years after the creation of the digital economy clusters.

Table 1
Indicators of digital economy clustering efficiency and digital economy cluster performance

Group indicators	Single indicators
1. Economic efficiency indicators	x_{11} – income growth from service implementation; x_{12} – development of labour productivity; x_{13} – capital investment growth; x_{14} – reduction of expenditures from service implementation; x_{15} – growth of profitability (ratio of total income to total expenditures).
2. Environmental efficiency indicators	x_{21} – reduction of emissions to the environment by using cleaner modes of transport; x_{22} – reduction of impact of transport on the environment through innovative technology; x_{23} – increase of compliance of vehicles with international environmental standards (environmental safety of transport); x_{24} – reduction of taxes and fees (environmental tax); x_{25} – reduction of fines for violation of environmental legislation.
3. Innovative efficiency indicators	x_{31} – return on assets; x_{32} – formation of new technology transfer channels; x_{33} – increase of the number of developed and/or introduced information-managerial innovation; x_{34} – increase of the number of developed and/or introduced logistic innovation; x_{35} – increase of the number of developed and/or introduced transport innovation.
4. Social efficiency indicators	x_{41} – creation of employment; x_{42} – improvement of working conditions; x_{43} – increasing the number and improving the quality of social communications; x_{44} – growth of the wage level among workers; x_{45} – advanced training of employees, growth of social status and opportunities for personal fulfilment.

23 survey results were obtained and processed using statistical methods of evaluation. 100% of responses single out the indicators characterizing the economic efficiency of enterprise clustering and digital economy cluster performance, 19 respondents (82.6%) singled out the indicators of innovative efficiency of enterprise clustering and digital economy cluster performance, 15 respondents (65.2%) singled out the indicators of social efficiency of enterprise clustering and digital economy cluster performance, 9 respondents (39.1%) singled out the indicators of environmental efficiency of enterprise clustering and digital economy cluster performance. The results of consistency check, carried out for the expert assessment of importance of indicators, were obtained by the rank correlation method with Student criterion. The experts were awarded the corresponding ranks. For the sequence of ranks, the coefficients of rank correlation were calculated and their significance was assessed using the Student criterion. Since the empirical values of the rank correlation coefficients for all indicators and all expert groups are statistically significant with the level of probability, there are no grounds to reject the hypothesis on consistency of expert assessment. The tables of the initial type display the probabilities of adopting the corresponding hypothesis on the consistency of expert assessment for each indicator and each pair of experts (we should note that in case when the table displays the value of 1 it means that the corresponding probability is close to 1 with accuracy to 0.00001 at least). Identification of the group integral are indicators of digital economy clustering efficiency and digital economy cluster performance.

As the calculations confirmed the consistency of the expert assessment, on the basis of the results of the expert assessment of the weight coefficients and the expected dynamics of digital economy clustering efficiency, we shall determine the average values of the following assessment indicators: p_{ij} are weight coefficients of each single indicator; $d_{ij}^{(t)}$, t=1,2,3 are predicted

values of the x_{ij} indicator growth coefficient for three years. The dynamics of the studied indicators of digital economy clustering efficiency and digital economy cluster performance are displayed in Table 2.

Table 2
Expected dynamics of the studied indicators of digital economy clustering efficiency and digital economy cluster performance

Group indicator	Single indicator	Years of functioning		
		t = 1	t = 2	t = 3
1. Economic efficiency	x_{11}	$1.02x_{11}$	$1.1016x_{11}$	$1.2118x_{11}$
	x_{12}	$1.02x_{12}$	$1.1220x_{12}$	$1.2903x_{12}$
	x_{13}	x_{13}	$1.1x_{13}$	$1.32x_{13}$
	x_{14}	$1.0101x_{14}$	$1.0413x_{14}$	$1.0961x_{14}$
	x_{15}	$1.02x_{15}$	$1.0812x_{15}$	$1.1677x_{15}$
2. Environmental efficiency	x_{21}	$1.0204x_{21}$	$1.0741x_{21}$	$1.1935x_{21}$
	x_{22}	x_{22}	$1.0204x_{22}$	$1.0741x_{22}$
	x_{23}	$1.0200x_{23}$	$1.0710x_{23}$	$1.1460x_{23}$
	x_{24}	x_{24}	$1.0101x_{24}$	$1.0636x_{24}$
	x_{25}	x_{25}	$1.0204x_{25}$	$1.0629x_{25}$
3. Innovative efficiency	x_{31}	x_{31}	$1.04x_{31}$	$1.1024x_{31}$
	x_{32}	$1.1x_{32}$	$1.232x_{32}$	$1.4168x_{32}$
	x_{33}	$1.1x_{33}$	$1.265x_{33}$	$1.518x_{33}$
	x_{34}	$1.01x_{34}$	$1.0605x_{34}$	$1.1666x_{34}$
	x_{35}	x_{35}	$1.02x_{35}$	$1.0608x_{35}$
4. Social efficiency	x_{41}	x_{41}	$1.03x_{41}$	$1.0918x_{41}$
	x_{42}	$1.01x_{42}$	$1.0504x_{42}$	$1.1134x_{42}$
	x_{43}	$1.01x_{43}$	$1.0403x_{43}$	$1.0923x_{43}$
	x_{44}	x_{44}	$1.02x_{44}$	$1.0710x_{44}$
	x_{45}	$1.04x_{45}$	$1.1232x_{45}$	$1.2355x_{45}$

We shall note that p_{ij} values must satisfy the following condition:

1) $0 \le p_{ij} \le 1$;

2) $\sum_{j=1}^{n}\sum_{i=1}^{4} x_{ij} = 1$,

where i is the number of the group indicator, and j is the number of the single indicator.

To satisfy these conditions, we shall apply the natural normalization method to the matrix of averaged expert assessments:

$$p_{ij}^{`} \to p_{ij} = \frac{p_{ij}^{`} - \min\limits_{i,j}(p_{ij}^{`})}{\max\limits_{i,j}(p_{ij}^{`}) - \min\limits_{i,j}(p_{ij}^{`})} \quad (1)$$

where $p_{ij}^{'}$ is an expert assessment, p_{ij} is a normalized assessment. Using this approach, we obtain the following normalized matrices:

$$p_1 = \|p_{1j}\| = \begin{pmatrix} 0,67 \\ 0,56 \\ 0,67 \\ 0,44 \\ 0,67 \end{pmatrix} \to \begin{pmatrix} 0,0652 \\ 0,0543 \\ 0,0652 \\ 0,0435 \\ 0,0652 \end{pmatrix} \quad (2) \quad p_3 = \|p_{3j}\| = \begin{pmatrix} 0,67 \\ 0,56 \\ 0,44 \\ 0,22 \\ 0,56 \end{pmatrix} \to \begin{pmatrix} 0,0732 \\ 0,0610 \\ 0,0488 \\ 0,0244 \\ 0,0610 \end{pmatrix} \quad (4)$$

$$p_2 = \|p_{2j}\| = \begin{pmatrix} 0,56 \\ 0,56 \\ 0,33 \\ 0,22 \\ 0,22 \end{pmatrix} \to \begin{pmatrix} 0,0610 \\ 0,0610 \\ 0,0396 \\ 0,0244 \\ 0,0244 \end{pmatrix} \quad (3) \quad p_2 = \|p_{2j}\| = \begin{pmatrix} 0,67 \\ 0,22 \\ 0,67 \\ 0,67 \\ 0,67 \end{pmatrix} \to \begin{pmatrix} 0,0732 \\ 0,0244 \\ 0,0732 \\ 0,0732 \\ 0,0732 \end{pmatrix} \quad (5)$$

We shall identify the integral indicators for each group indicator of digital economy clustering efficiency and digital economy cluster performance:

$$I_1 = \left\| p_{1j} \right\| \times x_{1j} = 0,0652x_{11} + 0,0543x_{12} + 0,0652x_{13} + 0,0435x_{14} + 0,06524x_{15} \quad (6)$$

$$I_2 = \left\| p_{2j} \right\| \times x_{2j} = 0,0610x_{21} + 0,0610x_{22} + 0,0396x_{23} + 0,0244x_{24} + 0,0244x_{25} \quad (7)$$

$$I_3 = \left\| p_{3j} \right\| \times x_{3j} = 0,0732x_{31} + 0,0610x_{32} + 0,0488x_{33} + 0,0244x_{34} + 0,0610x_{35} \quad (8)$$

$$I_4 = \left\| p_{4j} \right\| \times x_{4j} = 0,0732x_{41} + 0,0244x_{42} + 0,0732x_{43} + 0,0732x_{44} + 0,0732x_{45} \quad (9)$$

The resulting formulas for calculating the integral indicators have the following properties: upon substitution of the normalized relative x_{ij} values, which can vary from 0 to 1, into the corresponding formula, we shall obtain the normalized value of the integral indicator. Moreover, when all x_{ij} gain maximum values, the corresponding value of the integral index equals 1. This allows to use the obtained formulas for:

- comparison of relative digital economy clustering efficiency and digital economy cluster performance for different groups of indicators;
- identification of the impact from development, financing, support, etc. of each of the selected single indicators and their influence on the general digital economy clustering efficiency and digital economy cluster performance;
- analysis of the dynamics of changes in the economic, environmental, social and innovative fields in the process of digital economy clustering and digital economy cluster performance for certain time periods.

Modelling the dynamics of the studied indicators of digital economy clustering efficiency and digital economy cluster performance.

We shall set the recurrence relations to identify the dynamics of the studied indicators of digital economy clustering efficiency and digital economy cluster performance:

$$f^t(x_{ij}) = g(d_{ij}^1)x_{ij} + g(d_{ij}^2)g(d_{ij}^1)x_{ij} + g(d_{ij}^3)g(d_{ij}^2)g(d_{ij}^1)x_{ij} \quad (10)$$

where $g(d^t_{ij})$ is a function of the predicted value of the x_{ij} indicator growth coefficient for t year which constitutes a linear function when the factor is an indicator with a positive value and is inverse for the factor with a negative value. We shall display the implementation of the above formulas for the cases when $g(x^+) = x^+$ and $g(x^-) = 1/x^-$. The results of modelling the dynamics of integrated indicators of digital economy clustering efficiency and digital economy cluster performance are displayed in Table 3 and illustrated in Figure 1.

Table 3
Integral indicators of the expected digital economy clustering efficiency and digital economy cluster performance by group indicators

Integral indicator	Years of digital economy cluster performance			
	t=0	t=1	t=2	t=3
Economic efficiency	0.2935	0.2976	0.3203	0.3591
Environmental efficiency	0.1848	0.1865	0.1929	0.2068
Innovative efficiency	0.2826	0.2920	0.3128	0.3470
Social efficiency	0.2391	0.2423	0.2253	0.2696

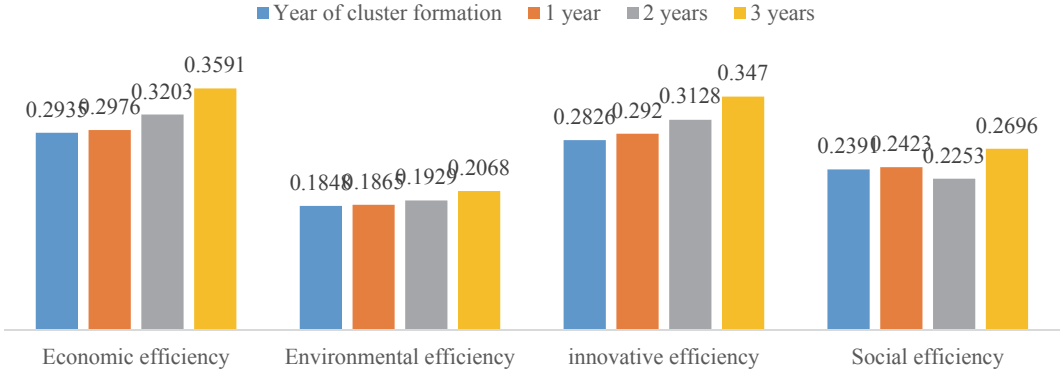

Fig. 1. Dynamics of integrated indicators of digital economy clustering efficiency and digital economy cluster performance

Calculation of the functionality of assessment of digital economy clustering efficiency and digital economy cluster performance and justification of the choice of the strategy type for digital economy cluster development.

The developed economic and mathematical model of digital economy clustering efficiency and digital economy cluster performance suggests using four types of digital economy cluster development strategy:

1) economic strategy, which involves changes in the technological complex, and production, innovation, organizational and management activities of the digital economy objects, aimed at profit enhancement and profitability of digital economy enterprises, competitive growth, the best possible use of resources available, service quality increase, full customer satisfaction in rendering services, expanding the range of services offered by enterprises, increase of the share and development of new market segments, introduction of modern technology, attraction of investments, management system improvement, widespread introduction of information and communication technology, introduction of partnerships with scientific institutions and governmental structures, increase in the level of security and availability of digital services for the population;

2) environmental strategy, which involves the implementation of ecological and economic interests by reducing polluting emissions through the use of green production, reduction of the impact of activities on the environment through innovative technology implementation, achievement of compliance of the digital economy objects to the international environmental standards and improvement of environmental consciousness of the population;

3) social strategy, which involves achieving common welfare and collective security on the basis of mutual responsibility, transparency, ethical behaviour, compliance with legal provisions, compliance with international standards of human rights protection, creation of employment, improvement of working conditions, ensuring continuous improvement of the educational and professional level of employees, decent wages and access to social benefits;

4) innovative strategy, which involves the effective development and introduction of management innovation, logistics innovation and transport innovation on the basis of strategic marketing, R&D, modern ICT, available scientific, technical and intellectual potential of the enterprise, production and technical facilities of the digital economy objects, substantial investment, use of technology, knowledge transfer channels, development of intellectual wants of personnel, encouragement of the creative approach to task performance, and consistent knowledge building of employees in the course of professional activity. We shall model the efficiency assessment matrix on the basis of Table 3. In the model example, we shall assume that all x_{ij} obtain a single value. We shall obtain the assessment functionality with a positive value of the following form Eq. (11):

$$F^{+}=\begin{pmatrix}0,0665\,0,0718\;0,790\\0,0554\,0,0610\,0,0701\\0,0652\,0,0717\,0,0816\\0,0439\,0,0453\,0,0477\\0,0665\,0,0705\,0,0762\\0,0555\,0,0584\,0,0649\\0,0543\,0,0555\,0,0584\\0,0333\,0,0349\,0,0374\\0,0217\,0,0220\,0,0231\\0,0652\,0,0672\,0,0712\\0,0549\,0,0571\,0,0605\\0,0439\,0,0452\,0,0475\\0,0217\,0,0222\,0,0233\\0,0565\,0,0610\,0,0671\\0,0652\,0,0678\,0,0719\\0,0239\,0,0268\,0,0308\\0,0717\,0,0825\,0,0990\\0,0659\,0,0692\,0,0761\\0,0652\,0,0665\,0,0692\\0,0241\,0,0398\,0,0156\end{pmatrix} \tag{11}$$

After the convolution operation, factoring in the weight coefficients, we shall obtain the assessment matrix for the indicator groups:

$$F=\left\|f_{ij}\right\|=\begin{pmatrix}0,297613 & 0,186544 & 0,242283\\0,320350 & 0,192898 & 0,252709\\0,359053 & 0,206828 & 0,269639\\0,297613 & 0,186544 & 0,242283\end{pmatrix} \tag{12}$$

For the research of the obtained assessment matrix we shall apply the approaches of selecting the best possible strategies in the decision theory, that are similar to the criteria of Wald, Bayes, and Savage, that is, we shall solve the optimization problems of the following types:

1. Optimization when distribution of environmental conditions is unknown and is supposed to be antagonistic (the most unfavourable) for the subject of decision-making

$$z=V\rightarrow\max, \tag{13}$$

subject to

$$\begin{cases} \sum_{j=1}^{4} f_{ij} w_i \geq V \\ \sum_{i=1}^{20} w_1 = 1 \\ 0 \leq w_{\min} \leq w_i \leq w_{max} \end{cases} \tag{14}$$

where w_i is a relative share of resources available for the digital economy cluster development, aimed at the implementation of i^{th} strategy, w_{min} and w_{max} are, respectively, the least and most expected values, which in practice should be identified by expert assessment, f_{ij} is F matrix elements, V is an integral indicator of digital economy clustering efficiency and digital economy cluster performance. Having reduced the model to an equivalent form:

$$g = \sum_{i=1}^{4} t_i = \frac{1}{V} \rightarrow \min \tag{15}$$

$$\begin{cases} \sum_{j=1}^{4} f_{ij} t_i \geq 1 \\ t_i = \frac{w_j}{V} \\ 0 \leq t_{\min} \leq t_i \leq t_{\max} \end{cases} \tag{16}$$

we shall solve the problem and obtain the result: w_1 =0.2847, w_2 =0.2293, w_3 = 0.2563, w_4 =0.2297, V=0.2834. Thus, per Wald criterion, to ensure the digital economy clustering efficiency and digital economy cluster performance in the amount of 28.34%, it is advisable to allocate 28.47% of resources available to the implementation of the economic strategy, 22.93% – to the environmental strategy, 25.63% – to the social strategy, 22.97% – to the innovative strategy of digital economy cluster development.

2. The optimization when the empirical expected distribution of environmental conditions is known, in our case this is the average expected level of performance for each indicator group. We shall denote this distribution $\lambda = (\lambda_1;\lambda_2;\lambda_3;\lambda_4), 0 \leq \lambda_1 \leq 1, \sum_{i=1}^{4} \lambda_1 = 1$. In this case, the Bayes criterion is applied. We shall obtain the following model:

$$z=V\rightarrow\max, \tag{17}$$

subject to

$$\begin{cases} \sum_{j=1}^{4} \lambda_1 f_{ij} w_i \geq V \\ \sum_{i=1}^{20} w_i = 1 \\ 0 \leq w_{\min} \leq w_i \leq w_{\max} \end{cases} \tag{18}$$

In practice, application of such model is advisable only after a certain time period elapsed since the start of the activity in the cluster, in such case there is a possibility to assess the value λ=(λ1;λ2;λ3;λ4) empirically.

3. The optimization when the expected distribution of priorities of the decision-making subject is known, in our case this is the average expected level of financial (organizational, etc.) support for a certain indicator group. We shall denote this distribution $\mu=(\mu_1;\mu_2;\mu_3;\mu_4)$, $0\le\mu_i\le1$, $\sum_{i=1}^{4}\mu_i=1$. We shall obtain the following model:

$$z=\sum_{i=1}^{4}\frac{\mu_1 w_1}{v}\to\min, V\to\max \tag{19}$$

subject to

$$\begin{cases}\sum_{j=1}^{4} f_{ij}\mu_i w_i \ge V\\ \sum_{i=1}^{20}\mu_i w_i=1\\ 0\le w_{\min}\le w_i\le w_{\max}\end{cases} \tag{20}$$

This study proposes the analysis of the influence of the binary and trinary combination of various strategies of digital economy cluster development on the expected digital economy clustering efficiency and digital economy cluster performance using the developed economic and mathematical mod with the Savage criterion. The developed economic and mathematical model of enterprise clustering efficiency and digital economy cluster performance facilitates a large number of combinations of types of development strategies for digital economy clusters by taking economic, environmental, social and innovative measures that influence various groups of efficiency indicators. We shall consider the influence of all possible variations of the binary combination of different types of development strategies on the digital economy clustering efficiency and digital economy of cluster performance:

1. Economic and environmental development. In this case, the following values are assigned: $\mu_3=\mu_4=0$, $\mu_1>0$, $\mu_2>0$, $\mu_1+\mu_2=1$. We also considered the values of weight coefficients as variables. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.6802$, $w_2=0.3198$, $w_3=0$, $w_4=0$, $V=0.2621$.
2. Economic and social development. In this case, the following values are assigned: $\mu_2=\mu_4=0$, $\mu_1>0$, $\mu_3>0$, $\mu_1+\mu_3=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.6599$, $w_2=0$, $w_3=0.3401$, $w_4=0$, $V=0.2788$.
3. Economic and innovative development. In this case, the following values are assigned: $\mu_2=\mu_3=0$, $\mu_1>0$, $\mu_4>0$, $\mu_1+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.6394$, $w_2=0$, $w_3=0$, $w_4=0.3606$, $V=0.2957$.
4. Social and environmental development. In this case, the following values are assigned: $\mu_1=\mu_4=0$, $\mu_2>0$, $\mu_3>0$, $\mu_2+\mu_3=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0$, $w_2=0.2768$, $w_3=0.7232$, $w_4=0$, $V=0.2269$.
5. Social and innovative development. In this case, the following values are assigned: $\mu_1=\mu_3=0$, $\mu_2>0$, $\mu_4>0$, $\mu_2+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0$, $w_2=0.3156$, $w_3=0$, $w_4=0.6844$, $V=0.2587$.
6. Innovative and environmental development. In this case, the following values are assigned: $\mu_1=\mu_2=0$, $\mu_3>0$, $\mu_4>0$, $\mu_3+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0$, $w_2=0$, $w_3=0.4358$, $w_4=0.5642$, $V=0.2753$.

Study results of the influence of binary combination of cluster development strategy types on digital economy clustering efficiency and digital economy cluster performance are displayed in Table 4.

Table 4
Study results of the influence of binary combination of cluster development strategy types on digital economy clustering efficiency and digital economy cluster performance

Variants of digital economy binary development	General efficiency indicator	Relative frequency, w_i			
		w_1	w_2	w_3	w_4
Economic and innovative	0.2957	0.6394	0	0	0.3606
Economic and social	0.2788	0.6599	0	0.3401	0
Innovative and environmental	0.2753	0	0	0.4358	0.5642
Economic and environmental	0.2621	0.6802	0.3198	0	0
Social and innovative	0.2587	0	0.3156	0	0.6844
Social and environmental	0.2269	0	0.2768	0.7232	0

Comparison of influence of binary combination of various cluster development strategy types revealed that the combination of economic and innovative strategy types influences the enterprise clustering efficiency and digital economy cluster performance the most. This will provide for the expected integrated efficiency in the amount of 29.57% after three years of digital economy cluster performance.

We shall consider the influence of all possible variations of the trinary combination of different types of development strategies on the digital economy clustering efficiency and digital economy of cluster performance:

1. Social and economic and environmental development. In this case, the following values are assigned: $\mu_4=0$, $\mu_1>0$, $\mu_2>0$, $\mu_3>0$, $\mu_1+\mu_2+\mu_3=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.3964$, $w_2=0.3010$, $w_3=0$, $w_4=0.3026$, $V=0.2475$.
2. Economic and social and innovative development. In this case, the following values are assigned: $\mu_2=0$, $\mu_1>0$, $\mu_3>0$, $\mu_4>0$, $\mu_1+\mu_3+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.4010$, $w_2=0$, $w_3=0.2993$, $w_4=0.2997$, $V=0.2455$.
3. Social and innovative and environmental development. In this case, the following values are assigned: $\mu_1=0$, $\mu_2>0$, $\mu_3>0$, $\mu_4>0$, $\mu_2+\mu_3+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0$, $w_2=0.3333$, $w_3=0.3333$, $w_4=0.3333$, $V=0.2732$.
4. Economic and innovative and environmental development. In this case, the following values are assigned: $\mu_3=0$, $\mu_1>0$, $\mu_2>0$, $\mu_4>0$, $\mu_1+\mu_2+\mu_4=1$. Subsequent to the implementation of the model, we obtained the following result: $w_1=0.3643$, $w_2=0.3178$, $w_3=0$, $w_4=0.3178$, $V=0.2605$.

Study results of the influence of trinary combination of cluster development strategy types on digital economy clustering efficiency and digital economy cluster performance are displayed in Table 5.

Table 5
Study results of the influence of trinary combination of cluster development strategy types on digital economy clustering efficiency and digital economy cluster performance

Types of cluster development strategy	Average value	Relative frequency, w_i			
		w_1	w_2	w_3	w_4
Social and innovative and environmental	0.2732	0	0.3333	0.3333	0.3333
Economic and innovative and environmental	0.2605	0.3643	0.3178	0	0.3178
Social and economic and environmental	0.2475	0.3964	0.3010	0	0.3026
Economic and social and innovative	0.2455	0.4010	0	0.2993	0.2997

Comparison of influence of trinary combination of various cluster development strategy types revealed that the combination of social, innovative and environmental strategy types influences the enterprise clustering efficiency and digital economy cluster performance the most. This will provide for the expected integrated efficiency in the amount of 27.32% after three years of digital economy cluster performance. The developed economic and mathematical model facilitated the identification of the influence of binary and trinary combination of different development strategy types for digital economy clusters on the expected integral efficiency of digital economy clustering and digital economy cluster performance (Fig. 2).

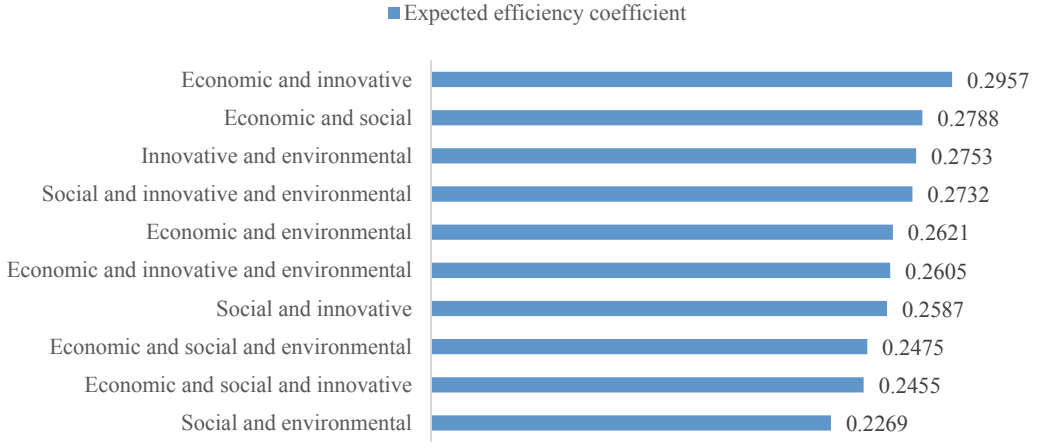

Fig. 2. Results of comparison of the influence of binary and trinary combination of different development strategy types for digital economy clusters on digital economy clustering efficiency and digital economy cluster performance

Comparison of impact of binary and trinary combination of various development strategy types for digital economy clusters revealed that the combination of economic and innovative strategies influences the digital economy clustering efficiency and digital economy cluster performance the most. This will provide for the expected integrated efficiency in the amount of 29.57% after three years of digital economy cluster performance.

For obvious reasons, Kazakhstan also strives to jump on the bandwagon. "Digitalization is not a goal, it is a means of achieving the supremacy of Kazakhstan. A self-respecting country cannot do without it. If we do not win the competition, we will lag behind and eat the dust fed to us by the advancing countries," said President Nursultan Nazarbayev.

For the implementation of the assignments of the Head of state, at the end of 2017, the Digital Kazakhstan State Program was adopted. The program envisages the increase in the share of e–commerce to 2.6%, and in electronic public services – up to 80%. With that, it is planned to create 300 thousand new jobs by means of digitalization. All this should be done by 2022. As Nursultan Nazarbayev noted, "the digitalization should facilitate the increase of Kazakhstani economy by 30%, in monetary terms, it will be over 2 billion tenges" ("Digital Kazakhstan"…, 2017).

Informational Kazakhstan-2020 State Program, approved in 2013, became the foundation for the digital transformation of the country's economy and contributed to the development of the following factors: transition to the information society, improvement of public administration, creation of institutions of "open and mobile government" and growth of availability of information infrastructure not only for corporate structures, but also for the citizens of the country. Informational Kazakhstan-2020 State Program includes 83 target indicators and 257 activities. As per results of three years of implementation of Informational Kazakhstan-2020 State Program, 40% has already been achieved. However, the rapid development of information technology on a global scale dictates its own rules and requires an adequate and timely response on the part of our government. Thus, it is necessary to take the next step – to timely initiate the process of transformation for the key sectors of the national economy, education, healthcare, including the sphere of interaction of the state with society and business. The purpose of Digital Kazakhstan State Program (hereinafter referred to as “the Program”) is to improve the quality of life and competitiveness of the economy of Kazakhstan through progressive development of the digital ecosystem. The program is aimed at development of the following areas:

1. Digital Silk Road – creation of a high-tech digital infrastructure by providing broadband Internet access in rural settlements; development of telecommunication hub; information security; construction of data processing centres, etc.

2. Creative society – development of human capital by improving digital literacy, advanced training for specialists in the field of information and communication technology, creative thinking development, etc.

3. Digital transformations in the economy sectors – development of the digital industry by automating the transport and logistics system of the country; implementation of digital technology in the agriculture and industry; implementation of analytical systems in the field of energy saving and energy efficiency; development of e-commerce; improvement of the mineral resources accounting systems; ensuring the preservation and accessibility of digital geological information; implementation of technology for creating smart cities, etc.

4. Proactive state – formation of digital government by further development of electronic and mobile government; increase of public services provided in electronic form; formation of open government; development of national spatial data infrastructure, etc.

The Program is developed in accordance with the Address of the President of the Republic of Kazakhstanб Nursultan Nazarbayev, to the people of Kazakhstan, Kazakhstan Way – 2050: One Goal, One Interest, One Future, 100 Steps Short-Term Anti-Crisis Strategy, Nurlyzhol Infrastructure Development Program and Laws of the Republic of Kazakhstan "On Electronic Document and Electronic Digital Signature", "On Communication", and "On Informatization". According to these documents, improvement of the quality of life of citizens, the development of economic, socio-political and cultural spheres of society, including improvement of the system of public administration are the main principles and vector of digital transformation development proposed by this Program.

To date, Kazakhstan has achieved steady progress towards the increase in the capacity of traditional telecommunications. In providing the shortest route for information flows between Europe and Asia, Kazakhstan strengthens its competitive advantage in the international traffic transit market. Acting as a coordinator of interregional initiatives, for example, the TASIM network project –Trans-Eurasian Information Super Highway, Kazakhstan contributes to the integration of data exchange centres in Western Europe and Asia. Analysis of the UN Economic and Social Commission for Asia and the Pacific (UN ESCAP) indicated that Kazakhstan has a leading position in terms of the capacity of international communication channels in the region. The current share of Kazakhstan in Europe – Asia land transit is 10%. With that, traffic in this direction currently reaches 75 Gb/s.

The main underdeveloped areas in the development of BBA are still the rural settlements (hereinafter referred to as “the RS”). If the density of urban Internet users at the end of 2015 was 76.4%, in RS this indicator amounted to 68.3%. Overcoming the information inequality of the regions is complicated by the size of the country (about 6723 villages and townships at the beginning of 2016), the presence of a large number of settlements located in the distant and inaccessible areas.

Overcoming the information inequality of the country's regions will be at the expense of further development of digital terrestrial television and promotion of BBA development in the rural areas of the Republic of Kazakhstan. In accordance with the regional frequency plan of the Republic of Kazakhstan, it is planned to complete the construction and reconstruction of 827 regional transport systems that will provide 95% coverage of the population of the Republic of Kazakhstan with digital terrestrial television by 2019. The use of different support mechanisms for the construction of BBA infrastructure in the RS will make the Internet accessible for 72% of rural residents by 2020.

To improve the digital literacy of the populationб within the framework of the Program, a complex of training materials will be developed and the process of training for all segments of the population in all regions of Kazakhstan will be organized.

The transport and logistics system is the main tool for the implementation of economic relations between the regions of Kazakhstan, including the main conductor of the export of the Kazakh goods to the world markets.

Currently, the e-commerce market in Kazakhstan is regulated by the Rules of e-commerce, approved by the Order of the acting Minister of National Economy of the Republic of Kazakhstan No. 720 dated November 25, 2015. With that, it is noteworthy that in Kazakhstan the transactions, concluded in the process of e-commerce, are regulated by the same documents as conventional transactions. One of the recent developments in the e-commerce was the President's signing of the Law of the Republic of Kazakhstan "On Payments and Payment Systems" aimed at protecting the interests of consumers of payment services. As for the delivery of goods, to date, the internal logistics matches international standards and competition in this market is present in big cities. The greatest necessity is in qualitative logistics in the remote regions of Kazakhstan.

In this regard, to date, large Internet-shops deliver their goods by their own efforts or establish their courier services to develop the level of service and build trust. However, courier services of Internet-shops are focused only on the urban population and it is difficult to refer to qualitative service in the rural areas. To this end, within the framework of the Program, the development of transport and logistics infrastructure in the distant regions will increase the level of goods delivery service.

An important aspect of development is the establishment of a financial centre with the aim of accessing larger markets in the region. The development of the international financial centre, by means of a highly efficient digital infrastructure, will facilitate the entrance into larger markets in the region, the transaction cost reduction for investors, will provide opportunities for investment diversification and efficient capital allocation and attract large enterprises from Central Asia.

Given that each city struggles with its own problems (specifics of the economic structure and the needs of cities) and their solutions for the implementation of the goal on the development of "smart cities" in the Republic of Kazakhstan, it is necessary to create the Smart City Concept for each city or region of Kazakhstan, which should contain all the factors determining the direction of urban development, strategic priorities, business principles and technology of documentation and clarification of tasks and projects.

5. Conclusions

Methodological framework for modelling the digital economy clustering efficiency and digital economy cluster performance was developed, providing for the identification of integral indicators of economic, social, environmental, and innovative efficiency. And which are based on the economic and mathematical model that facilitates the implementation of a large number of combinations of development strategy types for digital economy clusters, in particular through binary or trinary combination, by means of carrying out an action plan of economic, environmental, social, and innovative nature, which influence the level of integrated efficiency. According to the comparison results for the influence of binary and trinary combination of various development strategy types for digital economy clusters, it was established that the combination of economic and innovative development strategy types influences the digital economy clustering efficiency and the digital economy cluster performance. This will provide for the expected integrated efficiency of digital economy clustering in the amount of 29.57% after three years of digital economy cluster performance.

In the 1990s, the state program on forced industrial and innovative development was launched, the Bolashak International Education Program was initiated. In 2005, the formation of e-government began. In addition, Kazakhstan has already created a number of elements of the innovative ecosystem with a special economic zone – the Alatau Park of Innovative Technology, and Nursultan Nazarbayev University. Astana Hub International Technopark is being launched. Per preliminary calculations, the direct effect from the digitalization of the economy of Kazakhstan by 2025 will allow to create an added value in the amount of 1.7-2.2 billion tenges, thus yielding 4.8-6.4 times the return from investment to the total investment by 2025, private investment included.

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Territorial marketing and its role in determining regional competitiveness. Evaluating supply chain management

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C H R O N I C L E

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A B S T R A C T

Nowadays, development and sustainability are often combined in the analysis of regional and local processes. In this case, the definition of both competitiveness and sustainability of development require adequate interpretation and quantitative assessment. Territorial marketing is used as a tool to assess the competitiveness of a region. The main purpose of our research is to analyze the methodological and practical aspects of the sustainable development strategy of competitiveness of the Kazakhstan regions and the ways to implement it based on territorial marketing. Among the crucial indicators of territorial marketing, which this article tackles, supply chain management draws particular interest. Each indicator includes a set of criteria that best describe it. This is a 10-point rating system, where the region that showed the best result gets 10 points. It is assumed that based on the generally accepted methods the overall competitiveness can be measured, considering the competitiveness of the 5 mentioned indicators, as well as their assessment with regard to the competitiveness of their criteria. The research results showed that the aggregate indicator for all the regions is below average. The findings show that the Turkestan and Pavlodar regions are the most competitive in supply chain management, having the largest number of shipments. The overwhelming majority of Kazakhstan enterprises are small enterprises, which suggests that the logistics services market is still developing. The use of modern information technologies will optimize warehouse operations. A positive result is ensured by effective local regulation since doing business in Kazakhstan is relatively cheap. In our research, we offer some recommendations for improving the territorial indicators that determine the competitiveness of regions.

1. Introduction

Fast modernization of regions requires: quality breakthroughs in priority areas based on innovation; creation of new economic growth points and concentration of production and labor force. The development of market relations demanded a deeper study of markets, customer needs and demands. This fact contributed to the development of a new marketing direction, which is based on the systematization of territorial and methodological knowledge, allowing the adaptation of the main aspects of classical marketing to the needs of the territory.

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A characteristic feature of territorial marketing fundamentally distinguishing it from, for example, banking or industrial marketing is the possibility to mark the territory (Eidelman et al., 2016). In addition, the term "territorial marketing" is characterized by scalability principles, that is, the ability to adapt classical marketing methods and principles to any administrative and territorial unit: city, region or country (Romanova et al., 2015; Sowier-Kasprzyk et al., 2017). The main objectives of territorial marketing are (Renigier-Biłozor & Biłozor, 2015):

- creation and maintenance of the territorial identity;

- creation of favorable life and business conditions;

- increased competitiveness;

- attraction of foreign investments;

- stimulation of the demand for a territorial product both in domestic and foreign markets.

The tasks of territorial marketing are determined by the specifics of the marketing activity, as well as its purpose. The tasks of territorial marketing as a tool to increase economic attractiveness are identifying, advertising and promoting the advantages of regional products in the domestic and foreign markets; attracting tourists, business partners, investors to the region; preserving and developing the cultural heritage; preserving and developing human resources of the region and attracting financial resources to the region (Ivanov, 2016). Innovative activity in the market context, supply chain management and the output of goods and services, scientific and management potential, business climate, quality of management potential, labor costs and infrastructure are referred to as territorial marketing indicators of regional competitiveness (Cliquet, 2002; Comino & Ferretti, 2016; Danko et al., 2016; Popović et al., 2018). Let us briefly consider each indicator in relation to Kazakhstan. Since the innovation economy is a flexible and dynamic economy, in which new companies are created, outmoded companies disappear. There are studies for new markets and the development of innovation markets. The implementation of innovation policy in Kazakhstan is moving to the regional level (Schumpeter, 2018). Supply Chain Management (SCM) is an effective territorial marketing indicator to optimize business process management and gain regional competitive advantages (Gold et al., 2015). It appeared in Kazakhstan along with other Western technologies. Today it may help to ensure effective interaction between the companies and enterprises of the region. The leaders of domestic businesses realize that the introduction of SCM is crucial in order to consolidate their competitive advantages in the region and become successful abroad (Kot et al., 2018). This is evidenced by the fact that in an increasing number of Kazakhstan companies there are top managers responsible for the supply chain development (Dobrzykowski, 2019). The importance of service quality for consumers and suppliers cannot be denied. Consumers are serious about the quality in their purchases and lives. In recent years, customers have been requiring a higher quality of services (Burnes & Towers, 2016). For service, quality is directly related to the identity, sales and profitability of a region (Dabholkar, 2015).

Human capital is an intensive productive factor of economy, family and society development, including the educated part of labor force, knowledge, intellectual and managerial tools, as well as living and working environment. It ensures the effective and rational functioning of human capital as a productive development factor (Blundell et al., 2016). Today the human capital index in Kazakhstan is 0.75. The index consists of several key indicators: labor productivity, probability of dying among children under 5, expected years of quality-adjusted school, *harmonizing test scores*, number of years of school, adult survival rates (aging index), healthy growth (percentage of not stunted children) (Samans et al., 2016).

As it has already been mentioned, one of the objectives of territorial marketing is to ensure the competitiveness of the region. Regional competitiveness and regional competitive advantage are developed at the meso-level, which includes the macro and micro level elements. There are also three theoretical approaches to the formation of a competitive advantage: a market approach that focuses on cost and differentiation, a resource-based approach and a marketing approach that compromise between these two approaches. It is possible to consider a particular approach creating a new knowledge-based

advantage; cooperation of the public, private and non-profit sectors; networking and partnership. There are certain methods to ensure and manage regional competitiveness. The idea of sectoral clusters is singled out as the basis for economic development (Etzkowitz & Leydesdorff, 2000; Beer, 2016; Lund-Thomsen et al., 2016). This theory resulted in the innovation systems theory, which includes a wide list of network partners, including universities, research centers, government agencies and enterprises (Mattes et al., 2015; Coenen et al., 2017). This idea was adapted to the concept of constructed advantage (Camagni, 2017). In the literature, the following indicators are used to assess competitiveness: labor costs and their structure (staff), the intensity of renewal of fixed assets (technology), the state of investment market (finance), innovative mobility (innovation) increased profitability due to agglomeration (Budd & Hirmis, 2004; Aiginger & Firgo, 2017). The resource potential of the territory and infrastructure development should be added to the above-mentioned criteria for assessing the competitiveness of a region (Palei, 2015; Lengyel, 2016, Afzal, 2018). In this case, the infrastructure of the region is a set of social and transport components that form a general idea of the territory's ability to develop individual priority areas. In the works of Porter, the competitiveness of a region, as well as of the whole country, can be developed in four stages (levels) of competition based on production factors, investments, innovations and wealth. In accordance with the relevance of the research, the purpose of the research is to determine the level of regional competitiveness management based on territorial marketing indicators, such as innovation, supply chain management, the efficiency of the production of goods and services, and human resource development (Porter& Kramer, 2006).

2. Methodology

In this research, we propose a methodology for assessing the effectiveness of managing the competitiveness of the Kazakhstan regions. The basic idea is to determine the rating of regions according to the five territorial-marketing indicators that best characterize the management level of the region's competitiveness. The literature analysis has shown that the most relevant and informative territorial marketing indicators are the output of services and goods in the region, human resource development, regional innovation activity, supply chain management and ease of doing business. The rating consisted of 16 Kazakhstan regions (14 regions and the cities of Nur-Sultan and Almaty). To characterize the regions based on these indicators, the criteria were selected that will allow a quantitative assessment. The criteria for each indicator are presented in Table 1.

Table 1
Territorial marketing indicators and their criteria

Indicator	Criteria
Innovation activity	- The volume of innovative products (goods and services) *millions of tenge - Internal research and development costs - The number of innovative enterprises - Investments in fixed assets per capita, thousands of tenge/capita
Supply chain management	The number of logistics centres Transport infrastructure Freight transportation
Human resource development	Labor force Ageingindex (per 100 children) Unemployment rate
The output of goods and services	Production output (millions of tenge) The volume of goods and services produced by large and medium-size enterprises (millions of tenge) Core cattle production (millions of heads) Retail trade volume
Ease of doing business	Opening of new enterprises Procurement of building permit Connecting to power supply Registering property

The rating is based on a 10-point system. The region that showed the best result received 10 points. The other participants were rated in relation to the leader's indicator, proportionally decreasing from the maximum score. Having analyzed each region, we calculated the integral rating.

Based on the compiled rating, we have identified 3 levels of the effective regional competitiveness management. Level I – not effective management (<3), Level II – medium management (3 - 6), Level III – effective management (≥ 6). In order to process the data, we used the statistical method with the t-Student criterion, the standard deviation σ and the value p≤ 0.05. The data were processed in Origin 9.0. In addition, for the further analysis, the overall variable of territorial marketing, there are three sub divisions under the title of requirements for territorial marketing applications or TM, contents of territorial marketing or CTM items, and finally the difficulties in the application of territorial marketing or DATM. For the measurement of regional compactivities (RC), five items are added in the questionnaire. Additionally, data was collected through a sample of 240 respondents in the region of Kazakhstan who were dealing with the territorial marketing, regional competitiveness in supply chain. After the collection of data, descriptive, factor analysis and structural equation modeling techniques are applied, and findings are presented in the next section.

3. Results and Discussion

Based on our research, we constructed Tables 1-5.

Kazakhstan has entered the industrial and innovative stage of economic development. This stage is characterized by the adaptation of science to modern economic conditions, which should lead to fundamental changes in the structural, organizational, staffing, infrastructure and financial support for the development of science, regulated by the appropriate regulatory and legal framework. The rating of Kazakhstan regions in terms of innovation management is presented in Table 2.

Table 2

Rating of Kazakhstan regions in terms of innovative activities

Region	The volume of innovative products (goods and services) *millions of tenge	Internal research and development costs *, Millions of tenge	The number of innovative enterprises *	Investments in fixed assets per capita, thousands of tenge/capita	Integrated indicator
Akmola	0.88	0.64	1.68	7.0	2,55
Aktobe	2.2	0.37	1.99	8.10	3,17
Almaty	0.7	0,42	2.5	7.57	2,80
Atyrau	0.32	1.69	1.58	10	3,40
East Kazakhstan	4.5	2.00	5.2	7.7	4,85
Jambyl	2.85	0.28	1.65	7.9	3,17
West Kazakhstan	1.01	0.33	0.84	7.5	2,42
Karaganda	1.8	1,32	4.41	8.8	4,08
Kostanay	5.1	0,31	2.87	8.3	4,15
Kyzylorda	0.3	0,11	1.53	9.1	2,76
Pavlodar	10	0.1	1.92	6.6	4,66
NorthKazakhstan	0.77	0.085	1.98	7.9	2,68
Mangystau	0.016	3.7	0.69	7.79	3,05
Almaty city	1.47	10	9.45	8.08	7,25
Nur-Sultan city	8.4	5.3	10	7.35	7,76
SouthKazakhstan (Turkistan)	0.74	0.10	0.85	7.4	2,27

Source: Regional data from the statistical reports of the Statistics Committee of the Republic of Kazakhstan

The analysis revealed that the most innovative region is the city of Nur-Sultan (integrated indicator is 7.76) and Almaty, the average positions are occupied by the Kostanay, Pavlodar and East Kazakhstan regions. The regions whose indicators are below 3 should focus on limiting the administrative burden on small and medium-size enterprises and the difficulties of new innovative enterprises. The analysis of the current state and policy advice should be developed as a result of a dialogue between the government and business. Let’s consider the supply chain management indicator. The results of the study are shown in Table 3.

Table 3
Rating of Kazakhstan regions on the SCM indicator

Region	The number of logistics centers	Transport infrastructure (buses)**(units)	Freight transportation railway***(millions of tons)	Integrated indicator
Akmola	0.75	1.2	1.60	1,18
Aktobe	1.57	2.8	7.50	3,96
Almaty	1.65	5.5	6.25	4,47
Atyrau	1.05	3.5	5.61	3,39
Nur-Sultan city	3.75	2.3	9.37	5,14
East Kazakhstan	1.33	3.2	4.92	3,15
Jambyl	0.42	1.9	3.8	2,04
West Kazakhstan	0.71	1.8	2.11	1,54
Karaganda	1.76	4	8.125	4,63
Kostanay	1.03	1.4	5.72	2,72
Kyzylorda	0.71	0.99	4.30	2
Pavlodar	1.03	1.7	8.75	3,83
NorthKazakhstan	0.73	0.76	0.98	0,82
Mangystau	1.72	0.89	2.98	1,86
Almaty city	10	6	10.00	8,67
SouthKazakhstan(Turkistan)	1.36	10	6.88	6,08

*Source: Data from the statisticsof the Committee of Statistics of the Ministry of Industry and Infrastructural Development of the Republic of Kazakhstan (Transport Committee) * and from the reports of Translogistika Kazahstan **. A single logistics portal of Kazakhstan for 2018.*

The Logistics Performance Index created by the World Bank shows the efficiency of supply chain management in a country. In Kazakhstan, the LPI is 2.8 and in Russia – 2.75. The highest LPI is observed in Germany (4.2) and Sweden (4.05). Low LPI compared to the developed European countries indicates the need to develop supply chain management strategies in Kazakhstan. It should be noted that the overwhelming majority of enterprises in Kazakhstan are small enterprises. This suggests that the logistics services market is still developing. Some years ago, experts noted the need for an active logistics development in Kazakhstan, but there haven't been any significant changes yet. The biggest number of transportation and storage enterprises, as well as the main financial flows are concentrated in the two largest cities of the country – Almaty (4369) and Nur-Sultan (1637), while the rest of the Kazakhstan regions and cities are characterized by an acute shortage of logistics companies.

Human potential is another important territorial indicator. The human potential assessment is a necessary element of socio-economic development, since the consideration of demographic indicators improves the quality of life of the population of Kazakhstan. It is also an important indicator of the region's competitiveness. The analysis of the regions in terms of human resource development is presented in Table 4.

Table 4
Rating of Kazakhstan regions on the human resource indicator

Region	Labor force	Ageing index (per 100 children)	Unemployment rate	Integrated indicator
Akmola	7	6.875	0.95	4,94
Aktobe	4.11	5	1.92	3,68
Almaty	8.3	4.375	3.9	5,53
Atyrau	2.4	1.875	3.5	2,59
Nur-Sultan city	3.33	3.125	1.17	2,54
East Kazakhstan	5.8	8.75	2.5	5,68
Jambyl	4.75	3.75	3.42	3,97
West Kazakhstan	2.6	5.625	1.62	3,28
Karaganda	5.67	7.5	1.86	5,01
Kostanay	3.83	9.375	1.57	4,93
Kyzylorda	2.5	2.5	2.31	2,44
Pavlodar	3.2	8.125	1.86	4.40
NorthKazakhstan	2.5	10	1.23	4,58
Mangystau	2.3	0.625	1.89	1,61
Almaty city	6.67	6.25	2.54	5,15
South Kazakhstan (Turkistan)	10	1.25	10	7,08

Source: the statistics of the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan for 2018; official statistics of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan**.*

It should be noted that we consider the regions with high unemployment rates on the positive side, since there it is possible to develop industry, open new enterprises and increase job opportunities. The output of services and goods makes the gross domestic product (GDP) of the state. It is an indicator of the

competitiveness of the state and its regions. Table 5 shows the analysis of regions in terms of the output of goods and services.

Table 5

The output of goods and services

Region	Production output (millions of tenge)	The volume of goods and services produced by large and medium-size enterprises (millions of tenge)	Core cattle production (millions of heads)	Retail trade volume (millions of tenge)	Integrated indicator
Karaganda	3.4	3.7	6.4	9.54	5,76
Atyrau	10	10	1.11	1	5,5275
Almaty	1.17	1.20	10	1.47	3,46
East Kazakhstan	2.49	2.52	5.2	3.22	3,3575
Almaty city	1.18	1.21	0.04	10	3,1075
Akmola	0.86	0.89	7.84	0.83	2,605
Aktobe	2.47	2.5	2.03	2.90	2,475
Kostanay	1.16	1.19	5.65	0.99	2,2475
Mangystau	3.9	4.2	0.44	0.58	2,28
West Kazakhstan	3.29	3.34	1.53	0.92	2,27
North Kazakhstan	0.33	0.4	7.17	0.72	2,155
Pavlodar	2.61	2.65	1.90	1.44	2,15
Nur-Sultan city	0.80	0.84	0.02	4.49	1,5375
Jambyl	0.52	0.55	3.9	0.98	1,4875
Kyzylorda	1.24	1.28	1.00	1	1,13
South Kazakhstan (Turkistan)	0.60	0.64	1.66	0.51	0,8525

*Source: the official statistics data of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan for 2018**

In the regional context, the largest production output is observed in mega-cities, where the headquarters of many large and medium-size companies are located. At the same time, the share of Karaganda and Atyrau regions is the largest in the national index, followed by the city of Almaty and Nur-Sultan. The integrated indicator in all regions is lower. This means that the regions' potential is not sufficiently developed. Let us have a look at the ease of doing business in each Kazakhstan region in order to fully consider its competitiveness (Table 6). According to the 2018 World Bank rating, Kazakhstan was ranked 28 in the Ease of Doing Business Index, while Russia – 31, Kyrgyzstan – 70, Armenia – 41, Belarus – 37. The leaders were New Zealand (87.01), Singapore (85.05) and Denmark (84.87).

Table 6

Ease of doing business

Region	Opening of new enterprises	Procurement of building permit	Connecting to power supply	Registering property	Integrated indicator
Akmola	-	-	-	-	-
Aktobe	8.99	7.23	6.91	8.40	7,88
Almaty	9.19	10	10	10	9,80
Atyrau	-	-	-	-	-
Nur-Sultan city	10	7.245	4.144	8.41	7,45
East Kazakhstan	9.01	6.85	6.25	8.42	7,63
Jambyl	-	-	-	-	-
West Kazakhstan	-	-	-	-	-
Karaganda	9.194	7.248	4.74	8.42	7,4
Kostanay	9.00	7.30	6.79	8.42	7,88
Kyzylorda	-	-	-	-	-
Pavlodar	9.18	7.18	5.97	8.42	7,69
North Kazakhstan	-	-	-	-	-
Mangystau	-	-	-	-	-
Almaty city	-	-	-	-	-
South Kazakhstan	9.195	6.70	5.22	8.42	7,38

Source: "DoingBusiness" database

The cities with the highest rates (Almaty, Aktobe and Kostanay) have been the most successful in the indicators related to the spheres in which local authorities have the most autonomy in developing and implementing regulatory rules – procurement of building permits and connecting to power supply. The smallest regional disparities are observed in starting a business and registering property. Kazakhstan lags behind in terms of starting a business, in comparison with global indicators. The biggest regional discrepancy is connected with power supply. To achieve the tasks set by the president, the Ministry of Energy of the Republic of Kazakhstan is actively working to improve the quality and reliability of power supply to consumers, as well as the conditions for connecting them to the power supply system. In terms of property registration, all Kazakhstan regions meet the global standard, but they do not occupy a leading position. In order to see the general trend of regional competitiveness, we calculated the aggregated indicator for all the presented indicators of territorial marketing (Fig. 1). The aggregated index was calculated as an arithmetic average of all the integrated territorial marketing indicators. It can also be calculated by giving weight to the indicators based on their importance.

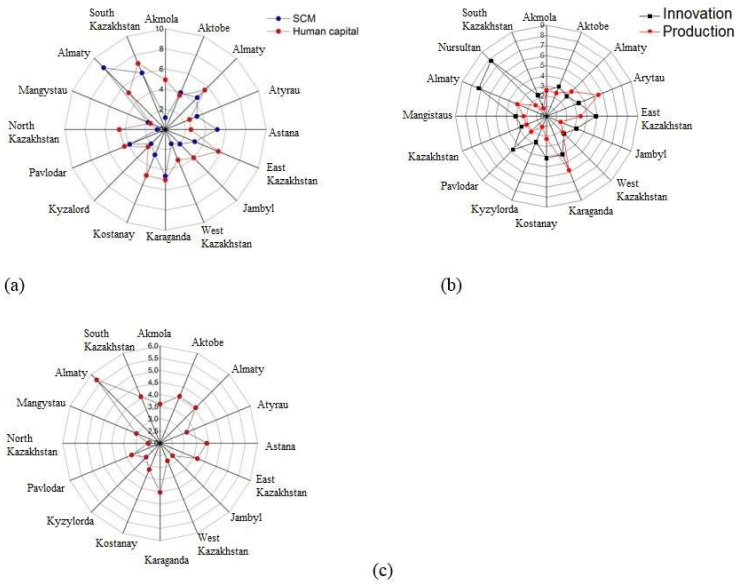

Fig. 1. Integrated indicator for a) Supply chain management and human potential, b) Innovation and production output, c) overall regional competitiveness index

NB. Fig. 1 does not present data on the ease of doing business, since there do not provide business reports for all regions. Table 5 shows an integral indicator of the ease of doing business.

It should be noted that most of the studied regions have a low level of competitiveness and the average score in almost all regions is 3.8 ± 2.7 (Fig. 1 c). The highest indicator is the aggregate indicator of Almaty (5 points) and Karaganda (3.2 points). None of the regions has a high level of output and the average score is below 5 (Fig. 1b). In terms of innovation development, Almaty and Nur-Sultan hold the leading position. The average indicator is observed in the East Kazakhstan, Atyrau and Mangystau and Pavlodar regions, in the remaining regions it is below 3 with a possible maximum value of 10.0. The indicator is the lowest in the North Kazakhstan and Turkistan regions. The Turkistan region is characterized by great human potential and effective supply chain management. But the unemployment rate is the highest there. The state should stimulate the development of the region by attracting investors and opening new enterprises. It should be noted that the ease of doing business in all regions is at the same level (Table 5). This means that from a territorial perspective the state has an effective management policy.

The results of the three groups are presented in Table 7. There are 5 of them in the text.

Table 7
Generalization

Indicator/Level	I-ineffective	II - average	III- effective
Innovation activities	South Kazakhstan (Turkistan) North Kazakhstan Kyzylorda West Kazakhstan Almaty Akmola	Aktobe Atyrau East Kazakhstan Jambyl Mangystau Pavlodar Karaganda Kostanay	Almaty city Nur-Sultan city
Supply chain management	Akmola West Kazakhstan Kyzylorda North Kazakhstan Mangystau	Aktobe Almaty Atyrau Nur-Sultan city East Kazakhstan Jambyl Karaganda Pavlodar	Almaty SouthKazahstan (Turkistan)
Human potential	Atyrau Nur-Sultan city Kyzylorda Mangystau	Akmola Aktobe Almaty East Kazakhstan Jambyl West Kazakhstan Karaganda Kostanay Pavlodar North Kazakhstan Almaty city	SouthKazakhstan (Turkistan)
The output of goods and services	Aktobe Akmola Kostanay Mangystau West Kazakhstan North Kazakhstan Pavlodar Nur-Sultan city Jambyl Kyzylorda South Kazakhstan (Turkistan)	Karaganda Atyrau Almaty East Kazakhstan Almaty city	-
Ease of doing business	-	-	South Kazakhstan (Turkistan) Pavlodar Karaganda Kostanay Nur-Sultan city East Kazakhstan Aktobe Almaty

The highest indicator of human resources is observed in the Turkistan region, but according to the other indicators it is not effectively managed. The analysis of the territorial marketing indicators showed that all Kazakhstan regions are attractive for doing business. But there are some obstacles. The level of regulatory obstacles that entrepreneurs face depends on the region in which they open their commercial enterprises. Regulatory effectiveness varies significantly in two of the four studied areas (procurement of building permits, connecting to power supply). This is due to the differences in the local law enforcement practice and the implementation level of recent reforms. The city of Almaty, where new reforms are usually implemented much earlier than in other regions, has the most favorable regulation for business. The capital city – Nur-Sultan, where pilot reforms are often introduced, is less favorable. Local regulatory effectiveness provides a higher overall ranking. Doing business in Kazakhstan is relatively inexpensive. The country ranks 6 in the cost of registering property and is in the top 30 countries to open an enterprise. The assessment based on territorial marketing showed that only 2 out of 16 regions take a proactive approach to innovation. This means that local authorities should attract investments to the regions with a low innovation level (level I and II regions which are presented in

Table 6). The analysis of the territorial marketing indicators showed that the innovation policy of local authorities is ineffectively implemented. This is evidenced by the low integrated indicator of innovation activity (3.8 ± 2.7). In addition, the territorial marketing research allowed us to establish that the Karaganda, Pavlodar and East Kazakhstan regions have a relatively average competitiveness level. The number of jobs could be increased by opening new enterprises focused on innovations. We propose to analyze the relationship between science and production and determine its bottlenecks and difficulties, which concern the interaction of different institutional sectors and their motivation, as well as the increase of the interest of private enterprises to participate in state funded projects or cooperation agreements. It is recommended to expand horizontal policy by limiting vertical methods. This involves the use of horizontal policy instruments aimed at strengthening the relationship between science and production, for example, the creation of technological platforms with the criteria characterizing the intensity of such relations. Special support should be given to new small companies that can connect science and markets. Knowledge transfer capacity can be increased through the use of effective intermediary services and experience. The study based on territorial marketing showed that the Turkistan region is not competitive in terms of innovation and production of goods and services. It also has the highest unemployment rate. We propose to invest in innovation and open innovative enterprises to improve competitiveness

The analysis of territorial marketing indicators revealed that supply chain management in the level I and level II regions in not effective. The Turkistan and Pavlodar regions are the most competitive in supply chain management. They provide the most freight and cargo transportation. When choosing supply chain management strategies for the regions with inefficient management policies, it is necessary to take into account that SCM has a huge impact on financial performance and competitiveness of a company. An increase in its turnover and profit directly depends on the speed and efficiency of supply chains. It should be highlighted that it is much easier to increase profit through the reduction of internal costs rather than supplier cost. It can be also done by increasing the selling price of finished products or services. In the end, SCM also raises the shareholder value of the enterprise. In the West, the concept of SCM has become popular over the past decade (Boström et al., 2015,). Leading companies have managed to significantly reduce their operating costs by focusing on the following aspects of SCM:

- Improved demand forecasting based on modern software applications. This helps to reduce procurement and increase turnover. In turn, it makes it possible to unlock working capital and reduce the cost of warehouse operations.
- Reduced supplier prices due to close cooperation with suppliers and exchange of information on the planned volume of procurement.
- Optimization of warehouse operations through the use of modern IT-technologies.
- Simplifying of procurement processes online orders.
- Reduced material procurement cost through the use of standardized materials. This reduces the setup time for a particular process.
- Improved quality of the goods and reduced number of manufacturing defects.
- The introduction of cost-effective production techniques to reduce waste.
- Optimization of logistics processes, which contributes to a reduction in transportation costs.

When choosing a supply chain management strategy for the regions with low efficiency (Table 6), the above-mentioned recommendations should be used. According to the territorial marketing analysis, the state should support supply chain management in the Turkistan region, ensure more freight traffic, simplify procurement processes through the use of online orders. In addition, the effectiveness of SCM can be increased by introducing innovation in these regions. World practice shows that the introduction of SCM is impossible without the use of advanced IT solutions. Of course, domestic companies cannot use all technologies in the same way as it is done in the West (Gundlach et al., 2019). For example, it is too early to talk about Trading Exchanges and e-Procurement (conducting operations on online

exchanges and electronic procurement). However, other IT solutions are already being implemented in Kazakhstan. Almost all enterprises implement ERP (enterprise resource planning system), many companies use WMS (warehouse management system) and TMS (transportation management system). Some enterprises use Demand Planning (and QMS (quality management) systems, etc. (Acar et al., 2017; Yu et al., 2017). The territorial marketing analysis showed that the policy on the production of goods and services is very ineffective in Kazakhstan. The division of labor and specialization can significantly increase productivity due to the following factors:

- workers perform certain operations in accordance with their skills;
- focus on simple actions;
- minimum number of tools and movements;
- the possibility of process mechanization.

All production is divided into sectors: metallurgical, agricultural, engineering, etc. According to its scale, production can be divided into single unit, batch or mass production. In single unit production, one or more units are produced. In mass production, various goods are manufactured in batches. It is divided into large, medium and small batch production. The most extensive production is the mass production of homogeneous products for a long period of time. Table 8 provides the descriptive findings of the study, covering the title of various items for territorial marketing and regional competitiveness. For this purpose, data is collected through a questionnaire approach developed for the various respondents who are linked to the different activities of supply chain in the region of Kazakhstan are selected. For the territorial marketing, three sub divisions are made under the title of requirements for territorial marketing applications, or TM items, contents of territorial marketing or CTM items, and finally the difficulties in the application of territorial marketing or DATM. For the measurement of regional compactivities (RC), five items are added in the questionnaire as presented under Descriptive findings of the study. It is observed for the TM items, maximum mean score belongs to TM5; 3.47, followed by TM4; 3.39 respectively. For CTM highest average value is 3.26 as presented by CTM5. In addition, mean score for the factors of DATM are also presented under descriptive findings.

Table 8

Descriptive Statistics of the Study

Descriptive Statistics

	N	Range	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
TM1	240	4.00	2.9833	1.35673	.030	.157	-1.143	.313
TM2	240	4.00	3.3708	1.21703	-.335	.157	-.874	.313
TM3	240	4.00	3.0250	1.32224	-.046	.157	-1.170	.313
TM4	240	4.00	3.3958	1.23647	-.482	.157	-.660	.313
TM5	240	4.00	3.4708	1.13483	-.378	.157	-.570	.313
CTM1	240	4.00	2.6625	1.41075	.300	.157	-1.166	.313
CTM2	240	4.00	2.9917	1.28393	-.092	.157	-.998	.313
CTM3	240	4.00	3.1375	1.27818	-.212	.157	-1.032	.313
CTM4	240	4.00	3.3125	1.24013	-.307	.157	-.907	.313
CTM5	240	4.00	3.1083	1.30205	-.191	.157	-1.063	.313
CTM6	240	4.00	3.2625	1.24165	-.352	.157	-.801	.313
CTM7	240	4.00	3.2708	1.33726	-.348	.157	-1.040	.313
DATM1	240	4.00	2.9042	1.34879	.124	.157	-1.082	.313
DATM2	240	4.00	2.8667	1.36871	.125	.157	-1.204	.313
DATM3	240	4.00	3.8875	1.11281	-.970	.157	.325	.313
DATM4	240	4.00	3.8542	1.09372	-.849	.157	.035	.313
DATM5	240	4.00	3.6875	1.18844	-.551	.157	-.700	.313
DATM6	240	4.00	3.8625	1.02778	-.724	.157	-.109	.313
RC1	240	4.00	3.7000	1.09850	-.605	.157	-.361	.313
RC2	240	4.00	3.5875	1.20349	-.455	.157	-.746	.313
RC3	240	4.00	3.6417	1.09999	-.546	.157	-.393	.313
RC4	240	4.00	3.8000	1.10230	-.844	.157	.146	.313
RC5	240	4.00	3.7167	1.12546	-.578	.157	-.499	.313
Valid N (listwise)	240							

After describing the data trends through mean score and other descriptive measures, next step is to develop a structural model, covering the title of confirmatory factor analysis or CFA. One of the significant benefits for analyzing the selected items for CFA is that it provides the relevant factor loadings for each of the item, which provide the overview about their presence in the model. For this purpose, figure 1provides an overview for the structural model of CFA, covering the latent variables like TM, CTM, and DATM as observed for the territorial marketing. For TM, five items, for CTM, seven items and for DATM, six items are under consideration. In addition, Fig. 2 explains that there is a covariance between the three latent variables as presented through double headed arrow. Besides, selected items of TM, CTM, and DATM are presented through observed variables with their relative error terms. Findings for the CFA are presented in the subsequent discussion.

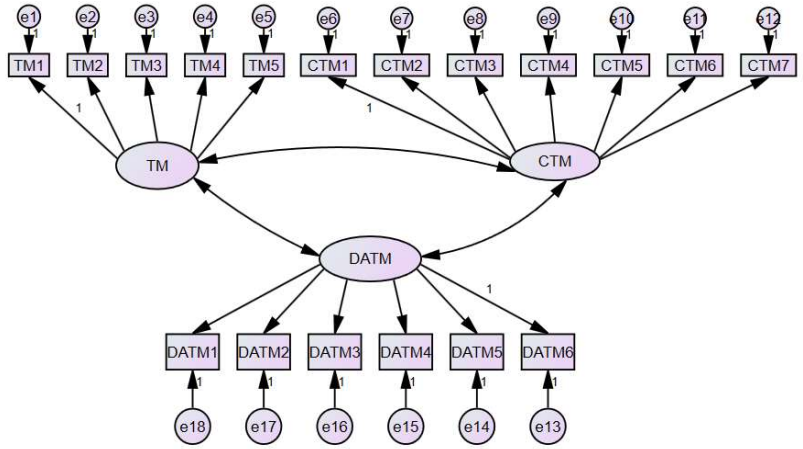

Fig. 2. Model of the Study for CFA

Table 9 provides the model fit indices for the CFA, covering the chi-square value, probability value, GFI, AGFI, TLI, CFI, PCFI, and finally RMSEA respectively. It is observed that overall value of chi-square is 412.50 as significant at 1 percent chance of error. It means there is 99 percent chance to state that overall CFA is under good fit or covering the criteria of model fit as observed through chi-square and its significance. For GFI, value is 88.9 percent and found to be acceptable among other model fits like AGFA and TLI. Besides, the value of RMSEA is .402 indicating that it is quite below the threshold point of .050 as observed in various earlier studies.

Table 9
Model Fit indices for CFA

Description of Fit Measurement	Value achieved	Accepted/Not accepted
Chi-square	412.25	Accepted
Probability value	0.000	Accepted
GFI	.889	Accepted
AGFI	.881	Accepted
TLI	.875	Accepted
CFI	.888	Accepted
PCFI	.871	Accepted
RMSEA	.042	Accepted

Table 10 provides the overall findings for the covariance between the CTM-DATM, between TM-DATM, and between TM-CTM respectively. It is observed that for CTM-DATM relationship covariance is .095 and significant at 5 percent. For TM-DATM covariance estimate is .189 and significant at 5 percent chance of error. Additionally, the covariance between TM-CTM is .310 as significant at 5 percent. Whereas, Table 10 provides the correlation between the variables of the study. For the correlation between CTM and DATM value is .267, between TM and DATM is .397, and between TM-CTM is .930 respectively.

Table 10
Covariances: (Group number 1 - Default model)

Variables	Covariance	Variables	Estimate	S.E.	C.R.	P
CTM	↔	DATM	.095	.035	2.729	.006
TM	↔	DATM	.189	.051	3.701	***
TM	↔	CTM	.310	.078	3.978	***

Table 11
Correlations: (Group number 1 - Default model)

Variables	Correlation	Variables	Estimate
CTM	↔	DATM	.267
TM	↔	DATM	.395
TM	↔	CTM	.930

After the description of correlation and covariance measures, Table 12 provides the weights for the factor loadings for the various items of the study. It is found that for the selected items of TM, loadings are .78, .71, .88, .72, and .82 respectively. For the factor loadings of CTM, maximum loading is observed for the CTM7, followed by CTM5, and CTM4 respectively. In addition, CTM3 has a factor loading of .78, followed by CTM2 and finally CTM1. Furthermore, DATM has shown a factor loading of DATM1 is .87, for DATM4 is .82, and DATM5 is .78. Fig. 3 provides an overview for the factor loadings of various items of territorial marketing.

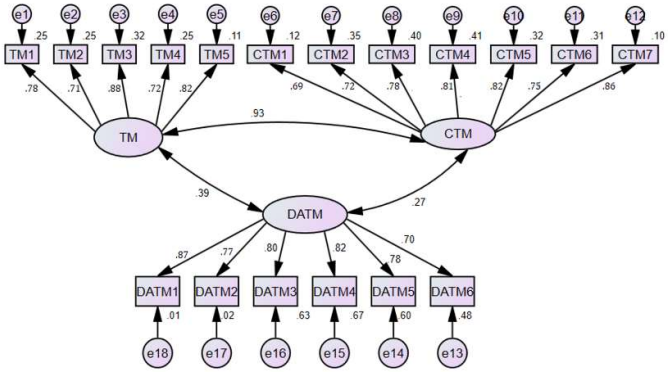

Fig. 3. Output for the for CFA

Table 12
Standardized Regression Weights: (Factor Loadings)

Items	Direction	Variables	Estimate
TM1	←	TM	.780
TM2	←	TM	.712
TM3	←	TM	.881
TM4	←	TM	.721
TM5	←	TM	.820
CTM1	←	CTM	.691
CTM2	←	CTM	.720
CTM3	←	CTM	.780
CTM4	←	CTM	.810
CTM5	←	CTM	.823
CTM6	←	CTM	.750
CTM7	←	CTM	.861
DATM6	←	DATM	.701
DATM5	←	DATM	.775
DATM4	←	DATM	.817
DATM3	←	DATM	.796
DATM2	←	DATM	.772
DATM1	←	DATM	.872

After the calculation of factor loading for the various items of territorial marketing, Fig. 4 provides the structural model of the study, covering the impact of TM, CTM, and DATM on regional competitiveness or RC. For TM five items, for CTM, seven items, for DATM, six items, and for RC five items are under consideration, covering the title of latent variables of the study. In addition, various error terms are presented through the title of e1 to e23 are also presented and added in the Figure 4 of the study.

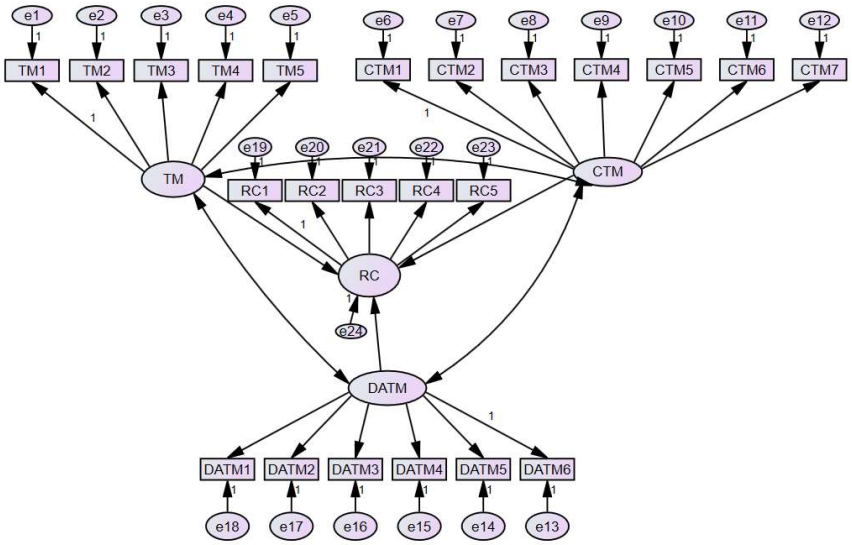

Fig. 4. Structural Model of the Study

Table 13 provides the findings for the various model fit measures of structural model of the study, covering the title of Chi-square along with other measures. It is found that the value of chi-square is highly significant, along with other model fit indices of the study. for GFA value is .881, for AGFA value is .872, for TLI value is .870, for CFI value is .876 and for PCFI value is .864 respectively. The last model fit indices of the study is RMSEA which is .048, indicating that overall structural model of the study is fit for explaining the impact of TM and related factors on RC.

Table 13
Model Fit indices for Structural Equation Model of the Study

Description of Fit Measurement	Value achieved	Accepted/Not accepted
Chi-square	456.02	Accepted
Probability value	0.000	Accepted
GFI	.881	Accepted
AGFI	.872	Accepted
TLI	.870	Accepted
CFI	.876	Accepted
PCFI	.864	Accepted
RMSEA	.048	Accepted

Table 14 provides the outcome for the impact of CTM, DATM, and TM on RC. It is found that the value of coefficient for the effect of CTM on RC is .838, indicating that there is a positive influence of CTM on RC. The value of standard error for this coefficient is .180 and critical ration of 4.65 respectively. It means that the overall effect of CTM on RC is highly significant and positive at 1 percent chance of error. This overall effect further implies the factors under the title of contents of territorial marketing have their direct influence on increase the RC in Kazakhstan region. For the effect of DATM on RC, coefficient is -.955 with the standard error of .132. It means that there is a significant and negative influence of difficulties in the application of territorial marketing or DATM on RC. The value of critical ration is -7.219, showing a significance level of 1 percent. It explains that with the more difficulties in the application of territorial marketing, there is an adverse influence on the value

of RC. For measuring the effect of TM on RC, standardized regression estimate of .587 indicates a positive causal relationship between the both. It means that requirements for territorial marketing and related items have presented their positive and significance influence on the value of RC. It further specifies that with the increase in the requirements for the territorial marketing application, there is a constructive influence on the value of RC. In addition, Table 15 provides the findings for the variance of the various factors, and error terms of the study.

Table 14

Regression findings for Structural Equation Model of the Study

			Estimate	S.E.	C.R.	P
RC	←	CTM	.838	.180	4.65	***
RC	←	DATM	-.955	.132	-7.219	***
RC	←	TM	.587	.053	11.07	***

Table 15

Variances: (Group number 1 - Default model)

Variables, Error terms	Estimate	S.E.	C.R.	P
TM	.441	.123	3.576	***
CTM	.259	.099	2.607	.009
DATM	.558	.089	6.296	***
e24	.055	.040	1.382	.167
e1	1.393	.140	9.970	***
e2	1.090	.111	9.844	***
e3	1.188	.126	9.450	***
e4	1.140	.115	9.907	***
e5	1.137	.108	10.563	***
e6	1.723	.163	10.547	***
e7	1.075	.112	9.566	***
e8	.974	.106	9.189	***
e9	.894	.099	9.077	***
e10	1.140	.118	9.690	***
e11	1.063	.109	9.786	***
e12	1.601	.150	10.645	***
e13	.494	.052	9.556	***
e14	.579	.063	9.175	***
e15	.416	.048	8.622	***
e16	.471	.053	8.939	***
e17	1.834	.168	10.911	***
e18	1.785	.164	10.914	***
e19	.554	.059	9.378	***
e20	1.078	.103	10.493	***
e21	.533	.058	9.256	***
e22	.590	.062	9.539	***
e23	.510	.057	8.956	***

4. Conclusion

In our research, we assessed the competitiveness of Kazakhstan regions with the help of territorial marketing indicators. As a result of our research, it was established that the aggregate indicator in all regions is below average. The cities of Almaty and Karaganda are characterized by the most effective management strategy. At the same time, innovation activities prevail in the cities of Almaty and Nur-Sultan. Supply chain management is best organized in the city of Almaty and the Turkistan region. Human resources are the most developed in the Turkistan region, but the unemployment rate is the highest there. Opening of new enterprises focused on innovation could increase job opportunities there. The production of goods and services is not competitive in all regions of Kazakhstan. It is a positive sign that in all Kazakhstan regions it is easy to do business. According to this indicator, Kazakhstan is in the top 30 countries. Low indicators of innovation activities (3.8 ± 2.7) indicate the ineffectiveness

of regional policy. The Karaganda, Pavlodar and East Kazakhstan regions have a relatively average level of competitiveness. In our research, we have also provided some recommendations for improving territorial indicators to increase regional competitiveness. In addition, this study has provided a good understanding for the causal relationship between territorial marketing and its impact on regional competitiveness. It is found that effect of TM and CTM is significantly positive for RC, while the effect of DATM on RC, effect is significant and negative.

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MODERN TRENDS OF DEVELOPMENT OF ELECTRONIC TRADE IN THE CONDITIONS OF DIGITAL ECONOMY

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Abstract. E-commerce is rapidly gaining popularity and is a dynamically developing industry in the global economy. With the help of information technologies, Internet companies are open to opportunities to develop new markets, providing the Internet consumer with great potential for product research. For the further effective development of commercial activity, an important condition is fulfilling the need to assess the main trends and changes in the development of electronic commerce.The purpose of the study is to analyze the development and current state of electronic commerce in the world, as well as develop methods and recommendations for participants in foreign economic activity doing business through the Internet in the interests of expanding companies and increasing the efficiency of their activities. Results. A study of the basic principles of electronic commerce and the factors affecting it. E-commerce systems are presented that enable buyers not only to interact with the seller, but also to receive the most complete information about the goods sold and the services provided. Using the results of the analysis, the state and main trends in the development of electronic commerce are determined. A system of indicators has been supplemented to assess the level of development of international electronic commerce.

1 Introduction.

In modern economic conditions, there is a dynamic development of a promising segment of the domestic economy - electronic commerce. The spread of broadband Internet access provides an opportunity to open up new markets. E-commerce systems enable customers not only to interact with the seller, but also to receive information on the goods sold and the

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services provided. Sellers are able to quickly respond to changing consumer behavior, demand dynamics, as well as reduce the cost of renting premises and company personnel [1].

E-commerce turnover and the number of online stores are constantly growing. This is due to the fact that the number of users, social media, as well as the development of Internet payments is increasing [2].

Nowadays, like never before, e-commerce is very popular in the world. The turnover of funds in the field of direct sales, that is, sales "from seller to consumer" amounted to more than 1.3 trillion dollars, between companies - 15 trillion in dollars. According to the results of analysts and experts in the field of electronic commerce in 2018, in countries that are economically transitional and developing countries, e-commerce will occupy more than 40% of total trade indicators, while in developed countries this indicator is somewhat will decrease from 70 to 60% [7].

Currently, in the countries of the European Union, electronic commerce has become an integral part of the functioning of enterprises [8]. (Nadtochy Yu.I., 2010, Sudakova N.A., 2008). About one in six European companies employing more than ten employees sold their goods and services online last year. Almost all of them (97%) engage in online sales within their own country, 44% trade with customers from various countries of the European Union, and 28% trade with countries outside the EU [9].

The term “electronic commerce” is actively used in the literature along with such concepts as “Internet commerce”, “electronic commerce” and “digital commerce”. The active development of electronic commerce in various countries is associated with the presence of a favorable socio-economic climate and the formation of a complex of factors that create a positive background and basic basis. The intensive growth of mass communication media has also determined changes in the sphere of entrepreneurial activity and doing business [10].

The electronic commerce system between companies can be implemented on the basis of cashless payments, between enterprises and individuals - consumers of products. In accordance with this division, there are 2 types of electronic commerce based on 2 types of interaction: “business-to-business B2B” and “business-client” (Business-to Consumer, B2C) [11].

The basic element of electronic commerce is now electronic trading platforms and online stores. E-commerce includes five main areas of activity:

- advertising (targeted, non-targeted, non-individualized advertising);
- Presentation of goods and services (electronic catalogs tied to an electronic platform or online store);
- Conducting basic operations for the selection of goods, filling in an electronic basket, working with an electronic payment system, tracking the implementation of an order;
- After-sales support, warranty service, etc .;
- marketing of relationships (partnerships) [10].

Another area of e-commerce development is the use of crypto currency. The founder of the crypto currency is David Chom. He invented a centralized payment system for confidential payments in the DigiCash system, but in 1998 the company ceased to exist [12]. (Matkovsky I, 2019). The resumption of crypto currency development was due to the advent of the decentralized payment system Bitcoin, which was developed in 2009 by an unknown programmer [13]. Today, crypto currency is one of the types of digital currency. Its emission and accounting are based on various cryptographic methods, its functioning is decentralized in a distributed computer network. Cryptocurrency is a real software product, the rate of which depends on the levels of supply and demand.

The highest concentration of online trading companies is in Ireland (26%), Sweden (25%) and Denmark (24%). At the same time, in Romania (7%), Bulgaria and Poland (9%), Italy and Latvia (10%) - a rather low level of development of companies engaged in electronic commerce [5].

According to E-Commerce Foundation research, last year, e-commerce in Denmark was worth 13.5 billion euros after an increase of 15.88% compared to 2015. It is currently projected that this industry will be more than 15.5 billion euros at the end of this year. It is also known that 32% of online shoppers in Denmark bought abroad. The most popular cross-border shopping destination is the United Kingdom, followed by Germany, the USA, China and Sweden. The most important reason to buy on foreign e-commerce sites is lower prices [14].

Recently, experts have noted the growth of e-commerce in the UK. It amounted to just over 19% of this country's annual income. If we take the pan-European indicators, then e-commerce

The UK will account for approximately 30% of the European total revenue. This will include not only retail, but also wholesale, sales of exclusive goods. If these indicators are not taken into account, then e-commerce will be approximately 26% of sales, in our country this figure is much lower, and ranges from 2 to 3%. According to the results of various expert groups and analysts, over the course of 5 years this indicator will increase to 40% [15].

In the future, electronic commerce will be built on multi-format and multi-industry electronic platforms, and the combined usefulness of products will be created by the efforts of all participants. As basic services, individualized information on supply and demand, the choice of a product or service, an online contract, an online transaction, electronic logistics, and analytical forecasting will be offered.

2 Literature review

An analysis of current trends in the development of electronic commerce is given in the works: O. Vlasova [1], Kazmina I.V. [11], Pimenova G.G. [2], Varlamova Yu.A. [9].

The development of electronic commerce in Kazakhstan was carried out by such researchers as: Ziyadin S.T. [16], Mutanov G.M. [17], Sash N. [18], Toluyev J. [19], Schedenov U.K., Askarov F. [20], Onaltaev D., Kazhmuratova A., Akhmetkalieva S., Malikova R.M [21].

In the works of foreign scientists researching the development of international economic relations, the problem of international electronic commerce has also been reflected. Among the works that have made a significant contribution to its study and development, the fundamental works of scientists should be distinguished: Sudakova N.A. [5], Maksimenko A.A. [6], Aksenova A.A. [7], Nadtochy Yu.I. [8], Sidorova G.M. [22], Granin Yu.D. [14], Korolkov V.E. [fifteen].

The work also uses the works of well-known foreign researchers involved in the effectiveness of electronic commerce, such as D. Luzin. [23], Matkovsky I. [24] a number of others.

At the same time, in foreign and domestic works, the research topic is not comprehensively developed, there is no detailed consideration of e-commerce trends, little attention is paid to problems that impede the expansion of international e-commerce, questions on ensuring international delivery of goods in the framework of the establishment of electronic business are not fully covered.

3 Data and methodology

The development of e-commerce was made possible thanks to a large-scale system program for the development of the economy of a new technological generation, the so-called digital economy.

The theoretical basis of the study was the work of domestic and foreign authors describing the influence of the information sphere and the spread of the Internet space, the digital economy on Internet trade, which allowed us to consider the development of its main directions.

When writing the article, a wide range of analytical methods was used - statistical analysis, forecasting, comparison, theoretical generalization, statistical data processing, data analysis in dynamics.

Studying and analyzing the transformation of marketing in the context of the development of the digital economy implies the development and application of a system of indicators and indicators that really reflect the actual state and development directions of the EAEU Internet space, which are reflected in the economic literature. Indicators differ in the number of indicators included, target orientation, research coverage, which allows to identify the position of the region relative to another, that is, to conduct a comparative analysis of them. The article analyzed the rating of the countries of the world in terms of the development of information and communication technologies, data from world Internet statistics, and reporting data from a report on the information economy.

Currently, there are several international ratings that directly or indirectly characterize the levels of development of information and communication technologies and the maturity of e-government tools in different countries of the world.

The most authoritative are the ratings of the United Nations (UN), the International Telecommunication Union (ITU), the World Economic Forum (WEF) and the World Bank (WB).

In the article, the described indicator was used to reflect the level of development of Internet technologies in the EAEU countries in comparison with world standards.

The dialectical research method was the general methodological basis of cognition using a systematic approach to the processes of transnationalization and economic development. Correlation and regression analysis of official statistical materials of federal executive bodies and international statistical databases. The information and legislative base of the work was composed of laws, UN, EU model laws, statistical materials (Rosstat, Internet World Stats, Eurostat, World Bank, UNCTAD, data from the Eurasian Economic Commission), information and analytical studies of Data Insight agencies, and the Association of Internet Companies Trade (AKIT) ", Association of Kazakhstan Internet Business (AKIB)," J'son and Partners management consultancy "," Statista.com "[23]. During the study, we analyzed both official statistics and industry surveys, data from business associations and companies .. At the same time, we conducted a series of in-depth interviews with representatives of the e-commerce sector.

4 Results and discussion

According to industry experts, a significant increase can come from electronic trading in intangible goods (about 20 - 25% per year), which is practically not taken into account by market experts in the total volume of online sales. This can be explained by the fact that so far there has not been a single international practice of recording and evaluating the indicators of the emerging online trading market [25].

Figure 1 shows the position of states in the market for online trade in services and goods. According to Remarkety, in 2017, China became the largest online trading market in the world. The main growth factor is the country's population [25].

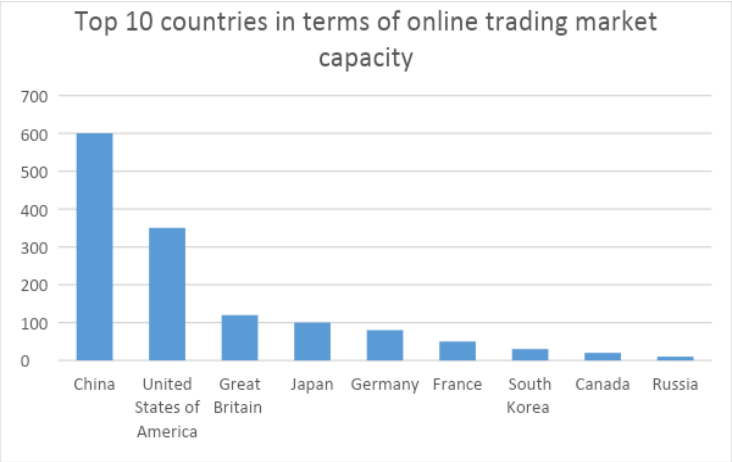

Fig. 1. TOP 10 countries - leaders in terms of capacity of online trading markets Source - according to the literature [25].

The high growth rate of the PRC economy over the past few years, as well as expert forecasts regarding their preservation and further growth, testify to the preservation and increase of China's leading position in global e-commerce. Some countries already include protectionist barriers to the relatively high-quality and low-cost market for services and goods offered by Chinese online stores. According to expert forecasts, a significant growth of the global online trading market should be expected over the next few years (Fig. 2). EMarketer experts predict that by 2019, sales will grow to $ 3.5 trillion [5]. At the same time, the share of online trading in world retail will increase to 12%, compared with 8–9% in 2015 [6].

The main factor in the growth of the online trading sector is a steady influx of new Internet users, mainly mobile Internet users (tablets, smartphones) [25]. It is also necessary to take into account the general global trend of digitalization of society in order to minimize costs on any operations and transactions, if they can be transferred to the global network. EMarketer experts predict that in the near future there will be a significant increase in the number of purchases, including due to increased price competition between market players. This is due to the fact that online consumers have the opportunity to compare prices of different sellers (including in the marketplace format), which acts as a driver for holding regular and frequent promotions by both traditional and electronic retailers [25]. According to experts, China will continue to lead the global online trading market (26% per year) [25]. Mainly due to export retail sales. Rather high growth rates are expected in other emerging economies: in India (24%), in Indonesia and South Korea (more than 20%). The key drivers of growth in these regions are the demographic situation (high population) and mobile Internet penetration. The growth of markets of developed countries (Japan, Germany, Great Britain, the United States) will be significantly affected by mobile sales (Table 1).

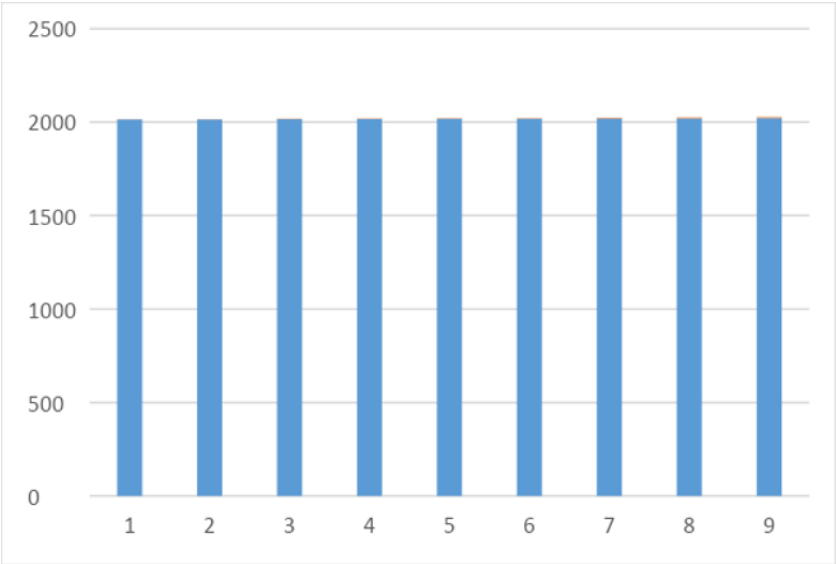

Figure 2 - Growth of the global e-commerce market
Source - according to the literature [25].

The country	Online sales, billion US dollars		Online Trading Share whether in total retail,%		Online shopping share-tele,% of the population countries		The proportion of online shoppers,% of the world's population	
	2015	2019	2015	2019	2015	2019	2015	2019
China	674	1974	17	35	38	53	29	30
USA	342	536	7,3	10,3	66	72	10	13
Great Britain	100	144	16	19,4	76	79,8		
Japan	91	135			69,5	74	5	6
Germany	63	89			67,7	71		

Table 1 - Development of the online trading market in the leading countries

The development and expansion of online trading leads to more rapid globalization and faster information exchange. At the same time, the development of online commerce is one of the main global trends in economic development. All e-commerce is based on principles. Modern principles of electronic business can be formulated as follows (table 2):

№	Principle	Justification
1	Justification	Speed of processing and exchange of information.
2	Business value.	Currently, the value of a business is estimated not only by material resources, but also not material.

3	The concept of distances between opponents is leveled.	Anyone can act as a buyer. Huge opportunities open up for entrepreneurs, since any person, regardless of location, can act as a buyer.
4	The importance of intellectual potential.	Creative ideas, revealing latent demand, quick response to new needs bring significant income.
5	Instant adaptation of the company to market requirements.	The presence of direct and feedback with consumers, the interactivity of the enterprise, becomes an important success factor.
6	Simplicity and high speed of information transfer.	Through the Internet - network information about the characteristics, properties of the new product, advertising materials are distributed instantly.
7	Attraction of information intermediaries.	The goal of attracting information intermediaries is to process a huge stream of data that are important for a particular entrepreneur.
8	Using modern information processing tools.	Using modern tools, you can make a comparative analysis of the prices of goods, get additional information and choose the most attracted brand.
9	Personal approach to each client	With the help of modern Internet marketing tools, a personal approach to each client should be observed.
10	Time saving	A significant reduction in the time between the desire to buy and the actual purchase. It creates additional amenities for consumers.
Note - developed by the authors		

Table 2 - Ecommerce Principles

№	The main factors of development and organization of electronic commerce			
1	Market	Information	Managerial	Legal
2	Market fragmentation	The presence of the economic component	Management Interest	Legality of Laws
3	The presence of competition	Business process automation	Willingness to cooperate	Legal literacy
4	Unique products	Wireless technology	Level of qualification of employees	Guarantees of judicial protection

Various factors influence the development of e-commerce (table 3).

Table 3 - The main factors of development and organization of electronic commerce

Ecommerce has great benefits. Table 4 lists the main advantages of electronic commerce and the resulting effect.

№	Ecommerce Benefits	Effect obtained
1	Save time on delivering product information to consumers	Time saving
2	Round-the-clock access without time zones	Lower time and cost

3	Direct manufacturer-buyer relationship, reduction of intermediaries	Financial cost reduction
4	Providing real-time trading	Reducing time costs, increasing the number of orders.
5	Competitive growth	The increase in sales of goods
6	Formation of the flow of potential customers	Market expansion
7	Expanding Product Information Types	Improving the quality and soundness of advertising
8	Customer satisfaction	Increased advertising, increasing the number of customers.
9	Significant reduction in staff costs and rental of premises	Financial cost reduction
10	Expanding the variety of forms of payment	Simplification of calculations and interaction with suppliers
11	Increase in cash due to electronic payments	The growth of the economy
12	Increase in cash due to electronic payments	Increased investment in the manufacturing sector

Table 4- Key Ecommerce Benefits

These benefits are largely interrelated. Raising the competitiveness of the industry through e-commerce is due to personalization of the service, an increase in the volume of investments in the manufacturing sector, a decrease in temporary financial costs, and an increase in costs. Along with the advantage, there are problems of the development of electronic commerce. Table 5 shows the main problems in the development of electronic business. On the one hand, the elimination of these problems in the organization of electronic commerce will provide an opportunity to build a global business on the Internet.

№	Ecommerce Benefits	Effect obtained
1	The number of Internet users is not enough	Creation of conditions for advertising and new Internet networks
2	Lack of funds to finance Internet projects	The adoption of regional programs for the development of Internet projects
3	The need to expand the system of payments with credit cards and payment systems	The adoption of the state program for the creation of new and development of existing Internet projects
4	The need to develop communications system infrastructure using promising channels	Creating the conditions for completing the construction of a wireless network
5	The need to expand the number of financial institutions providing online services	Creation of additional banking nodes for goods and banking operations
6	Recognition of the legality of new forward-looking payments	Improving the efficiency of legislative bodies
7	Securing Internet Payments	Strict leadership of information security concept
8	The need for legislation	Development and approval of legislation on electronic commerce
9	Lack of training for IT managers	Further training for employees

Table 5 - Problems of the development of electronic commerce and ways to solve problems

Based on official statistics, the authors found a relationship between indicators of electronic commerce development and significant macroeconomic indicators (table 6).

Dependence	Regression level	Coefficient of determination
1. The dependence of GDP per capita on the Index e-commerce development in the world	0,0588x y = 380,82e	0,851
2. The dependence of GDP per capita in countries of the world on sub-indices of the E-commerce Development Index:		
2.1 Proportion of individuals using the global Internet	1,2445 y = 72,842x	0,734
2.2 The proportion of persons using bank cards in quality of payment in electronic commerce	y = 799,06x – 297,37	0,705
2.3 Internet Server Security	y = 0,0079x3,3402	0,789
2.4 Postal reliability (delivery)	1,5233 y = 15,569x	0,511
3. The dependence of the BBB per capita on the level Internet penetration in countries of the world	0,043x y = 678,47e	0,729
4. Dependence of the Quality of Life Index on the proportion Internet shoppers in the total population in countries of the world	y = 0,0309x + 5,6209	0,571
5. The dependence of labor productivity in trade on Worldwide E-Commerce Development Index	4,0765 y = 0,0009x	0,820
Note - developed by the authors		

Table 6 - Analytical relationships between indicators of the development of electronic commerce and macroeconomic indicators

Based on the constructed dependencies, e-commerce development indicators were predicted, the results of which showed a positive trend. In particular, this refers to the IRET, which by 2020 will amount to 53.6%, that is, the EAEU countries will reach 67.7% of the level of electronic commerce development in the EU. Based on the gradation of the analyzed indicator (from 50 to 74 inclusive), the EAEU countries have reached the average level of electronic commerce development.

5 Conclusion

The first experience of electronic commerce led to the conclusion:

1. The electronic business takes root where services are provided to enterprises operating in an adequate infrastructure environment.

2. Without automation of technological processes of enterprise resource management, including procurement management, production and marketing. A promising task is the formation of electronic commerce, which will provide:

1. IT - accumulation and processing of open data about business and people for decision making

2. The penetration of electronic communications in various industries and sectors of the economy, including manufacturing and the labor market.

3. Remote control and management of business operations.

1. Logistics optimization

2. Accurate forecasting of demand and individual production of goods and services based on the results of a significant amount of data.

3. Profit exclusively through innovation

4. Integration of big data at the national and international levels.

The rapid development of multimedia communications, a high degree of adaptation of the population to modern means of communication, the formation of a system of legal, technological support and economic support for electronic commerce contributes to its continuous improvement. The transformation of economic relations is going towards the development of the digital economy in general and electronic commerce in particular.

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ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ

Х А Б А Р Ш Ы С Ы

ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

THE BULLETIN

THE NATIONAL ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

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ALMATY, NAS RK

NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы "ҚР ҰҒА Хабаршысы" ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

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ASSESSING THE COMPETITIVENESS OF "SMART" CITIES OF KAZAKHSTAN: MARKETING ASPECT

Abstract. The article considers the issue of introducing the reference standard of "Smart" cities of the Republic of Kazakhstan. The main achievements and problems of the "Smart" cities of the Republic of Kazakhstan are studied in connection with the introduction of the reference standard. Moreover, there were proposed solutions to the mentioned problems employing digital territorial marketing tools and were analyzed methodical recommendations on the creation of "Smart" cities. The directions and indicators of the reference standard of "Smart" cities regarding public life were considered, and its main development trends were determined. This article provides a rating of introducing the reference standard for "Smart" cities of the Republic of Kazakhstan for 2019. As the method of study, we chose the method of analysis and synthesis, as this is an integral element for the fundamental analysis of the introduction of the standard in smart cities.

Using the method of analysis and synthesis, we determined the rating of "Smart" cities of the Republic of Kazakhstan, thus we can calculate the average percentage of the level of implementation of digitization in the areas of public life.

In connection with a high or low indicator in a certain area of public life, the determination of the most effective and attractive directions for the implementation of digitization has become possible for the City Administration thanks to marketing analysis.

Key words: "Smart" cities, reference standard, digital territorial marketing, city competitiveness, competitiveness assessment.

Introduction. The study of theoretical and practical issues of the city's competitiveness is a relatively new and dynamically developing area today.

Due to the rapid development of information and communication technologies (ICT) in the light of globalization, the introduction of digitalization is a modern requirement to increase the competitiveness of enterprises, cities, states, as well as to improve the living standards of the population. In this regard, in 2017 the state program "Digital Kazakhstan" was made. This program provides for the implementation of the concept of "Smart City" in connection with the development of "Smart " cities, and it is a key tool for the implementation of digital projects in all spheres of public life [1].

According to Address of the President of the Republic of Kazakhstan Nursultan Nazarbayev to the people of Kazakhstan on January 10, 2018, cities will compete for investors in the world. They will invest in a city where they can live and work comfortably, not the country. Therefore, based on the experience of Astana, it is necessary to form a "reference" standard of "Smart City" and start the dissemination of best practices and exchange of experience between the cities of Kazakhstan [2]. This, in turn, will increase competition between cities, as well as increase the investment attractiveness and image of cities. Therefore, the development of any city in a market economy depends on its competitiveness. Today, the main tool to increase the competitiveness of these cities is digitalization.

Literature review. According to many authors, the use of territorial marketing should be a key tool in achieving sustainable socio-economic growth, image enhancement and competitive advantage of cities in the digital space.

For example, Ivanov N.A., states that the main task of modern territorial marketing is the introduction and implementation of an effective mechanism to increase the competitiveness of certain areas in the information environment due to the development of modern market relations in the country and the growing importance of the digital space [3, p.128].

According to Vlasova N.Y. and Kulikova Y.S., digital territorial marketing is the formation and promotion of its virtual potential to increase the competitiveness of the real potential of the territory [4, p 70]. These scientists paid attention to the structure of the formation of the virtual potential of the territory.

Digital marketing and branding of the territory can be considered as one of the components of the "Smart" city project, which is used in solving problems of urban planning and management. Features of the digital branding strategy aimed at creating a technologically innovative business ecosystem for a highly-skilled population were studied on the example of Songdo International Business District in South Korea, Masdar in Abu Dhabi and Skolkovo in Russia [5].

In the implementation of the "Smart" city project, the introduction of ICT in tourism and increasing the competitive advantage of the territory by taking into account the views and suggestions of stakeholders (residents, tourists, etc.) is studied on the example of the tourist city of Gandhi (Valencia) [6]. According to this research, the "Smart" model of tourism should become an effective tool for territorial marketing.

From the given definitions we can give the following concept: Digital territorial marketing is an activity aimed at increasing the competitive advantage of the territory (city) through the use of digital technologies in the planning and management of the territory (city).

Research methods. In order to implement the Address of the President of the Republic of Kazakhstan Nursultan Nazarbayev to the people of Kazakhstan, from 2018 the implementation of the "Smart" city project by local executive bodies is in full swing. "Smart" city is an innovative city that uses ICT and other tools to improve the quality of life, efficiency, and competitiveness of the city, as well as to meet the economic, social, environmental, and cultural needs of present and future generations [7]. To implement the project and to form a single method and standards for the formation of "Smart" cities, in 2018 on behalf of President Nursultan Nazarbayev approved the "reference" standard "Smart City". In July 2019, the Ministry of Digital Development, Innovation, and Aerospace Industry adopted a document "Guidelines for the creation of "Smart" cities (reference standard of "Smart" cities of the Republic of Kazakhstan) based on the update of the "reference" standard "Smart City "adopted in 2018 [8]. The adopted document is based on the international experience of 11 areas and 101 indicators of the standard of "Smart" cities to public life, 110 digital initiatives and a description of each indicator, and methods of its evaluation. 6 out of 11 areas are devoted to the priority areas of public life: urban management, health, education, security, housing, communal services, and transport. The importance of the following areas of public life is aimed at managing the integrated development of the territory (city) using a geographic information system (GIS) to improve the quality of life and attractiveness of the territory (city).

The other 5 areas are devoted to additional areas of public life: social sphere, ecology, business and tourism development, construction, agriculture. It is also necessary for the Administrations to ensure the implementation of digital initiatives in the field of ICT to ensure the successful implementation of existing digital initiatives for the undertaking of 11 areas of public life and the inclusion of Kazakhstan's "Smart" cities in the international ranking. In general, the direction of ICT is a connecting direction, as it forms the ground of infrastructure and technical support for the implementation of existing initiatives in 11 areas of public life.

As for the method of assessing the implementation of initiatives related to public life in "Smart" cities, it consists of the following basic rules:

1. Calculation of each indicator in one area of public life in %;
2. Determining the average % of the performance of all indicators in the priority areas of public life;
3. Determining the average % of the enactment of all indicators in additional areas of public life;
4. Determining the average % of execution of all indicators in the field of ICT;
5. Calculation of the final assessment of the implementation of indicators in all areas of public life.

According to the above 5 rules, let's look at the formula for calculating the rating of "Smart" cities:

1. Calculation of each indicator in one area of public life in %. The calculation of the % of implementation of each indicator in one area of public life is carried out by the method of calculation of each indicator.

The percentage calculation of the implementation of indicators calculated by the method of "Yes / No" is carried out following table 1.

Table 1 – % calculation of the implementation of indicators calculated by the method of "Yes / No"

Index calculation method	**Yes**	**No**
Implementation value, %	100	0

The average% of the implementation of all indicators of a particular direction of public life is calculated by the formula 1:

$$\mathbf{S_{industry\ (hlt,\ edu\ and\ etc.)} = (I_1 + I_2 + I_n)/N} \quad (1)$$

where: $\mathbf{S_{industry\ (hlt,\ edu,\ etc.)}}$ – average % of implementation of indicators in a specific direction; I_1, I_2, I_n - % of implementation of indicators; **N** - the number of indicators in a particular direction.

2. Determining the average % of the performance of all indicators in the priority areas of public life

After calculating the average % of implementation of all indicators in each area of public life in "Smart" cities, it is necessary to calculate the average % of implementation of all indicators in priority areas of public life by formula 2:

$$\mathbf{S_{p.a.} = (S_{hlt} + S_{edu} + S_{scy} + S_{hcs} + S_{its} + S_{ctm})/6} \quad (2)$$

where: $S_{p.a.}$ – average % of implementation of indicators in priority areas of public life (urban management, health, education, security, housing and communal services, transport); $S_{hlt,\ edu}$ – average % of the implementation of the indicator in a particular area of public life; 6 - the number of priority areas of public life.

3. Determining the average % of enactment of all indicators in additional areas of public life

The average % of implementation of all indicators in additional areas of public life is calculated by the formula 3:

$$\mathbf{S_{add}=(S_{soc}+S_{eco}+S_{btd}+S_{bld}+S_{agr})/5} \quad (3)$$

where: S_{add} – average % of implementation of indicators in additional areas of public life (social sphere, ecology, business and tourism development, construction, agriculture); $S_{soc,\ eco}$ - the average% of the implementation of the indicator in additional areas of public life; 5 - the number of additional areas of public life.

4. Determining the average% of execution of all indicators in the field of ICT

The average% of the implementation of all indicators in the field of ICT is calculated by the formula 4:

$$\mathbf{S_{ict} = (I1+I2+In)/N} \quad (4)$$

where: S_{ict} - average% of implementation of indicators in the field of ICT; I1, I2, In - % of implementation of indicators in the field of ICT; N - the number of indicators in the field of ICT.

5. Calculation of the final assessment of the implementation of indicators in all areas of public life. After making calculations according to the above formulas, it is necessary to calculate the evaluation scores for each area of public life and the evaluation scores for the implementation of initiatives based on public opinion polls according to the following formulas:

$$\mathbf{C_{p.a.} = C_i * K_2} \quad (5)$$

where: $\mathbf{C_{p.a.}}$ - Evaluation score of priority areas according to the formula: $\mathbf{C_i}$ - evaluation points according to the table 2; K_2 - the priority correction factor.

$$\mathbf{C_{add} = C_i * K_1} \quad (6)$$

where: $\mathbf{C_{add}}$ - score for the assessment of additional areas according to the formula; $\mathbf{C_i}$ - assessment score is given by table 2; $\mathbf{K_1}$- the priority correction factor.

$$\mathbf{C_{ict} = C_i * K_2} \quad (7)$$

where: $\mathbf{C_{ict}}$ - ICT assessment score; $\mathbf{C_i}$ - assessment score is given following table 2; K_2 - is the priority correction factor.

Table 2 – $S_{p.a.}$, S_{add}, $S_{ict\ add}$% 's implementation of points depending on the range of indicators

$S_{p.a.}$, S_{add}, S_{ict},%	% (Range) of the implementation				
	0-20	21-40	41-60	61-80	81-100
C i, points	1	2	3	4	5
	Points				

Priority correction coefficient	
K1	1
K2	2

After determining the assessment scores for areas of public life in "Smart" cities, the overall assessment of the implementation of initiatives and achievement of indicators is determined. It is calculated by the formula 8.

$$C_t = (C_{б.б.} + C_{кос} + C_{ict}) / 25 \quad (8)$$

where: C_t - total cost of implementation of initiatives and achievement of indicators; 25 is the maximum score [8, pp. 131-134].

According to the above formulas, let's analyze the implementation of initiatives related to public life in "Smart" cities.

Research results. Taking into account the task of Nur-Sultan, Almaty, Shymkent, Karaganda, and Aktobe to enter the global ranking of "Smart" cities, the adopted "benchmark" standard has become the main document used by city Administrations as a methodological recommendation [9]. Following the results of 2018, 2019, the cities of Nur-Sultan and Almaty were included in the international ranking of "Smart" cities. We can see it in table 3 below.

Table 3 – The place of Nur-Sultan and Almaty in the international rankings of "Smart City"

	Local Online Service Index	Mercer's Quality of Living	Innovation Cities Index	European Smart Cities	IMD Smart City Index
Nur – Sultan	–	–	460 - th place (500)	460 - th place (500)	Not included in the rating (102 cities, 2019)
Almaty	25 th place (40, 2018).	177 th place (231, 2019).	400 (500, 2018).	400 (500)	Not included in the rating (102 cities, 2019)
Note: [10, 11] Compiled by the author based on the literature.					

As can be seen from table 3 above, Almaty is included in both the International 5 rankings and below-average in the first 2 rankings, and in the last 2 rankings, according to the IMD Smart City Index in 2019, Almaty was not included in this ranking. Almaty's 25th place in the UN rankings is due to the development of online services (quality of urban services) for the population [12,13].

Nur-Sultan is not included in the first 2 rankings, and took the last places in the last 2 rankings, according to the results of the IMD Smart City Index in 2019, Nur-Sultan was not included in this ranking. From the above analysis, we found that Almaty in the international rankings "Smart City" is higher than Nur-Sultan. This is due to the high level of digital literacy in Almaty in Kazakhstan and the high budget for digitization (more than 20 billion tenge in 2019) [12, 14]. This analysis is based only on the position of Nur-Sultan and Almaty in the International Smart City rankings.

Nur-Sultan and Almaty are also leading in the ranking of "Smart" cities in Kazakhstan according to the "reference" standard. The study involved 14 regional centres and 3 cities of national importance. The assessment was based on the reference standard "Smart Cities", which consists of 11 different areas and 80 indicators [15].

This rating is based on obtaining information from the Administrations to determine the level of implementation of the indicators specified in the "reference" standard. Based on the information received, digital initiatives will be evaluated. After the analysis and evaluation scores of the "reference" standard of "Smart" cities in all areas of public life, a rating of the level of implementation and application of digital initiatives among the cities of the Republic of Kazakhstan. This rating can be seen in figure 1 below.

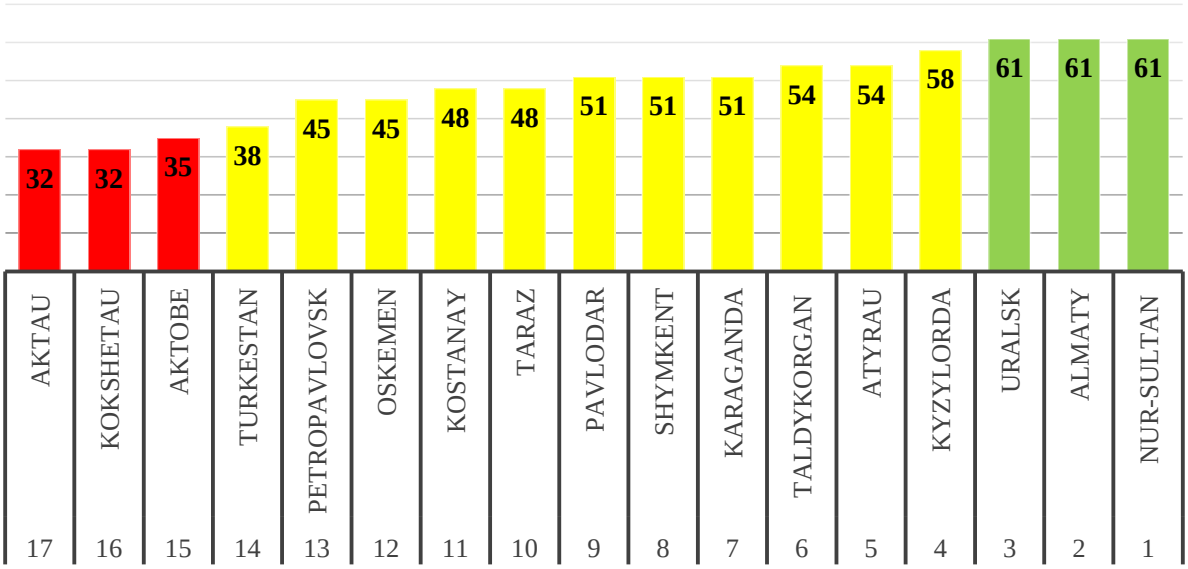

Figure 1 – Rating of implementation of the "standard" standard of "Smart" cities of the Republic of Kazakhstan, %, for 2019 [10]

As we can see from figure 1 above, Nur-Sultan, Almaty and Uralsk have the same indicators (61%). Nur-Sultan city is associated with high rates of digitalization in education (100%), health (67%), transport (63.7%), housing and communal services (49.6%), and these areas due to the priority areas, it occupies the 1st place. Almaty in comparison with Nur-Sultan is associated with high rates of digitalization in education (100%), urban management (95.4%), health (77.7%), security (76.0%), transport (51.9%) and the fact that these areas are the priorities of public life, as well as due to the low level of digitalization in the field of housing and communal services (2.2%). Uralsk took the 3rd place since the level of digitalization in the fields is lower than in Nur-Sultan and Almaty, and higher than in other cities of Kazakhstan: education (100%), urban management (88.8%), health (59.6%), security (53.7%), and transport (44.5%). Also, the level of digitalization in the construction industry in Uralsk is (100%).

The lowest rate is in Aktau (32%), Kokshetau (32%), Aktobe (35%). The fact that these 3 cities are in the last place does not mean that they have not done anything, on the contrary, these cities are actively implementing digital projects, but its performance is not as high as in other cities. Therefore, these 3 cities in the ranking of the implementation of the "reference" standard of "Smart" cities: Aktau. - 17, Kokshetau - 16, Aktobe - 15 places. Aktau occupies 17th place due to the low level of digitalization in the areas of security (7.9%), housing and communal services (12.6%), transport (22.2%), which are the priorities of public life. Kokshetau is in 16th place because of low introduction of digitalization in the areas of housing and communal services (0%), security (26.2%), health (34.8%), which are the priorities of public life. The 15th place of Aktobe and 5 Kazakhstani cities (Nur-Sultan, Almaty, Shymkent; Karaganda, Aktobe) following the task of entering the international ranking is excluded from this rating. It is security (33.4%), transport (41.5%), and is associated with a low level of application of digitalization in the construction industry (0%), which is an additional area of public life [9].

The performance level of the "reference" standard of "Smart" cities in other cities of Kazakhstan is between 58% (Kyzylorda) and 38% (Turkestan). Due to this low level, these cities are not included in the International Rating "Smart City".

Evaluation of the accomplishment of indicators of the reference standard of "Smart" cities - it is aimed not only at creating a rating but also to increase the chances of the country's cities to enter the international ranking of "Smart City". This analysis shows us in which areas of public life we are actively using digital projects and in which areas we need to work on the introduction of digital projects. Based on the analysis, it is possible to identify problems in the inclusion of Kazakhstani cities in the international ranking of "Smart City" and suggest ways to address them. Therefore, we need to analyze the practising level of digital projects in Kazakhstan in the areas of public life. We can see it in figure 2 below.

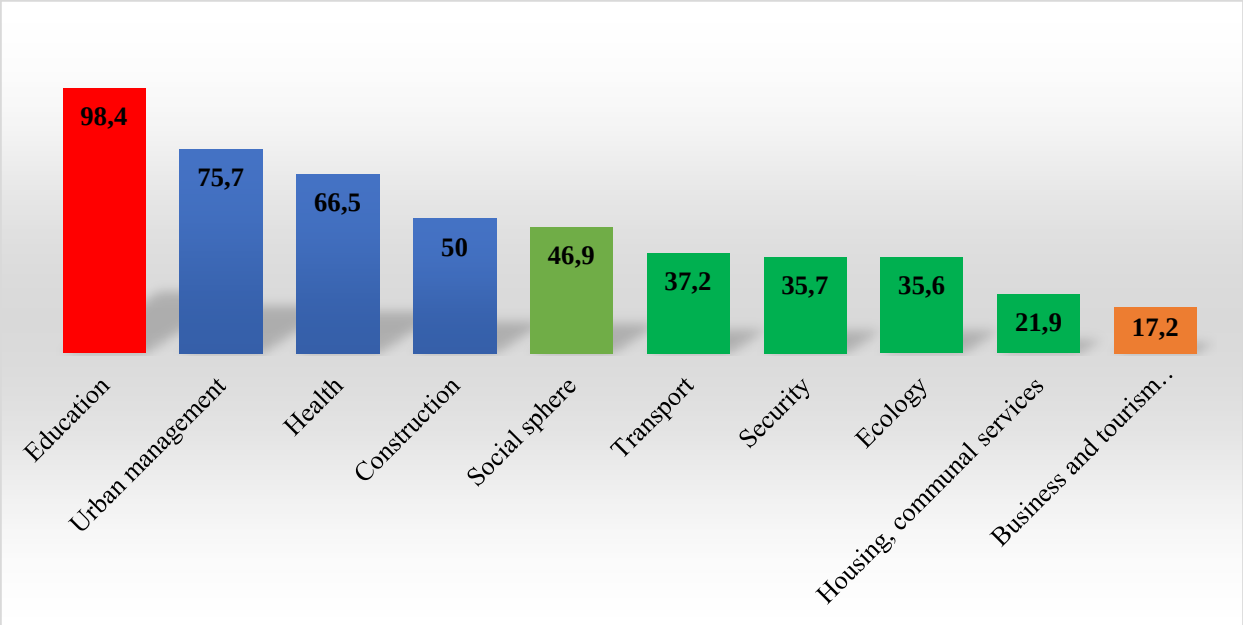

Figure 2 – The average % of the level of implementation of digitization in the areas of public life in 2019 [9]*.
Note: This rating does not include the agricultural sector

As can be seen from figure 2, intensive work is underway to implement digitalization projects in the areas of education (98.4%), urban management (75.7%), health (66.5%). However, the lowest level is observed in the areas of housing and communal services (21.9%) and business and tourism development (17.2%).

The high level of digitalization in education (98.4%) is due to the provision of schools with computer equipment, as well as the use of electronic diaries and magazines by students (6703 schools use, out of 7014 schools). 90% of schools (6336 schools) are provided with Internet access with a speed of 4 Mbps and above.

An electronic queue for admission has been introduced to 78% of kindergartens and 70.3% of schools accept students online. 70% of public services in education are automated. In general, the digitization of the education system has reduced the gap in the quality of education between rural and urban schools by more than 30%.

The high level of digitalization in urban management (75.7%) is due to the automation of public services. As part of the automation of public services, 723 services have been listed, of which 580 services or 80.2% are expected to be provided electronically. Public services were optimized, as a result of which the number of them decreased by 17 (from 740 to 723). The optimization will reduce the average package of documents by 30%, the duration of public services by an average of 3 times.

Automation of public services will increase paperwork by 70.8 mln. reduced to 8.4 billion tenge. Indirect economic results of more than tenge. This highlights the importance of digitization.

The high level of digitalization in health care (66.5%) is because 97.5% of health care organizations are equipped with computers, 100% are connected to the Internet. Besides, 95.7% of the population of Kazakhstan (17.9 million) have a regional electronic health passport.

The measures taken have improved the quality of medical services to the population, as well as facilitated the work of doctors.

Due to pre-registration through electronic services, queuing in clinics has been reduced by 30%, which has halved the time patients spend in clinics. The time to obtain the results of the study was reduced by 1.8 times (from 7 to 4 hours).

Due to the reduction of the average time of patient care, the time of doctors and patients was reduced by 45%, the work of the ambulance service was optimized: the processing time of incoming calls to the dispatcher was reduced by 26%, resulting in reduced waiting time for ambulance services by 1.3 times.

Also, work will continue on the introduction of medical information systems in rural areas and bringing the level of electronic health care coverage to 100% [16]. Despite the high level of digitalization in education (98.4%), urban management (75.7%), health (66.5%), there are many unresolved issues in this area. The study and analysis of them will continue in the future.

The lowest level of implementation of digitization projects can be seen in the development of business and tourism (17.2%). The highest level of development of this area belongs to Almaty (29.6%), and the lowest level belongs to Turkestan (9%). We can see it in figure 3 below.

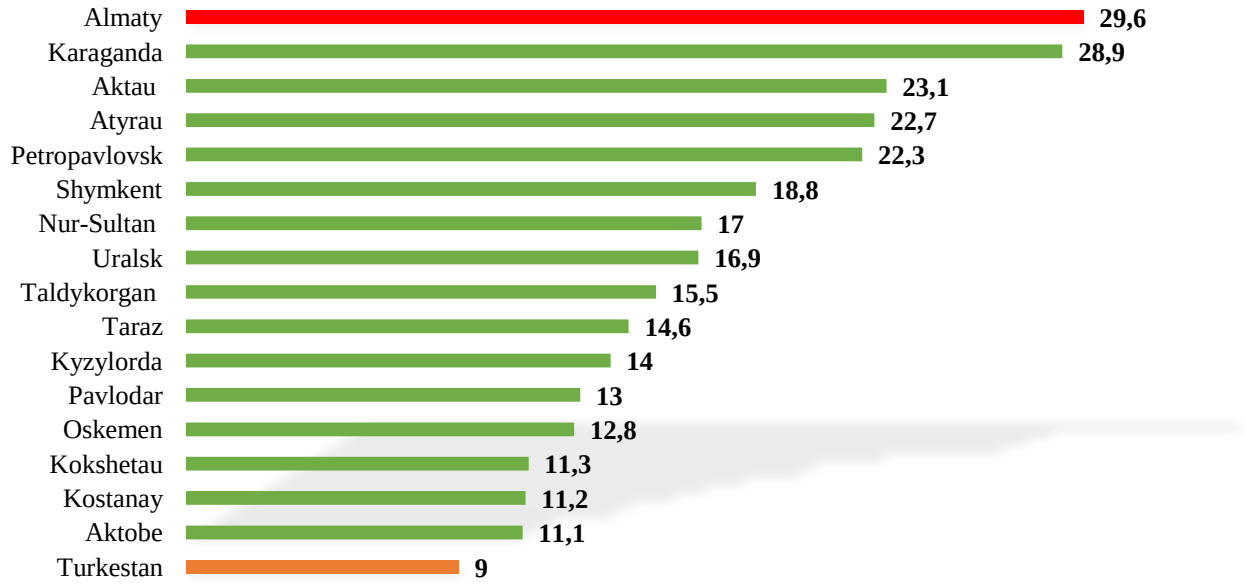

Figure 3 – The average % of the digitization level in the direction of "Business and Tourism Development" in the cities of Kazakhstan, for 2019*. Note: [9] Compiled by the author based on the literature

The relatively high average level of digitalization in Almaty in the development of business and tourism compared to other cities is due to the availability of electronic and mobile payment platforms (100%), cloud payments and similar resources to the public to facilitate access to urban services, by the presence of shares (100%) of companies that offer to other companies, government and other organizations. Although e-commerce transactions are used in Almaty at a higher rate than in other cities, there are no companies providing e-services in this area (0%). Due to the low use of GIS (0.1%) and the intensity of research and development in the field of ICT (0.1%), the level of digitalization in the "Development of Business and Tourism" in Almaty is low (29.6%) [17]. The low level of these indicators is explained by the lack of an approved government agency working with them. In general, these indexes are low in all cities of Kazakhstan. Therefore, we can observe a low execution level of digitalization in the

"Development of Business and Tourism" in Kazakhstan's "Smart" cities (from 29.6% to 9%). Therefore, a lot of work needs to be done in the future in connection with the digitalization introduction in the "Development of Business and Tourism."

Owing to the low level of "Business and Tourism Development" in all cities of Kazakhstan, we can say that the work to be done in this direction in Almaty can be done in other cities.

Analyzing the rating of the application of the "reference" standard of "Smart" cities of the Republic of Kazakhstan, we noticed the following shortcomings:

First, many Administrations do not implement digitization projects under the Law of the Republic of Kazakhstan "On Informatization" in coordination with the Ministry of Digital Development, Innovation and Aerospace Industry (MDDIAI), examining investment proposals, terms of reference and budget applications;

Second, many Administrations do not have a clear documented strategy and concept for the application of the Smart City project;

Third, the weak coordination of sectoral central government agencies and administrations, as well as departments within the regional administrations;

Fourth, the low level of participation of stakeholders (residents, businessmen, etc.) interested in the application of "Smart" city projects and, accordingly, their opinions and suggestions are often not taken into account;

Fifth, the lack of an official portal and website, mobile applications in the Administrations to obtain the necessary information of these projects to interested parties;

Sixth, the lack of an established IT ecosystem in cities for the implementation of "Smart" urban projects.

The following recommendations can be made to address the above issues:

1. Administrations try to implement "Smart" city projects by examination and coordination of MDDIAI RK but not in all cases and not all projects. We recommend the administrations to execute all "Smart" city projects with the examination and coordination of the MDDIAI RK. To do this, the MDDIAI RK, in turn, must examine the projects of the "smart" city and provide the necessary resources (personnel, finance, time, organizational, etc.) for the application of the agreement.

2. Currently, administrations are using only some features of the "smart" city practice. For example, there is a single dispatching service in Almaty [18]. However, the Administrations do not have the Architecture for the implementation of the "smart" city, developed and approved following the Law of the Republic of Kazakhstan "On Informatization". Therefore, we recommend the administration to create a "Smart" city architecture under the Law of the Republic of Kazakhstan "On Informatization". The submitted document specifies departments within the administration and their functions [19]. This, in turn, will allow determining the relevant departments and their responsibilities and coordination for the administration and enactment of "Smart" city projects within the administration. Based on the adopted "Smart" urban architecture document, we recommend that administrations consider increasing the responsibility of sectoral government agencies responsible for the formation of a unified and systematic approach to the implementation of "smart" city projects.

3. Should be developed a strategy following the document "Methodological recommendations for the creation of "Smart" cities" (reference standard of "smart" cities of the Republic of Kazakhstan), based on which the opinion and suggestions of the population will be taken into account in the ranking of "Smart" cities. However, during the research, we found that the survey was incomplete and it was conducted only in response to specific groups (administrative staff) per Annex 4 to the document. We can also see from other studies that the views of the population are not taken into account [20]. Therefore, we recommend to take into account the views and suggestions of stakeholders interested in the implementation of "Smart" city projects and use the official portal and website, mobile applications to obtain the necessary information for them. These proposals can be implemented through SMM marketing, a tool for digital territorial marketing, or social marketing on the Internet.

4. Today, in Kazakhstan, mobile applications are often used in only one area of public life. For example, in Almaty, City Bus, Almaty Bus, Onay applications are used in the field of transport, Open Almaty is used in city management. And in Uralsk, there is a mobile application Smart Uralsk, which combines several areas of public life (education, health, transport, business and tourism, housing and

communal services, etc.) and the official portal for investors bko.invest.gov.kz [21]. Based on the example of Uralsk, we propose to introduce an official portal and mobile applications in other Kazakhstani "Smart" cities.

5. We propose to create an IT ecosystem on the example of Singapore for the development of IT-entrepreneurship based on stable links between business, science and the state in "Smart" cities. We will be able to export intellectual products based on the existing IT ecosystem to the world market [18].

The solution of these problems is carried out in today's "Smart" cities

It will increase the inclusion and competitiveness of Kazakhstan's "Smart" cities in the international rankings, forming certain elements of its implementation as a whole system of its use in the future.

With the help of marketing analysis, we have determined the level of execution of digitalization in the spheres of public life in Kazakhstan's "Smart" cities. The study showed us the importance of using marketing analysis in urban activities. This will be the beginning of new research in this area in the future.

Conclusion. Analyzing the rating of the implementation of the "reference" standard of "Smart" cities of the Republic of Kazakhstan, have been identified the rating of Kazakhstan's cities and its place and shortcomings in international rankings and have been suggested the ways to address:

– Nur-Sultan took the 1st place (61%), Almaty took the 2nd place (61%), Uralsk took the 3rd place (61%), and lowest places have been taken Aktau the 17th place (32%), Kokshetau the 16th place. - It is known that Aktobe took the 15th place (35%);

– Among the cities of Kazakhstan, Nur-Sultan and Almaty are included in the International Smart City rankings, and Almaty's position in the Smart City International rankings is higher than that of Nur-Sultan. This is due to the high level of digital literacy in Kazakhstan and the high budget for digitization (more than 20 billion tenge in 2019).

Analyzing the level of implementation of digitalization in the areas of public life, its high and low levels and the factors influencing it were identified:

– There is a high rate of implementation of digitization projects in the areas of education (98.4%), urban management (75.7%), health (66.5%) and the need to work on the factors that affect it and unresolved issues;

– The lowest level of digitalization was identified in the direction of "Development of Business and Tourism" (17.2%), the highest relative level of "Development of Business and Tourism" in Almaty (29.6%) and the factors influencing it were analyzed.

The study showed that the mass digitization of information and communication technologies and its application in the planning and management of urban activities is a natural phenomenon. Therefore, today the use of digital territorial marketing tools in the activities of "Smart" cities has become a key tool to increase the competitiveness and image of the city.

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ҚАЗАҚСТАНДАҒЫ «АҚЫЛДЫ» ҚАЛАЛАРДЫҢ БӘСЕКЕГЕ ҚАБІЛЕТТІЛІГІН БАҒАЛАУ: МАРКЕТИНГТІК АСПЕКТ

Аннотация. Мақалада ҚР «ақылды» қалалардың эталонды стандартын енгізу мәселелері қарастырылған. ҚР «ақылды» қалаларында эталонды стандартты енгізуге байланысты қол жеткізген негізгі жетістіктер мен мәселелер зерттелді. Аталған мәселелерді цифрлық территориялық маркетинг құралдарын қолдану арқылы шешу жолдары ұсынылған. ҚР «ақылды» қалаларды құрудың әдістемелік ұсынысына талдау

жүргізілген. «Ақылды» қалалардың эталондық стандартының қоғамдық өмірге қатысты бағыттары мен көрсеткіштері қарастырылып, оның негізгі даму тенденциялары анықталды. Бұл мақалада ҚР «ақылды» қалалардың эталондық стандартын 2019 жыл бойынша жүзеге асыру рейтингі құрылған. Біз зерттеу әдісі ретінде талдау және синтез әдісін таңдадық, өйткені ол «ақылды» қалалардың эталонды стандартын енгізудің іргелі зерттеулері үшін ажырамас элементі болып саналады. Талдау және синтез әдісінің көмегімен ҚР «ақылды» қалалардың рейтингі анықталып, қоғамдық өмірдің бағыттары бойынша цифрландыруды енгізу деңгейінің орташа %-ын анықтауға болады. Талдау және синтез әдісі әкімшіліктерге қоғамдық өмірдің белгілі бір бағытының ішіндегі көрсеткіштің төмен немесе жоғары болуына байланысты цифрландыру жобаларын енгізудің тиімді және тартымды бағыттарын анықтау – маркетингтік талдау арқылы жүзеге асты.

ҚР «ақылды» қалалардың «эталонды» стандартын жүзеге асыру рейтингін талдай келе оның халықаралық рейтингтегі орны мен кемшіліктері анықталып, шешу жолдары ұсынылды:

– Нұр-Сұлтан қаласы 1-орын (61 %), Алматы қаласы 2-орын (61 %), Орал қаласы 3-орын (61 %), ал ең төменгі орындарды: Ақтау қаласы 17-орын (32 %), Көкшетау қаласы 16-орын (32 %), Ақтөбе қаласы 15-орын (35 %) иеленген;

– Қазақстандық қалалардың ішінен Нұр-Сұлтан және Алматы қалалары «Смарт Сити» халықаралық рейтингіне кіретіндігі мен Алматы қаласының «Смарт Сити» халықаралық рейтингіндегі орны Нұр-Сұлтан қаласымен салыстырғанда жоғары екендігін байқалды. Ол Қазақстан бойынша Алматы қаласында цифрлық сауаттылық деңгей мен цифрландыруға жұмсалған бюджеттің (2019 жыл бойынша 20 млрд.теңгеден астам) жоғары болуына байланысты.

Қоғамдық өмірдің бағыттары бойынша цифрландыруды енгізу деңгейін талдай келе, оның жоғарғы және төменгі деңгейі мен оған әсер еткен факторлар анықталды:

– білім беру (98,4 %), қаланы басқару (75,7 %), денсаулық сақтау (66,5 %) бағыттарында цифрландыру жобаларын ендіру қарқынының жоғары екендігі және оған әсер еткен факторлар мен шешімін таппаған мәселелер жөнінде жұмыс атқару қажеттілігі белгілі болды;

– цифрландыруды енгізудің ең төменгі деңгейі «Бизнес пен туризмді дамыту» (17,2 %) бағытында екендігі анықталып, Алматы қаласында «Бизнес пен туризмді дамыту» деңгейінің (29,6 %) салыстырмалы түрдегі ең жоғарғы көрсеткіші мен оған әсер еткен факторлар талданды.

Жүргізілген зерттеу ақпараттық-коммуникациялық технологияларды жаппай цифрландыру мен оны қала қызметін жоспарлау мен басқаруда қолдану табиғи және заңды құбылыс екенін көрсетті. Сондықтан, қазіргі уақытта цифрлық территориялық маркетинг құралдарын «ақылды» қалалар қызметінде қолдану қаланың бәсекеге қабілеттілігі мен имиджін арттырудағы негізгі құралға айналды.

Түйін сөздер: «ақылды» қала, эталонды стандарт, цифрлық территориялық маркетинг, қаланың бәсекеге қабілеттілігі, бәсекеге қабілеттілікті бағалау.

Алғыс. Мақала AP05135078 «Қазақстан Республикасында цифрлық экономиканы қалыптастыру және дамыту: теория және іске асырудың тәжірибелік шаралары» тақырыбындағы ҚР БҒМ ғылыми зерттеулерді гранттық қаржыландыру жобасы аясында орындалды.

Мақаланы жазуда ақпараттық қамтамасыз еткені үшін Алматы қаласының әкімдігіне, атап айтқанда Цифрландыру басқармасына алғыс білдіреміз.

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ОЦЕНКА КОНКУРЕНТОСПОСОБНОСТИ «УМНЫХ» ГОРОДОВ КАЗАХСТАНА: МАРКЕТИНГОВЫЙ АСПЕКТ

Аннотация. В статье рассмотрены проблемы внедрения эталонного стандарта «умных» городов в РК. Были исследованы достигнутые результаты и проблемы внедрения эталонного стандарта «умных» городов в стране. Также предложены решения данных проблем с помощью инструментов цифрового территориального маркетинга. Проанализированы методические рекомендации к построению «умных» городов. Рассмотрены направления и показатели по сферам жизни эталонного стандарта «умных» городов и выявлены основные тенденции его развития. В статье построен рейтинг по достижению эталонного стандарта «умных» городов РК за 2019 год. В качестве методики исследования был выбран метод анализа и синтеза, так как данный метод является неотъемлемым элементом для фундаментального исследования внедрения эталонного стандарта «умных городов». Используя метод анализа и синтеза, можно рассчитать средний процент достижения по внедрению цифровизации по сферам жизни и сформировать рейтинг «умных» городов РК. Применение

метода анализа и синтеза наряду с маркетинговым анализом позволяет акиматам определить наиболее выгодные и привлекательные направления сфер жизни с учетом высоких или низких внутренних показателей для внедрения проектов цифровизации.

В результате анализа рейтинга по внедрению эталонного стандарта «умных» городов в Казахстане были определены их места в международных рейтингах, а также выявлены проблемы и предложены пути их решения:

– г. Нур-Султан – 1 место (61%), г. Алматы – 2 место (61%), г. Уральск – 3 место (61%), а самые низкие показатели у г. Актау – 17 место (32%), г. Кокшетау – 16 место (32%), г. Актобе – 15 место (35%);

– Обнаружено, что среди казахстанских городов в международные рейтинги «Смарт Сити» входят города Нур-Султан и Алматы, а г.Алматы имеет высокий рейтинг, по сравнению с г. Нур-Султан. Это связано с тем, что у г.Алматы по Казахстану самый высокий уровень цифровой грамотности, и огромный бюджет, потраченный на внедрение цифровизации (свыше 20 млрд тенге за 2019 год).

В ходе анализа уровня внедрения цифровизации по сферам жизни были выявлены, по каким направлениям высокие и низкие показатели, и факторы, влияющие на них:

– Направления образование (98,4%), управление городом (75,7%), здравоохранение (66,5%) имеют высокие показатели внедрения цифровизации, а также выявлены влияющие на них факторы и проблемы, требующие решения;

– Самый низкий показатель по внедрению цифровизации выявлен в направлении «Бизнес и туризм» (17,2%), в г.Алматы данный показатель самый высокий по РК и равняется 29,6 %. Проанализированы факторы, влияющие на него.

Проведенное исследование показало, что массовое применение ИКТ в цифровизации, планировании и управлении городом – естественный и законный процесс. Поэтому в настоящее время применение инструментов цифрового территориального маркетинга в службах «умных» городов явилось основным инструментом повышения конкурентоспособности и имиджа городов.

Ключевые слова: «умный» город, эталонный стандарт, цифровой территориальный маркетинг, конкурентоспособность города, оценка конкурентоспособности.

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СОДЕРЖАНИЕ

Естественные науки

Гуманитарные науки

Краткие сообщения

Юбилейные даты

CONTENTS

Natural sciences

Humanitarian sciences

Brief messages

Anniversary dates

Publication Ethics and Publication Malpractice in the journals of the National Academy of Sciences of the Republic of Kazakhstan

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ХАБАРШЫ

ХАЛЫҚАРАЛЫҚ ҚАТЫНАСТАР ЖӘНЕ
ХАЛЫҚАРАЛЫҚ ҚҰҚЫҚ СЕРИЯСЫ

ВЕСТНИК

СЕРИЯ МЕЖДУНАРОДНЫЕ ОТНОШЕНИЯ
И МЕЖДУНАРОДНОЕ ПРАВО

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МАЗМҰНЫ – CONTENTS - СОДЕРЖАНИЕ

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Цифровизация в социально-экономической сфере: контент развития, зарубежные практики и результаты

В статье представлены основные аспекты развития цифровых технологий в рамках общественного и экономического развития, обозначены современные тренды развития цифровизации по данным направлениям, их влияние на условия жизнедеятельности человека. В работе также проработаны вопросы цифровизации системы государственного управления, раскрывается опыт зарубежных стран, активно внедряющих процессы цифровизации. Важным аспектом исследования выступили проблемы цифровизации в сфере управления трудовыми ресурсами, обосновываются повышенный спрос и подбор компетентных сотрудников. В статье рассмотрены перспективные направления развития исследований и разработок в условиях цифровой экономики, выявлены соответствующие проблемы, показаны «плюсы» и «минусы» данного процесса с учетом отечественной специфики государственного управления в научной сфере.

Также в статье рассмотрены международные практики государственной поддержки развития цифровой экономики; различные точки зрения и оценки на развитие цифровой экономики и цифровизации в целом.

Ключевые слова: цифровая экономика, кадровый потенциал, цифровизация науки и образования, бизнес-модели, цифровые технологии, искусственный интеллект, экономическое и общественное развитие.

Introduction

The proliferation of digital technologies over a long period determines the paths of socio-economic development, which ultimately leads to fundamental changes in human life.

At the present stage of socio-economic development, the digital economy begins to play a dominant role in public life, having a significant impact on almost all of its components. The "digital trend" implies that human activities in the production, exchange, distribution and consumption of public goods are directly associated with the creation, processing and use of a large array of information and knowledge presented in digital form.

In recent years, there has been a clear trend in digitalization models in business and the social sphere, caused by the advent of a new generation of digital technologies, which received such names as artificial intelligence, robotics, Internet markets for goods and services, wireless technologies, etc. Widespread adoption of new digital technologies estimates of foreign organizations that can increase labor productivity in companies by 40%; and their effective use is to determine competitiveness both within individual companies and at the country level (WEF, 2018a).

Thus, what the World Bank determines, thanks to the development of digital technologies in the economy and social sphere, there will be an increase in labor productivity, competitiveness of companies, lower production costs, creation of new jobs, reduction of poverty and social inequality (World Bank, 2016).

Important challenges have also become that the development of the digital economy is one of the priority areas for most countries - economic leaders, including the USA, Great Britain, Germany, Japan, etc. These countries are characterized by a long period of implementation of priorities in organizing digitalization - from building a basic information and communication infrastructure until the formation of a coordinated policy in this area and support programs for the widespread adoption of digital technologies (NRU WB, 2019).

Today, at a new stage in the development of digital technologies, one of the main challenges are various transformations that will require people to have new skills and competencies, a willingness to use new technologies in everyday life.

Literature review

There are numerous studies of the problematic issues of digitalization and its development, the impact on the living conditions of man and society as a whole, including the positive and negative aspects of this process. In this regard, the definitions of the meaningful characteristics of digitalization, the justification of content in order to indicate

government support and promising areas for the development of the digital economy are significant.

So, in international practice, there is still no unambiguous definition of the digital economy. When describing the digital economy, most foreign sources focus on digitalization technologies - either specific types of technologies, or trends in economic processes in the field of digitalization. The following are examples of determining the content of the digital economy in foreign practice. Digitalization is determined as a global network of economic and social activities supported by platforms such as the Internet, as well as mobile and sensor networks (Australian Government, 2009).

We cannot ignore the fact that the digitalization of the economy is linked to markets based on digital technologies that facilitate the trading of goods and services through e-commerce on the Internet (Fayyaz, 2018). In another view, the digital economy is one that can provide high-quality information technology infrastructure (ICT infrastructure) and mobilize ICT capabilities for the benefit of consumers, business and the state (The Economist, 2014).

There are a number of other definitions, among which the digitalization of the economy is defined as the economy based on digital technologies, which to a greater extent means the implementation of business operations in markets based on the Internet and the World Wide Web (British Computer Society, 2013). Other content of the digitalization process rests on the presence of a complex structure consisting of several levels (layers), interconnected by an almost infinite and constantly growing number of nodes (European Parliament, 2015).

A broader interpretation is the digitalization of the economy as a form of economic activity that arises from a billion examples of networking between people, enterprises, devices, data and processes. The basis of the digital economy is hypersensitivity, i.e. the growing interconnectedness of people, organizations, and machines, shaped by the Internet, mobile technology, and the Internet of things (Deloitte, 2019); in other words, European experts add, this is an economy dependent on digital technologies (European Commission, 2014).

One cannot disagree with the opinion of World Bank experts assessing the digitalization process as a new economy based on knowledge and digital technologies, within the framework of which new digital skills and opportunities are emerging in society, business and the state (World Bank, 2016a).

It should also be noted that the digital economy is characterized by reliance on intangible assets, massive use of data, the widespread adoption of multilateral business models, and the difficulty of determining the jurisdiction in which value creation occurs (OECD, 2015a). Another position rests on the fact that the digital economy is the main source of growth, which will stimulate competition, investment and innovation, which will lead to better services, more choice for consumers, and creation of new jobs (European Commission, 2018a).

From the above analysis it follows that the universal concept of the digital economy does not yet exist, although in the above definitions you can isolate the keywords related to the digitalization process - this is a new economy; business operations in markets based on the Internet and the World Wide Web; economic activity and improving the quality of services; mass use of data; widespread adoption of multilateral business models; high-quality information technology infrastructure; a form of interconnectedness of people, organizations, machines, etc.

Materials and methods

The study of the digital economy is accompanied by the need for processing and analysis of

Table 1 - Descriptions of content in relation to the conceptual apparatus for digitalization *

Definitions	Content
1	2
Digital economy	Activities to create, disseminate and use digital technologies and related products and services; Digital technologies are technologies for the collection, storage, processing, search, transmission and presentation of data in electronic form.
Neurotechnology	Cyberphysical systems that partially or completely replace / supplement the functioning of the nervous system of a biological object, including those based on artificial intelligence.

Definitions	Content
Artificial Intelligence	A software and / or hardware system capable of perceiving information with a certain degree of autonomy, learning and making decisions based on the analysis of large amounts of data, including imitating human behavior.
Distributed Registry Technologies (Blockchain)	Algorithms and protocols for the decentralized storage and processing of transactions, structured as a sequence of related blocks without the possibility of their subsequent change.
Quantum technology	Technologies for creating computer systems based on new principles (quantum effects) that allow radically changing the methods of transferring and processing large amounts of data.
New manufacturing technologies	Digitalization technologies for production processes that increase the efficiency of resource use, design and manufacture of individualized objects, the cost of which is comparable to the cost of mass-produced goods.
Additive technology	The technology of layer-by-layer creation of three-dimensional objects based on their digital models («doubles»), allowing to produce products of complex geometric shapes and profiles
Supercomputer Technology	Technologies providing high-performance computing through the use of the principles of parallel and distributed (grid) data processing and high throughput
Cross-cutting digital technology	Technologies used for the collection, storage, processing, search, transmission and presentation of data in electronic form, which are based on the use of software and hardware and systems that are in demand in all sectors of the economy, creating new markets and changing business processes.
Big data	Technologies for the collection, processing and storage of structured and unstructured arrays of information, characterized by a significant volume and rapid rate of change (including in real time), which requires special tools and methods for working with them.
Augmented Reality Technologies	Visualization technologies based on adding information or visual effects to the physical world through the imposition of graphic and / or sound content to improve the user experience and interactive capabilities
Virtual reality technology	Technologies for computer modeling of a three-dimensional image or space through which a person interacts with a synthetic («virtual») environment, followed by sensory feedback.
5G	Fifth generation wireless technologies, which are characterized by high bandwidth (at least 10 Gb / s), network reliability and security, low data transfer latency (not more than one millisecond), making it possible to use big data effectively
Wireless technology	Data transmission technology through a standardized radio interface without using a wired network connection
Sensory	Technologies for creating devices that collect and transmit environmental information through data networks
Robotics components (industrial robots)	Production systems with three or more degrees of mobility (freedom), built on the basis of sensors and artificial intelligence, able to perceive the environment, control their actions and adapt to its changes
Industrial Internet	Data transmission networks connecting devices in the manufacturing sector, equipped with sensors and capable of interacting with each other and / or the external environment without human intervention
Computer engineering	Technologies for digital modeling and design of facilities and production processes throughout the life cycle

** Note: compiled on the basis of data (NRU WB, 2019)*

information on digitalization, which is associated with a description of the content in relation to the conceptual apparatus (Table 1):

The conceptual apparatus for digitalization presented in Table 1, the content of concepts and a description of terminological boundaries will allow building a unified multifunctional system of statistical measurement of the digital economy for its full-scale monitoring, substantiation and evaluation of policies in this area. The need to develop a system of key definitions, to consolidate the terminological description of its content is associated with achieving the goal of developing methodological approaches to assessing the digital transformation of socio-economic sectors.

Discussion and results

Digital services and a modern approach to the development of "smart" spaces are changing the human condition for a more comfortable one. A "smart" space is a physical or digital environment in which people and technological systems openly interact in connected intelligent ecosystems. Examples of this kind include smart cities, smart homes, digital workplaces and factories (NRU WB, 2019).

The digital economy sets the path for the transformation of traditional sectors of the economy, the emergence of new markets and niches. New business models are customer-oriented, which completely determines their structure: from a value proposition aimed at solving the predicted needs of the client, timely delivery (just-in-time) and revenue streams based on the time the client used the product.

The key source of value creation is high-speed processing of big data, as transactions occur in real time and often simultaneously. Customer data is becoming the main asset of digital companies, and access to large arrays of them increases the assessment of market value. In the financial sector, the implementation of this concept is the Open Banking system, which provides third parties with the opportunity to analyze or use data, integrate various applications and services, thereby improving the quality of customer service (Rusbase, 2017).

New digital technologies expand business opportunities to optimize many processes and improve decision-making. Thus, the Internet of things market optimizes data collection and storage, and machine learning technologies and methods allow for deep processing, construction of behavior algorithms and predictive models (Tesco, 2019).

Applications of the Internet of things market are also a driver for the development of a model for optimizing service services, as they allow us to evaluate the parameters of product use and the effects achieved. This principle is based on the popular Rolls-Royce TotalCare model, under the program of which aircraft engines are supplied to customers, but payment is made for the hours during which the engine is running. The service provided includes monitoring of work from the Rolls-Royce data center and engine maintenance (BCG, 2017b).

On the example of the introduction of digitalization in the industry, it should be noted here that, despite the success of many enterprises in the automation of production processes, the implementation of distributed control and monitoring systems, most companies do not yet sufficiently realize the potential of big data analytics and artificial intelligence (AI) decision-making algorithms. At the same time, AI technologies have the greatest transformational potential in industry, which is especially important for companies with significant tangible assets. According to a survey, almost 50% of industrial companies rated AI as a critical element on the path to success over the next five years.The development of the appropriate infrastructure requires the creation of innovation centers at enterprises, attracting highly qualified specialists, and a significant increase in investments in cybersecurity (Forbes, 2018).

Another example: a production management system integrated with user experience data allows you to track information throughout the entire product life cycle. As a result, manufacturers provide customers with comprehensive personalized services, and pricing is possible based on the result.

Consider the experience of digitalization of the economy, using the example of the Russian platform solutions market, namely Yandex and Mail.Ru, which seek to create their own ecosystems that can compete with such major companies as Amazon, Apple, Facebook, etc., including by joining capital of high-tech startups.

For example, the largest Russian Sberbank, in addition to introducing new elements of the digital economy into its business model (crowdfunding and crowdfunding platforms), is improving its ecosystem by developing digital e-commerce and sharing platforms (providing customers with unified access to all platforms through the bank's mobile application)

The foreign practice of digitalization of industrial production involves the integration of a number of breakthrough technologies: virtual modeling, the Internet of things, robotics, artificial intelligence,

big data, etc. Digitalization is carried out both within the framework of production process control systems and further maintenance (NRU VB, 2019).

The technology of "digital doubles", combining the industrial Internet of things and digital modeling, is actively introduced in developed countries at all stages of the product life cycle (GC) - from development to operation. By 2021, approximately half of the large industrial companies in the world will use this technology (Medium, 2018). The introduction of “digital doubles” for modeling and evaluating various scenarios will reduce the number of equipment failures by an average of 30% (PTC, 2019).

The decline in the cost of technological solutions over the past decade has become a significant incentive for the widespread penetration of digital technology. The cost of sensors, which is one of the most significant components of the Internet of Things systems, has shown a steady decrease from $ 0.95 in 2008 to $ 0.44 in 2018 (IoTONE, 2016). The cost of industrial robots has also halved over the specified period, and its further decline is expected (ARK 5 Internet of things, Internet of things. Invest, 2017).

There are examples of the introduction of digital technologies in such a socially significant sphere as medicine. Thus, the introduction of new technologies and radical changes in the life sciences (bioinformatics, synthetic biology, etc.) make it possible to modernize and personalize modern medicine by constantly monitoring the health status of each person, increasing the speed of medical care and selecting individual therapy options. All this makes it possible to treat previously incurable diseases; the development of bioinformatics allows the analysis of new DNA or protein sequences only through innovative methods, which significantly reduces the time and material costs of experiments.

Such models in medical practice as neurotechnologies help not only to create systems similar to the human brain in algorithms, but also to study the mechanisms of behavior and the potential for brain development. In the future, this will contribute to the development of a person’s cognitive abilities, increase his working capacity, and overcome the negative consequences of stressful situations (Tremblay et al., 2017).

Organ-on-a-chip technology (Wyss Institute, 2018), which is an artificially created biomimetic system that mimics the functions of human tissues, will accelerate drug safety testing and will eliminate the use of experimental animals for these goals. In the future, such technologies may serve to restore the lost functions of individual organs, and other examples of digitalization in the medical industry.

Digitalization is causing technological complication and the disappearance of a number of traditional professions due to the automation of the corresponding labor operations and at the same time the emergence of new professions and the growing demand for highly creative work. A significant part of labor relations and entire segments of employment is moving into the virtual environment, the flexibility of forms of which is significantly increased (the share of non-standard, partial and unstable, one-time employment, etc.). The digital economy is a large set of opportunities for creating conditions that significantly facilitate certain types of activities through the use of information technology. But the more humanity strives for relief, the more difficult it is to regulate relations in which the digital economy often takes place and the more the need for their legal regulation increases (Loshkarev A.V., Tarasov V.V., 2018).

The Republic of Kazakhstan adopted a number of regulations aimed at the development of the digital economy: Plan of the nation “100 concrete steps” (Plan of the nation “100 concrete steps”, 2015), Message from the President of the Republic of Kazakhstan to the people of Kazakhstan “Third modernization of Kazakhstan: global competitiveness” dated January 31, 2017 of the year (Message of the President of the Republic of Kazakhstan to the people of Kazakhstan “Third Modernization of Kazakhstan: Global Competitiveness”, 2017), the State program “Digital Kazakhstan” was developed, Decree of the President of the Republic of Kazakhstan dated February 1, 2010 No. 922 “On Strategic Plan e development of the Republic of Kazakhstan until 2020 ”(Decree of the President of the Republic of Kazakhstan“ On the Strategic Plan for the Development of the Republic of Kazakhstan until 2020 ”, 2010), the State Program“ Information Kazakhstan 2020 ”, approved in 2013 (State Program“ Information Kazakhstan 2020 ”, 2013) , Message of the President of the Republic of Kazakhstan N.A. Nazarbayev “Growth of the welfare of Kazakhstanis: increasing income and quality of life” dated October 5, 2018 (Message from the President of the Republic of Kazakhstan N.A. Nazarbayev “Growth of the welfare of Kazakhstanis: increasing income and quality of life, 2018).

The state program “Information Kazakhstan 2020”, approved in 2013, became the foundation for the digital transformation of the country's economy and contributed to the development of the following factors: the transition to the information society,

improving public administration, the creation of "open and mobile government" institutions, and the increase in the availability of information infrastructure only for corporate structures, but also for citizens of the country. The state program "Information Kazakhstan 2020" includes 83 target indicators and 257 events. According to the results of three years of implementation of the State program "Information Kazakhstan 2020", 40% performance has already been achieved. However, the rapid development of information technology on a global scale dictates its own rules and requires an adequate and timely response from our government. Therefore, it is necessary to take the next step - to initiate in time the process of transformation of key sectors of the national economy, education, healthcare, as well as the sphere of interaction between the state and society and business.

At the end of 2017, the state program "Digital Kazakhstan" was adopted, according to which the share of electronic commerce should grow to 2.6%, electronic government services - up to 80%. At the same time, due to digitalization, it is planned to create 300 thousand new jobs. And all this - by 2022. As NursultanNazarbayev noted, "due to digitalization, the Kazakhstani economy should increase by 30%, in monetary terms this will amount to more than 2 trillion tenge" (State program "Digital Kazakhstan, 2017).

The purpose of the State program "Digital Kazakhstan" is to improve the quality of life of the population and the competitiveness of the economy of Kazakhstan through the progressive development of the digital ecosystem. The program aims to develop the following areas:

1. The Digital Silk Road - the creation of a high-tech digital infrastructure by providing broadband Internet access in rural areas; development of a telecommunication hub; ensuring information security; building data centers, etc.

2. Creative society - the development of human capital by increasing the digital literacy of the population, improving the skills of specialists in the field of information and communication technologies, developing creative thinking, etc.

3. Digital transformations in economic sectors - the development of the digital industry by automating the country's transport and logistics system; introduction of digital technologies in agriculture, industry; implementation of analytical systems in the field of energy conservation and energy efficiency; e-commerce development; improving mineral accounting systems; ensuring the safety and accessibility of geological digital information; implementing technologies to create smart cities.

4. A proactive state - the formation of digital government through the further development of electronic and mobile government; increase in public services provided in electronic form; the formation of an open government; developing a national spatial data infrastructure, etc.

The program was developed in accordance with the Message of the President of the Republic of Kazakhstan N. Nazarbayev to the people of Kazakhstan "Kazakhstan's path - 2050: Common goal, common interests, common future", short-term anti-crisis strategy "100 steps", infrastructure development program "NurlyZhol", laws of the Republic of Kazakhstan "On electronic document" and electronic digital signatures ","" On Communications ","" On Informatization ". According to these documents, improving the quality of life of citizens, developing the economic, socio-political and cultural spheres of society, as well as improving the public administration system are the main principles and vector for the development of digital transformations offered by this Program.

Currently, the e-commerce market in Kazakhstan is regulated by the Rules for the implementation of electronic commerce, approved by order of the acting Minister of National Economy of the Republic of Kazakhstan dated November 25, 2015 No. 720 (Rules for the implementation of electronic commerce. By the order of the acting Minister of National Economy of the Republic of Kazakhstan, 2015) .. It should be noted that in Kazakhstan, transactions concluded in the process of electronic commerce are regulated by the same documents as traditional transactions.

The World Bank names three important categories of problems that are signs of the possibility of digital transformation: legal regulation, the availability of skills among the population and the creation of appropriate digital management institutions.

Having analyzed the regulatory documents, we can identify the problems of the digital economy in Kazakhstan:

- The issues of the existing technological lag of individual sectors of the economy and the social sphere and the ways to eliminate it from the point of view of the introduction of digital technologies have not been worked
- the problems of regional differentiation of the level of readiness for implementation and the potential for using the capabilities of the digital economy have not been studied;
- the personnel potential for digitalizing the

economy of Kazakhstan requires the introduction of new educational programs.

To improve the regulatory regulation of the digital economy of the Republic of Kazakhstan, it is proposed to adopt the Law "On the Digital Economy", standards for the development of the digital economy, and a digital code. With the adoption of these documents, barriers to existing legislation will be removed.

It is also necessary to create a state body that directly performs such functions as: monitoring the use of acts in the field of the digital economy, developing programs to clarify the provisions related to the application of legislation in the field of the digital economy and establishing posts in accordance with various areas of the digital economy (for example, a specialist on cybersecurity with this body). Therefore, in order to transform the economy into a digital one, it is necessary to create an appropriate regulatory framework for electronic business, reform the education system and involve citizens in government through electronic services, transparency and control over the spending of budget funds.

The digital economy in the Republic of Kazakhstan should be implemented in areas that include: the digital transformation of traditional industries, the development of human capital, the digitalization of government bodies, the development of digital infrastructure. This will ensure in the Republic of Kazakhstan the transition to digital governance of the state and the economy on the basis of a unified system of intellectual knowledge, advanced information technologies and special software systems as the most important factor in solving existing socio-economic problems of the country, increasing the efficiency of the public administration system, and carrying out the necessary reforms in education science and economics.

Thus, the formation and development of the digital economy in Kazakhstan can be achieved through the creation of a digital environment, the development and approval of regulatory documents, the translation of legal norms into algorithms and databases for specific areas of activity in various sectors of the economy.

Analysis of the development of the digital economy in the Republic of Kazakhstan.

The main driving force for the formation of the digital economy is the level of development of the information and communication technology industry. In 2016, Kazakhstan ranked 52 out of 175 in the key global ICT Development Index (ICT Development Index), without changing its position since 2015. As a result of the implementation of the Program and other strategic measures, the country should rise in ranking to 30th place by 2022, 25th place by 2025 and 15th place by 2050 (Liu Z, 2001). To assess the degree and direction of the impact of the processes of digitalization of the economy on the results of its effectiveness, it is necessary to compare and conduct a comparative analysis of the performance indicators of the ICT industry and general indicators of the national economy (Table 2):

Table 2 – Average annual growth rate of the main indicators of the functioning of the ICT industry in Kazakhstan *

Indicators	The analyzed period, years	Average annual growth rate,%
Total costs of information and communication technologies, mln. tenge	2007-2017	109,8
Volume of electronic retail trade, mln. tenge	2013-2017	118,2
Volume of electronic wholesale trade, mln. tenge	2013-2017	106,4
The number of transactions conducted outside of Kazakhstan through the Internet using payment cards of Kazakhstan issuers, units	2013-2017	136,8
The volume of transactions conducted outside Kazakhstan through the Internet using payment cards of Kazakhstan issuers, mln. tenge	2013-2017	131,4
The number of computers in organizations, units	2004-2017	111,9
Number of organizations using the Internet	2004-2017	113,7
The volume of industrial production in the field of information and communication technologies, mln. tenge	2007-2017	102,7

Indicators	The analyzed period, years	Average annual growth rate,%
The volume of industrial production in the field of information and communication technologies, mln. tenge	2007-2017	99,5
Share of the total volume of manufacturing industrial products,%	2007-2017	97,7
Volume of information and communication technology services in actual prices, mln. tenge	2005-2017	116,9
The volume of information andcommunication technology services at basic prices, mln. tenge	2005-2017	111,9
* Note: compiled by the author		

For the period from 2007 to 2017. the share of ICT industry products in the total manufacturing output decreased from 0.42% to 0.26%. In the ICT industry, the volume of output at current prices is increasing annually by an average of 2.7%, but at base prices (base - 2006) there is a decrease by an average of 0.5% per year. (Varavin I.V., Samusenko E.A., 2013) - Table 3:

Table 3 - the Dynamics of ICT costs from 2007 to 2017

№	Year	Amount, mln. Tenge
1	2007	53 485,8
2	2008	78 159,4
3	2009	126 597,2
4	2010	147 538,3
5	2011	214 179,7
6	2012	309 821,2
7	2013	220 847,7
8	2014	237 079,4
9	2015	375 600,4
10	2016	269 526,7
11	2017	349 943,6
* Note: compiled by the author		

For the period from 2007 to 2017. an average annual increase in costs in the information and communication technology industry.

The summary table 3 presents the indicators of the total population, the number of Internet users, as well as the growth rate of Internet users in the context of five countries (Table 4):

Table 4 - The number of Internet users, taking into account the population of 2010-2019

Year	Total population	Number of users	The number of users per 100 people	Internet users growth rate (%)
Kazakhstan				

Year	Total population	Number of users	The number of users per 100 people	Internet users growth rate (%)
2010	16310624	5154157	32	75,9%
2011	16554305	8376478	51	62,5%
2012	16821455	8968471	53	7,1%
2013	17099546	9233755	54	3%
2014	17371621	9535283	55	3,3%
2015	17625226	9784837	56	2,6%
01.06.2016	17855384	9961519	56	1,8%
31.12.2017	18403860	14063513	76	41,1%
31.12.2018	18 608 079*	*14,669,853 (06.2018)*	79	4,3%
2019 (estimated)	18,592,970	14669853 (30.06.2019)	79	-
* Note: compiled by the author				

The small increase in subscribers is explained by the lack of coverage in extremely remote areas. A number of other basic annual indicators are summarized in table 5:

Table 5 - Indicators characterizing the infrastructure of the information technology sector

Country	Mobile subscription (units/per 100 people)	Bandwidth of international Internet connection Bit/s per each Internet user	Households with computers (%)	Households with Internet access (%)
	2017	2017	2017	2017
Kazakhstan	145,4	69,8	76,2	84,9
* Note: compiled by the author				

The analysis shows a lack of digital security development in the studied region, and a correspondingly reduced level of consumer confidence in Internet commerce, which is a constraining factor for the development of electronic commerce.

The most important elements of the digital economy are: e-commerce; electronic banking; electronic payments; Internet advertising; internet games. In most countries, today the most developed (judging by the cost indicator of turnovers) such type of digital economy as electronic commerce. For the successful operation of electronic commerce in Kazakhstan, it is necessary to have a comprehensive impact, one legal mechanism is not enough, as logistics, infrastructure and the development of IT technologies (domestic) are poorly developed (I.V.Varavin, 2013, E.A.Samusenko, 2013)

As noted in the Digital Kazakhstan state enterprise in the long run, the successful implementation of measures will lead to a gradual change in the structure of the economy, with an increasing role for e-commerce, ICT and the financial sectors, as well as the sectors of the "new economy" (Svetunkov I.S., 2019).

Weaknesses in the implementation of electronic commerce in Kazakhstan:

- lack of competition as such in the domestic (domestic) market for electronic commerce;
- incomplete awareness of business entities about new ways of electronic commerce activities.

From the foregoing, conclusions and suggestions follow, which is necessary:

- training;

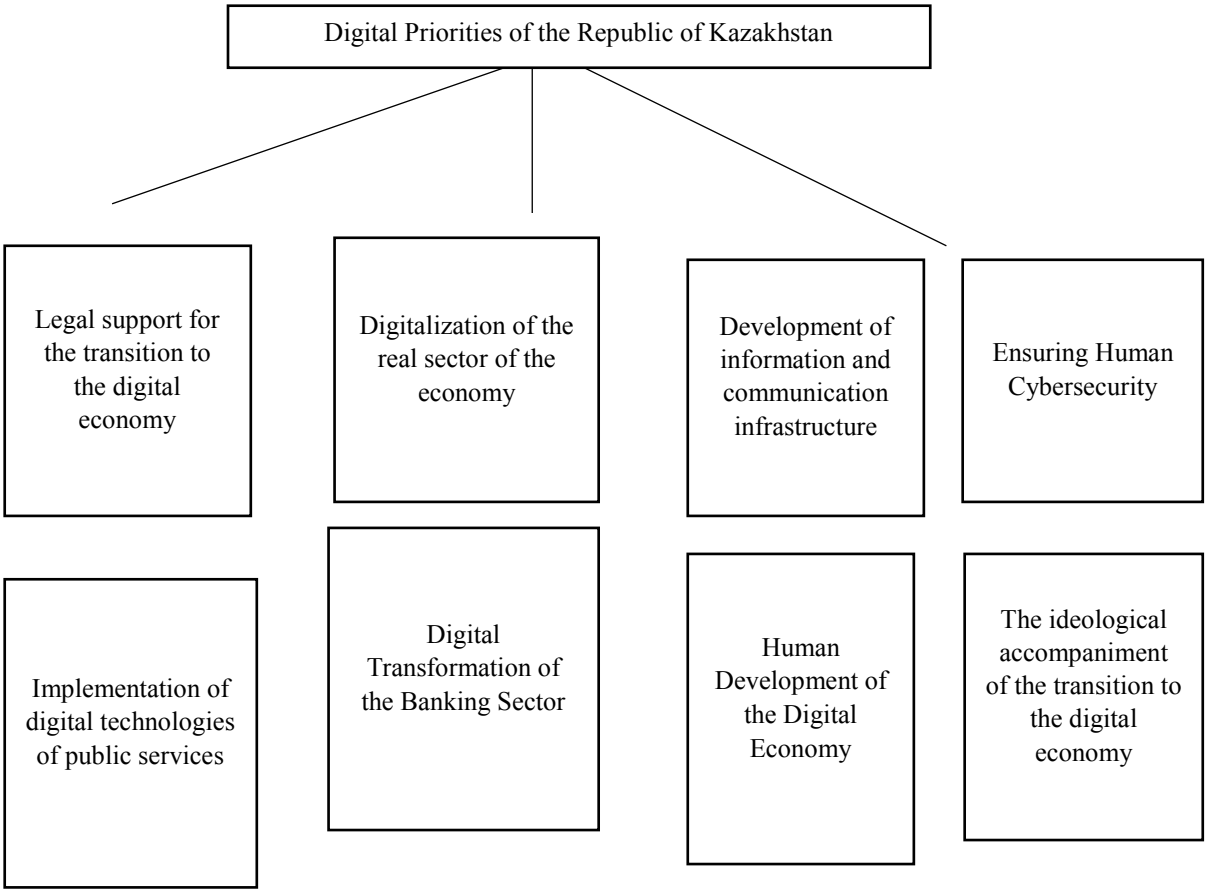
– adoption of the concept "Kazakhstan model of electronic commerce" with a clearly regulated form of protection for all participants in electronic commerce, regardless of their country of origin;

– an increase in the growth of the number of domestic, online stores, retail and wholesale online sales;

– establish transport logistics for the timely delivery of goods to consumers;

– expanding the consciousness of society by increasing open access to the Internet, ensuring an effective information society, while maintaining information security (Kozhakhmetova S.G., 2019).

In this regard, we will determine the priorities for the development of the digital economy for the Republic of Kazakhstan (Figure 1):



* Note: compiled by the author Figure 1 - Priority areas for the development of the digital economy *

The widespread introduction of new technologies and the chosen path to the digital economy will provide the country with increased efficiency and transparency in government, in the field of employment, as well as improve quality in education and healthcare, and will improve the investment climate.

Conclusion

Despite the fact that the introduction of digital technologies over the past decades in many countries has acquired the status of a "traditional" direction of development both at the state and corporate levels, the current stage of the digital economy is creating fundamentally new technological and organizational and managerial challenges.

As for the transformation of human living conditions, it should be noted here that digitalization provides fundamental transformations in all spheres of human life and activity. Technology is becoming not only an engine for the development

of new industries, but also gaining important social roles, making a significant contribution to solving social problems, such as aging populations, social stratification, environmental problems and climate change. With the help of advanced science and technology, a “smart” society arises, based on new values of orientation to human needs, flexibility, creativity.

Under the influence of digitalization, the labor market, healthcare, education, and spatial development are radically changing (NRU WB, 2019).

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PROSPECTS FOR THE DEVELOPMENT OF THE DIGITAL ECONOMY IN KAZAKHSTAN

Annotation. In modern Kazakhstan, the role of advanced technologies and innovations in economic development is growing. The latest technologies allow increasing the efficiency of production and business processes. Traditional approaches and methods of work are changing as the latest technologies penetrate into new industries and spheres of human activity. In this regard, the purpose of this article is to consider the impact of digitalization on the development of the economy and determine the main directions of development of the digital economy. At the same time, modern methods of scientific knowledge, such as analysis and synthesis, are used; induction, abstraction. The article considers the growth of GDP in the conditions of digitalization, the volume of venture financing of digital projects in Kazakhstan in comparison with other countries, the economic and social advantages of digitalization of the economy, including the impact of the digital economy on the labor market. Assistance in attracting direct private investment through crowdfunding platforms is proposed as a tool for developing the digital economy. Positive effects of the digital economy are revealed. The main directions of development of the digital economy are outlined: competent it regulation, developed infrastructure, national centers of competence and digital platforms. Segments of the digital economy are highlighted: the first is software products where added value is created. The second is the level of competence where research and development takes place. This is where platforms are created that are used to create products. And the third segment includes infrastructure, qualified personnel, and the regulatory environment, which is devoted to the question of how to describe new entities that are emerging in this economy, and how to configure relationships between participants.

Keywords: digital economy, cyber stability, cybersecurity, competent it regulation, developed infrastructure, digital platforms.

Introduction. In the modern world of telecommunications and information technology in society become an integral part of every human being. The rapid development of computer technology and it gave rise to the formation of a society that seeks to improve and interact business, science and technology.

Production of electronics, development and sale of software and information systems, mass distribution of personal computers, as well as the development of economic relations in a competitive environment-all this served to form a new concept of modernity-the digital economy.

The digital economy is not a separate industry, in fact it is a way of life, a new basis for the development of the public administration system, the economy, business, the social sphere, and the entire society.

The concept of "digital economy" arose in the 90 - ies of the twentieth century. Its ideology was best described in 1995 by the American computer scientist Nicholas Negroponte (Megroponte N, 1995). – The formation of the digital economy is a matter of national security and independence, competition of domestic companies.

Global trends, such as the emergence of breakthrough technologies, digitalization and acceleration of the product life cycle, lead to radical changes in most industries. Value chains are changing, profitability zones are shifting-and this radically changes the balance of forces in industries, significantly accelerating the introduction of new ideas and developments. The frequency of new opportunities and threats, as well as the speed of their penetration into markets, continues to increase. Every year new technologies get into our lives faster, and companies have less time to implement them (Ашинова М.К, 2018).

Today, the popularity of the digital economy as a fundamentally new model for the development of the economic system is increasing. With the increase in the world's population and the consumption of various resources, the e-economy can affect every aspect of human life: health, industry, education, social policy, agriculture, and culture. Now it is possible to make an appointment with a doctor via the Internet, with the help of distance education, you can improve your knowledge without leaving home, make documents online and receive financial services.

In scientific sources, the interpretation of the term "digital economy" is diverse and varies. "The digital economy is a form of economic activity that is based on a global electronic environment with the predominance of knowledge and information as the most important elements of the productive forces and the accelerated dynamics between supply and demand.

In General, the digital economy is a segment of economic relations mediated by technological advances, a global network, and information systems. But digitalization, like any process, is impossible without the use of such components as technologies and tools. They become intermediaries between the state and the people, banks and enterprises, reducing the chain of contractors and increasing the speed of decision-making.

A tool, in this case, refers to a tool used to influence, create, or transform an object (object), as well as to achieve specialized tasks. Digital economy tools such as the Internet of things, big data, artificial intelligence, machine learning, cyber-physical systems, monitoring systems, blockchain, neural networks, robotics, 3D modeling, virtual reality, cloud computing, and many others contribute to the digitalization and integration of all data flows to create an information society.

Literature review. Consider the fundamental tools of digitalization:

1. Big data.

The term "big data" appeared in 2008 while big data existed earlier. But, with the increase in the global flow of information, it became necessary to designate such a huge array of data. Today, in the world, the concept of big data means an object for analysis, or more precisely, large volumes of heterogeneous and fast-moving digital information that can not be studied by traditional methods. In the Russian-speaking community, in addition to the above, big data is also understood as technologies for processing this data, as well as tools and methods for their further use in solving specific goals and tasks. At the same time, data sources are Internet sites (from social networks, blogs and mass media to ordinary sites), archival documentation (for example, in the public sector), sensor readings, PC reports, and others. In the future, the volume of the global big data market will grow according to the forecast of the Wikibon Agency.

Big data technologies help specialists notice certain and unexpected patterns that are inaccessible to humans. An example of the application of this technology is the experience of the world-famous electric car manufacturer Tesla, where Analytics is used to collect information from the consumer. A large amount of information is created by the car itself, and processing this information helps employees identify patterns of driving behavior, driver behavior, and other data.

In 2015, Beeline launched a project that assesses the creditworthiness of subscribers. About 20 banks were interested in the experiment. Now banks can purchase information about the points assigned by the operator for payment for cellular communication, the services provided by the

mobile operator and geolocation data. Banks, in turn, can assess the solvency of potential customers.

2. Internet of things.

Back in 1926, Nikola Tesla predicted the possibility of creating a "big brain" by means of radio, when all things without exception will become inseparable, and the devices that made it possible to do this will be so simple that a person can easily carry them in his pocket. In 2008-2009, the number of devices connected to the world wide web exceeded the number of people using the Internet. Thus, the concept of the Internet of things emerged.

The Internet of things refers to a network consisting of physical objects (things) that can communicate with each other or with the external environment without human involvement. What is important here is the autonomy of devices that can transmit data independently (Ашимова М.К., 2015).

The ideology of the Internet of things is aimed at increasing the productivity of the economy by automating processes in diverse areas of activity and eliminating human participation from them. According to Huawei's forecast, the Internet of things in 55% of cases will be focused on business, development and improvement of smart cities and production, the remaining 45% - on human needs-household appliances, driverless cars, medical devices. The Internet of things technology has significant advantages over other technologies: it is widespread in the consumer market, in the sphere of production and Commerce. Also, there is a ready-made infrastructure for the spread of the Internet of things, and the introduction of various sensors and sensors in the future will be inexpensive.

It is planned that in the future, the components of the Internet of things will be able to perform the function of participants in Commerce, where they will coexist and communicate with each other, transmitting information to each other about the world around them.

For example, a smart thermoregulation mechanism will send power consumption data to the smart grid. As soon as a certain amount of electricity is used, the other mechanism will pay for this energy, based on the bill specified to it.

In Copenhagen, the government plans to reduce carbon dioxide emissions to zero by 2025. To do this, install street lights based on the concept of the Internet of things. They change the brightness of the lighting, focusing on external conditions. Installed sensors detect the presence of pedestrians and cars, air clogging, climate.

3. Blockchain.

Initially, the blockchain technology was first used in 2009. It served as the basis for secure anonymous transactions with cryptocurrency. Cryptocurrency can be described as a virtual, electronic coin, which is encrypted information that can not be copied. Blockchain is used in almost any cryptocurrency and guarantees its operation. More than hundreds of cryptocurrencies have already been created and this number continues to grow. But the possibility of using blockchain technology is not limited to cryptocurrencies.

Blockchain is a tool for storing information or a digital inventory of transactions, transfers, agreements, and contracts. Any data that needs to be documented and verified. You can store all sorts of information in this database, from your medical history to your Bank account status or the history of important contracts (Гао М, 2017).

A significant difference between the blockchain and its indisputable advantage is that all participants in the chain have separate access to it, without a hierarchical distribution of powers, which eliminates the possibility of data falsification, without the knowledge of other participants in the system. This registry can store a regularly updated list of entries in chronological order. Such lists with information are called blocks.

At the same time, the blocks are interconnected with each other and all information is subject to irreversible encryption. This explains the negligible possibility of a hacker attack.

The main functions of the blockchain include: its transparency - all actions are recorded, security - every step is subject to cryptography, and efficiency - fast and easy data exchange. Any

personal data is classified. Only information about a particular operation is available to system participants.

When the technology becomes commonplace, the participation of banks, notaries, and government agencies will not be necessary. The blockchain will be able to perform the necessary roles: fixing agreements, verifying identity, and confirming transactions.

One of the main tasks of the blockchain is to reduce the load on staff engaged in monotonous work, which makes it possible to optimize the workforce. Banks have already announced their intention to create a blockchain-based document management platform and remotely resolve most customer issues.

4. Intelligent information technologies.

Intelligent information technologies are technologies that can process various data using artificial intelligence algorithms. With the help of IIT, it became possible to formulate and regulate situations that were usually considered subject only to human intelligence. These situations could not be considered as a formal system or calculus and subjected to automation.

It is generally believed that IIT originated from the joint application of decision support systems and artificial intelligence in practice. Their combination contributed to an increase in the effectiveness of decision-making. Now each case could be described and modeled.

The distinctive features of IIT include the ability to self-study and development, and the availability of a database with some examples of solved problems. They are also able to identify solutions based on incomplete data. And explain the mechanism for making this decision.

Intelligent information technology can be described as a process with a clear schedule of actions and operations performed on data. At the same time, the main task of the IIT is to obtain important information for the user, using the achievements of scientists and mankind in any applied field. In addition, IIT not only preserves the knowledge and experience of various specialists, but also generates the missing ones. Such technologies help to accelerate the analysis of various problems: from technical, economic to social or personal, and can serve as a universal technical tool. In the foreseeable future, the competitive advantage will belong to companies with a high level of digitalization (Малявкина Л.И, 2016).

Already, the world's leading players are vigorously introducing digital tools in various sectors of the economy, financing the construction of data centers and the introduction of storage systems for business operations and customers. Digital tools will allow you to combine industrial production with individuality, reduce the period from the development of an idea to the sale of finished products, and provide an opportunity to achieve effective customization to meet the requirements of the consumer. The customer will be able to influence the desired characteristics of products or services.

Material and Methods. In this connection, it is safe to say that the fourth industrial revolution is getting closer.

Today, digital technologies have improved cost-effectiveness, changed the operating model of companies, and identified new opportunities in the market. Even in the most traditional industries, methods for analyzing large amounts of data are increasingly used to acquire new knowledge and make effective management decisions. The main reason for the slow growth of domestic innovative companies is the lack of investment. At the same time, the volume of state funding for research and development in Kazakhstan corresponds to the level of developed countries, amounting to 0.4 % of GDP.

In order to change the situation, it is important to create the basic infrastructure of the digital economy, including secure communication lines and data centers, with the participation of the state and private business, as well as to increase the output of specialists in the field of the digital economy and achieve universal digital literacy.

An important tool for the development of the digital economy is the promotion of attracting direct private investment through crowdfunding platforms, in particular, the creation of a regulatory framework for the operation of such platforms (Добрынин А.П, 2016).

In addition to positive effects, unfortunately, the digital economy entails negative consequences and risks. For example, the expansion of the range and individualization of digital services leads to a decrease in control in the field of digital services, and the opportunities for fraud increase. The risks of information leakage increase significantly, which requires increasing the level of protection and allocating additional investments in information security.

Many experts fear that the digital economy could lead to mass unemployment. Of course, there is a certain risk: automation leads to the release of labor resources, reducing the number of jobs that require average qualifications, and increasing the difference in pay levels. As a result, digital technologies can increase the gap in socio-economic inequality, thereby increasing competition for jobs, which can later lead to stagnation of wages. However, the introduction of innovative digital technologies has a positive impact on the labor market, as digital platforms create new jobs. In addition, they help to develop additional skills and improve skills, especially for people who previously did not have such opportunities due to social or geographical restrictions. New specialties and professions are emerging.

Results and Discussion. First, digital technologies contribute to social and financial inclusion of the population and increase the availability, quality and convenience of services in such important areas as medicine, education, municipal and public services, and culture.

Second, digital technologies make it possible to create comfortable and safe cities. In the context of digitalization, centralized systems for monitoring the state of urban infrastructure are emerging. Innovative digital technologies allow us to identify links where new infrastructure is needed and how to maintain it more cheaply and efficiently. The result is that with the same budget, the city authorities can provide citizens with more comfortable living conditions.

In addition, the use of digital technologies makes it possible to increase the availability and efficiency of public services (registration of legal entities, certification and accreditation, obtaining permits, declaring and paying taxes, customs support), thereby helping to improve the business and investment climate.

Digitalization contributes to the development of an entire ecosystem of business services (logistics services, mobile banking), increasing the transparency of business conditions (electronic platforms for tenders and purchases, feedback portals).

The main directions of development of the digital economy are the following: competent it regulation, developed infrastructure, national centers of competence and digital platforms.\

Let's highlight three segments of the digital economy. The first is software products where added value is created. The second is the level of competence where research and development takes place. This is where platforms are created that are used to create products. And the third segment includes infrastructure, qualified personnel, and the regulatory environment, which is devoted to the question of how to describe new entities that are emerging in this economy, and how to configure the relationships between participants. In the future, it is necessary to have a jurisdiction in a country that attracts investors from the point of view of technological innovations on the one hand, and protects the intellectual property, interests and rights of data owners on the other, and supports data turnover in the correct mode.

The regulatory environment in the context of digitalization should be ahead of the technical capabilities of economic participants in terms of innovation. In our opinion, it is necessary to provide for the mechanism of "sandboxes" in the legislation, or to introduce such rules in advance that allow you to immediately begin its implementation and engage in innovations at the moment when the technology appears. It should be noted that the current professions, taking into account the transformation of economic sectors in the conditions of digitalization, require an additional set of competencies related to information technologies.

Within the framework of the "Digital economy of Kazakhstan" program, by 2024, the infrastructure sector in Kazakhstan provides for the elimination of digital inequality, and communication will appear in all hard-to-reach areas of the country. The situation with data centers will change significantly. Now the two largest Chinese data Centers surpass all the capacities of our

Republic in terms of computing power. It is necessary to create a data Center development plan that is synchronized with the electrical infrastructure and the data link infrastructure. By 2024, the infrastructure should be a smart infrastructure. This is not just a set of individual elements, but a service platform that provides a set of digital semi-finished products on the basis of which you can create platforms. One of these services can be, for example, a service for electronic identification and authentication of individuals and legal entities.

Another component of the Foundation of the digital economy is cyber stability and cybersecurity. The number of threats and the complexity of the technologies used will increase every year, so it is advisable to implement solutions at the infrastructure level that protect the basic elements of this infrastructure from key threats.

At the middle level, we believe that one of the key tasks is to ensure closer interaction between research teams, large national companies, startups and financial institutions.

Conclusion. Thus, despite the fact that Kazakhstan is currently experiencing growth in the digital economy, Kazakhstan lags behind the leading countries. The main reason for the slow growth of domestic innovative companies is the lack of investment. Crowdfunding platforms can be singled out as an important tool for attracting investment. The introduction of innovative digital technologies has a positive impact on the labor market. In addition, digital technologies contribute to social and financial involvement of the population and increase the availability, quality and convenience of services in such important areas as medicine, education, municipal and public services, and culture. The use of digital technologies makes it possible to increase the availability and efficiency of public services, and helps to improve the business and investment climate. The main directions of development of the digital economy are the following: competent it regulation, developed infrastructure, national centers of competence and digital platforms.

The need to develop information and communication technologies, which are becoming a vital stimulus for the development of the world economy, is emphasized in the Charter of the global information society (adopted on Okinawa island on 22.07.2000), adopted by the United Kingdom, Germany, Italy, Canada, the United States, France, Japan, and Russia. According to the Charter, the development and sustainability of the global information society is based on the promotion of values such as democracy, freedom, and justice in people's lives, which will be achieved by the freedom to exchange information network resources, encouraging scientific and cultural exchanges of knowledge, and increasing respect and tolerance for the civilizational characteristics of other peoples. Research on information and communication technologies in the context of human rights has led to the conclusion that a new fundamental human right - the right to access the Internet-will be recognized in the near future.

As the recommended principles and approaches identified in the Charter:

- ensuring fair competition in the markets of information technologies and telecommunications, considered as electronic products and services, which implies equality of rights and legitimate interests of users to access for inclusion in system telecommunications lines, based on non-discrimination and protectionism;
- protective measures of intellectual property protection for developed information technology processes, as well as promotion of various forms of e-Commerce and cross-border digital commodity exchange transactions, while expanding the principle of freedom and openness of trade networks, the principle of preserving global trade chains and their financing procedures under WTO law;
- stimulating taxation of international e-Commerce revenues based on the principles of proportionality of the tax burden, payment of taxes by the beneficiary, prevention of aggressive taxation, use of simplified tax systems, and other provisions of the OECD in the context of international tax policy for development;
- continue the practice of exempting electronic transfers from customs duties until it is reviewed again at the next WTO Ministerial conference;
- promotion of market standards, including, for example, technical interoperability standards;

- further development and effective functioning of electronic identification, electronic signature, cryptography and other means of ensuring security and reliability of transactions, etc.

When assessing the significance of the adopted Charter of the global information society, the literature notes that information and communication technologies include digital methods of data transformation, modern means of communication and means of data transmission using global networks, primarily the Internet, the development of which forms a new habitat for humanity, defined as an information society.

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ҚАЗАҚСТАНДАҒЫ ЦИФРЛЫҚ ЭКОНОМИКАНЫҢ ДАМУ БОЛАШАҒЫ

Аңдатпа. Қазіргі Қазақстан жағдайында экономиканы дамытудағы озық технологиялар мен инновациялардың рөлі өсіп келеді. Жаңа технологиялар өндірістік және бизнес-

үдерістердің тиімділігін арттыруға мүмкіндік береді. Жұмыстың дәстүрлі тәсілдері мен әдістері жаңа технологиялардың адам өмірінің барлық жаңа салалары мен салаларына енуіне қарай өзгереді. Осыған байланысты осы баптың мақсаты – цифрландырудың экономиканың дамуына әсерін қарастыру және сандық экономиканы дамытудың негізгі бағыттарын айқындау. Сонымен қатар талдау, синтез сияқты ғылыми танымның заманауи әдістері қолданылды.; индукция, абстракция. Мақалада цифрландыру жағдайындағы ЖІӨ өсімі, басқа елдермен салыстырғанда Қазақстанның цифрлық жобаларын венчурлік қаржыландыру көлемі, экономиканы цифрландырудың экономикалық және әлеуметтік артықшылықтары, оның ішінде цифрлық экономиканың еңбек нарығына әсері қарастырылған. Цифрлық экономиканы дамыту құралы ретінде краудфандингтік платформалар арқылы тікелей жеке инвестициялауды тартуға жәрдемдесу ұсынылды. Сандық экономиканың оң әсері анықталды. Цифрлық экономиканы дамытудың негізгі бағыттары белгіленді: сауатты ат-реттеу, дамыған инфрақұрылым, ұлттық құзыреттілік орталықтары және сандық платформалар. Цифрлық экономиканың сегменттері бөлінген: біріншісі-қосылған құн жасалатын бағдарламалық өнімдер. Екінші – зерттеулер мен әзірлемелер жүргізілетін құзыреттілік деңгейі. Мұнда өнімдер пайда болатын платформалар құрылады. Үшінші сегмент осы экономикада туындайтын жаңа мәндерді қалай сипаттауға, қатысушылар арасындағы өзара қарым-қатынастарды конфигурациялау мәселесіне арналған инфрақұрылымды, білікті кадрларды және реттеуші ортаны қамтиды.

Түйінді сөздер: сандық экономика, киберқауіпсіздік, сауатты ат-реттеу, дамыған инфрақұрылым, сандық платформалар.

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ПЕРСПЕКТИВЫ РАЗВИТИЯ ЦИФРОВОЙ ЭКОНОМИКИ В КАЗАХСТАНЕ

Аннотация. В условиях современного Казахстана растет роль передовых технологий и инноваций в развитии экономики. Новейшие технологии позволяют увеличивать эффективность производственных и бизнес-процессов. Традиционные подходы и методы работы меняются по мере проникновения новейших технологий во все новые отрасли и сферы жизнедеятельности человека. В связи с этим цель данной статьи – рассмотреть влияние цифровизации на развитие экономики и определить основные направления развития цифровой экономики. При этом использованы современные методы научного познания, такие как анализ, синтез; индукция, абстракция. В статье рассмотрены прирост ВВП в условиях цифровизации, объем венчурного финансирования цифровых проектов Казахстана в сравнении с другими странами, экономические и социальные преимущества цифровизации экономики, в т.ч. и влияние цифровой экономики на рынок труда. В качестве инструмента развития цифровой экономики предложено содействие привлечения прямого частного инвестирования через краудфандинговые платформы. Выявлены позитивные эффектны цифровой экономики. Обозначены основные направления развития цифровой экономики: грамотное ИТ-регулирование, развитая инфраструктура, национальные центры компетенции и цифровые платформы. Выделены сегменты цифровой экономики: первый – программные продукты, где создается добавленная стоимость. Второй – уровень компетенций, где происходят исследования и разработки. Здесь создаются платформы, на базе которых возникают продукты. И третий сегмент включает в себя инфраструктуру, квалифицированных кадров и регуляторную среду, посвященную вопросу, как описать

новые сущности, возникающие в этой экономике, как конфигурировать взаимоотношения между участниками.

Ключевые слова: цифровая экономика, киберустойчивость, кибербезопасность, грамотное ИТ-регулирование, развитая инфраструктура, цифровые платформы.

КАЗАХСКИЙ НАЦИОНАЛЬНЫЙ УНИВЕРСИТЕТ имени АЛЬ-ФАРАБИ

Товма Н.А.

ЗАРУБЕЖНЫЙ ОПЫТ РАЗВИТИЯ ЦИФРОВОЙ ЭКОНОМИКИ

Монография

Алматы
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Актуальность темы. В современных условиях развития во многих странах цифровизация является стратегическим приоритетом развития. К 2020 году четверть мировой экономики стало цифровой, и внедрение технологий цифровизации экономики, позволяющих государству, бизнесу и обществу эффективно взаимодействовать, становится все более масштабным и динамичным процессом [1, с. 2]. Внедрение информационных технологий в государственном секторе выводит на качественно новый уровень ключевые аспекты жизни населения – от оплаты коммунальных услуг до оформления страховых полисов и лечения. Цифровая экономика становится важнейшим драйвером инноваций, экономического роста и конкурентоспособности.

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СОДЕРЖАНИЕ

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ЦИФРОВАЯ ЭКОНОМИКА В РЕСПУБЛИКЕ КАЗАХСТАН В УСЛОВИЯХ ПАНДЕМИИ

Алматы 2020

Товма Н.А., Плошай А.Г. Цифровая экономика в Республике Казахстан в условиях пандемии –Алматы, издательство «Valentina» 2020 - 120 с.

Более 15 стран мира реализуют национальные программы цифровизации. Китай в своей программе «Интернет плюс» интегрирует цифровые индустрии с традиционными. Сингапур формирует «Умную экономику», Канада создает ИКТ-хаб в Торонто, Южная Корея в программе «Креативная экономика» ориентируется на развитие человеческого капитала, предпринимательство и распространение достижений ИКТ, а Дания фокусируется на цифровизации госсектора.

Для Республики Казахстан основное значение цифровизации экономики связано с необходимостью сокращения различий регионального развития [7, с. 8]. Это обусловлено длительным историческим развитием только развитием центральных регионов [8, с. 8]. Поэтому стоит говорить о необходимости цифровизации региональных экономических систем [9, с. 11].