UDC 330.47] (4-672ЄС+477)
DOI 10.37772/2309-9275-2023-1(20)-4
JEL Classification: K 23, K 40, M 21, O 52

ASSESSMENT OF THE IMPACT OF DIGITALIZATION ON BUSINESS DEVELOPMENT IN EU COUNTRIES AND UKRAINE

Igor MATYUSHENKO, ORCID ID 0000-0001-9866-9025, ResearcherID E-1648-2018[1],
Serhii HLIBKO, ORCID ID 0000-0003-3398-9276, ResearcherID A-1120-2019[2]
Olena KHANOVA, ORCID ID 0000-0002-0681-4860, ResearcherID M-2175-2016 2[3]
Denys KORYTIN, ORCID ID 0000-0001-9595-9799[4]

[1]Professor, Dr.Sc. of Economics, PhD of Technical Sciences, Department of International Economic Relations, School of International Economic Relations & Touristic Business, V.N. Karazin Kharkiv National University, Ukraine; Chief researcher from the Scientific Research Institute of Providing Legal Framework for the Innovative Development of the National Academy of Legal Science of Ukraine
[2]PhD, Associate Professor, Head of the Scientific and Research Institute of Providing Legal Fremework for the Innovative Development of National Academy of Law Sciences of Ukraine
[3]Associate Professor, PhD of Geography, Department of International Economic Relations, School of International Economic Relations & Touristic Business, V.N. Karazin Kharkiv National University, Ukraine
[4]Junior Research Fellow of the Scientific and Research Institute of Providing Legal Framework for the Innovative Development of NALS of Ukraine

Corresponding author: Igor Matyushenko, email: imatyushenko@karazin.ua

Abstract. The article assesses the prospects for the development of entrepreneurial activity in the EU and Ukraine in the conditions of digitalization of the economy. A methodical approach for the analysis of the development of entrepreneurial activity in the EU countries and Ukraine in the context of the digitalization of the economy has been formed, which consists of three stages. Attention is drawn to the fact that the WDCR, NRI, GII indices combine mainly institutional, economic and technological indicators that reflect the development of regulatory and legal research base, use of ICT in business, information security. The EGDI index has a more social orientation and reflects socio-economic integration - it is designed to assess the level of development of the information society. An analysis of the dynamics of changes in entrepreneurial activity in EU countries and Ukraine in the conditions of digitalization of the economy was carried out. It was established that despite the lower level of development of digitalization in Ukraine compared to the EU countries, the development trends both in the EU as a whole and in Ukraine clearly coincide. The impact of the digital component on the development of entrepreneurial activity in EU countries and Ukraine was modeled using correlation-regression analysis. It was noted that the level of digitalization does not affect the speed of the legislative body's reaction to eliminate the deterioration of the conditions of business activity, and the establishment of index indicators only according to the adopted normative legal acts does not take into account the effectiveness of the implementation of legislative changes in the field of business activity. It was concluded that among the three variables, the e-government development index has the greatest influence on the development of entrepreneurial activity. Belgium, Croatia, Italy, Slovakia, Luxembourg, the Netherlands, and Hungary have the greatest direct relationship between the development of entrepreneurial activity, the digital government development index, and digital competitiveness.

Keywords: European integration, correlation-regression model, international indices of digital competitiveness, development of entrepreneurship, digitalization of the economy, legal environment, law and business.

Acknowledgments

V. N. Karazin Kharkiv National University and the Scientific and Research Institute of Providing Legal Framework for the Innovative Development of the National Academy of Legal Sciences of Ukraine support the

work within the Jean Monnet Module «Ukraine's European Integration in Industry 4.0» (611674- EPP-1-2019-1-UAEPPJMO-MODULE).

Funding

All the studies presented in this article were conducted by the authors within the framework of the topic «Legal Support of the Innovation Process in the Context of Global Challenges» (РК УкрІНТЕІ №0120U104786, duration of the implementation (01.2022 p. – 12.2024 p.).

Author Contributions

I. Matyushenko and O. Khanova have conceived the study and have been responsible for the design and data analysis. S. Hlibko and D. Korytin have analyzed the legislation and its impact on the indicators of business development.

Disclosure statement

The authors do not have any competing financial, professional, or personal interests from other parties.

INTRODUCTION

The study of the development of entrepreneurial activity in any country is impossible without a constant rethinking of the factors that influence it and the dynamics of their changes. Such factors include global economic trends, the geopolitical situation and a number of other circumstances. Any country cannot develop in an environment of economic instability, when inflation is rising, the national currency is unstable, and there are no plans for the development of small and medium-sized businesses. The problems that affect the development of the country's business activity can only be solved at the government level, in a comprehensive manner. It is worth noting that in the context of the new industrial revolution, the importance of innovative development factors, such as the digitalization of the economy, is growing significantly. Therefore, the study of the impact of economic digitalization on the development of entrepreneurship in the country is relevant.

THEORETICAL FRAMEWORK

The research of issues and problems of development of entrepreneurial activity of countries of the world as a factor of their innovative development is devoted to the scientific works of such famous scientists as: M. Tugan-Baranovsky, M. Kondratiev, J. Schumpeter, D. Bernal, S. Kuznets, B. Twiss, J. Bright and others. The problem of effective development of entrepreneurial activity in the EU and Ukraine, which stimulates the country's innovative development, has been studied in recent decades in the works of many scholars, in particular, J. Krauf, F. Kwiatkowski, and others. Krauff, F. Quattaro and P. Saviotti (Krauff et al., 2014), U. Kantner (Kantner, 2016), S. Winter (Winter, 2016), P. Adams, R. Fontana and F. Malerb (Adams et al, 2016; Malebra & McKelvey, 2020; Malebra & McKelvey, 2018), S. Clapper (Klepper, 2015), M. McKelvey (Malebra & Kleper, 2015; Malebra & McKelvey, 2020), K. Lee (Lee & Malebra, 2017), M. Dorosch-Kizim, O. Dadak, M. Dorosch, L. Babych (Dorosch-Kizim et al, 2020) and others. However, the sphere of entrepreneurship development in Ukraine and the European Union in the context of economic digitalization is not described in sufficient detail, which determines the relevance of the work.

METHODOLOGY

At the first stage, the author proposes to analyze the dynamics of changes in the indicators of entrepreneurial activity of the EU countries and Ukraine in the context of digitalization of the economy. As characteristic indicators of business activity of countries in the context of digitalization of the economy, we have chosen:

– Doing business index from the World Bank;
– The World Digital Competitiveness Index (WDCI) developed by the Swiss Business School;

– The E-Government Development Index (EGDI), which represents the state of e-government development in UN member states;

– The Global Innovation Index (GII) ranks world economies according to their innovation capabilities.

At the second stage of the study of the impact of the digital component on the development of entrepreneurship in the EU and Ukraine, we propose to conduct a correlation and regression analysis in order to build equations of influence on the level of entrepreneurship of the level of digitalization and innovation of the economy for each of the EU countries and Ukraine. In particular, we consider:

– the correlation between the Doing Business and EDGI indices of the EU and Ukraine;

– the correlation between Doing Business and WDCI (World Digital Competitiveness Index);

– the correlation between Doing Business and GII (Global Innovation Index) indices.

Based on the results of the calculations, an equation of influence on the level of entrepreneurial activity (in the form of the Doing Business index) is formed by three components: X1 - EDGI (E-Government Development Index); X2 - WDCI (Digital Competitiveness Index); X3 - GII (Global Innovation Index).

After that, the impact of each of these components is analyzed and the EU countries and Ukraine are classified according to the total amount of influence on the entrepreneurial activity of the digitalization of the economy.

At the third stage, the prospects for the development of entrepreneurial activity in the EU and Ukraine in the context of economic digitalization are determined.

RESULTS

The World Bank's Doing Business Index is one of the most influential rankings of business performance.

Table 1 shows data on the Doing Business index in the dynamics from 2015 to 2021 for each of the EU countries and Ukraine.

Table 1. Dynamics of changes in the Doing Business index in the EU and Ukraine

	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Ukraine	61,52	64,18	65,42	68,09	69,07	70,21	71,95
Austria	77,42	78,82	78,86	78,71	78,74	78,75	78,92
Belgium	71,11	72,43	72,41	72,18	74,75	74,99	75,74
Bulgaria	71,80	72,46	71,59	71,69	71,81	71,97	71,95
Hungary	68,80	71,07	71,38	72,68	73,24	73,42	74,30
Germany	79,73	79,50	79,55	79,35	79,35	79,71	79,69
Greece	66,70	66,92	67,09	67,11	67,41	68,42	68,71
Denmark	84,20	84,51	84,60	84,58	85,17	85,29	85,50
Ireland	80,07	79,80	80,10	80,10	79,59	79,58	79,49
Spain	73,17	75,93	77,63	77,63	77,70	77,94	78,77
Italy	68,48	71,69	71,83	73,19	73,04	72,85	73,63
Cyprus	66,55	71,95	72,31	72,28	72,78	73,35	74,39
Latvia	76,73	79,13	80,60	79,99	80,32	80,28	80,87
Lithuania	76,31	78,99	79,22	80,63	80,96	81,62	82,59
Luxembourg	67,60	69,15	69,17	69,59	69,59	69,60	69,94

	2015	2016	2017	2018	2019	2020	2021
Malta	62,11	62,28	64,78	65,21	65,50	66,14	67,00
Netherlands	75,01	75,52	5,57	76,08	76,10	76,10	76,32
Poland	73,56	76,93	77,68	77,86	76,93	76,38	76,79
Portugal	76,03	76,36	76,66	76,51	76,44	76,47	76,53
Romania	70,22	72,72	72,85	73,04	72,51	73,33	73,77
Slovakia	71,83	74,84	75,03	75,15	75,45	75,59	76,18
Slovenia	69,87	74,71	75,41	76,39	76,41	76,52	77,64
Finland	80,83	80,10	80,10	79,9	80,04	80,18	80,08
France	73,8	76,15	76,25	76,01	76,78	76,80	77,27
Croatia	66,53	71,35	72,15	72,61	72,95	73,62	74,78
Czech Republic	70,95	76,11	76,39	76,42	76,32	76,34	77,13
Sweden	80,60	81,63	82,15	82,17	82,02	81,99	82,22
Estonia	78,84	80,54	80,70	80,77	80,79	80,62	80,89

Systematized by (Doing Business 2015–2020; World Digital Competitiveness Ranking, 2021)

Fig. 1 shows the dynamics of changes in the Doing Business index for Ukraine and the EU average.

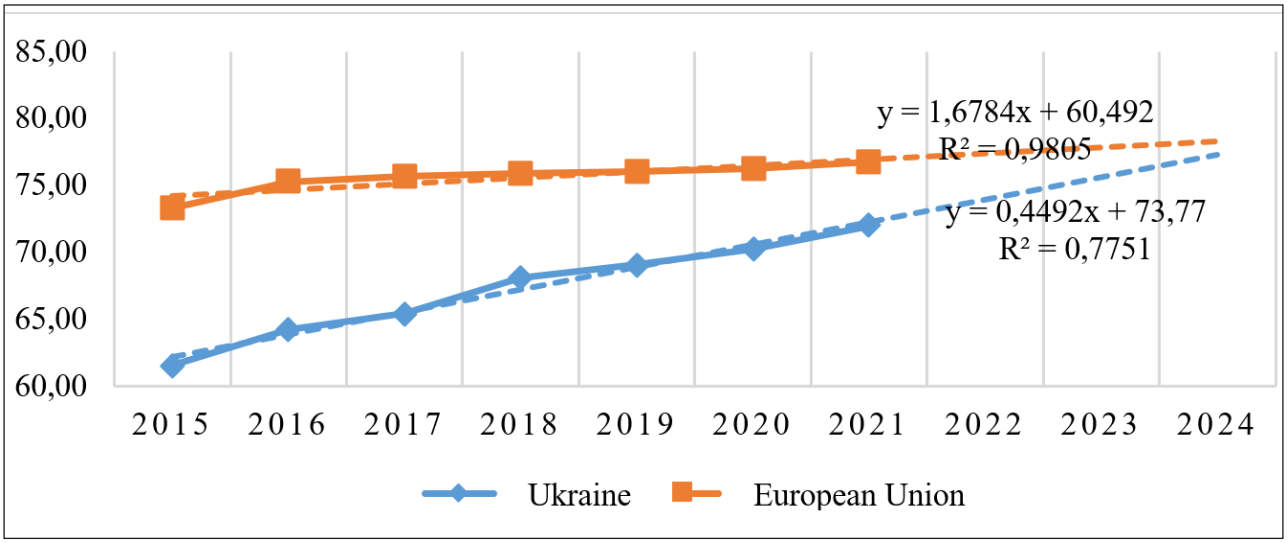

Fig. 1. Dynamics of changes in the Doing Business index for Ukraine and the EU average (Doing Business 2015–2020; World Digital Competitiveness Ranking, 2021)

As can be seen from the figure, both in Ukraine and the EU, the level of entrepreneurial activity has a positive development trend. In Ukraine, the probability of the forecast is slightly lower than in the EU, but high - 77.5%.

The World Digital Competitiveness Index (WDCI) was developed by the Swiss Business School. This index reflects the readiness and ability of countries to adapt to the development of the digital economy.

Table 2 shows data on the WDCI index in the dynamics from 2016 to 2021 for each of the EU countries and Ukraine.

Table 2: Dynamics of changes in the WDCI index in the EU and Ukraine

	2016	2017	2018	2019	2020	2021
Ukraine	59	60	58	60	58	58
Austria	19	16	15	20	17	17
Belgium	18	22	23	25	25	27
Bulgaria	47	45	43	45	45	45
Hungary	42	44	46	43	47	48
Germany	15	17	18	17	18	19
Greece	45	50	53	53	46	47
Denmark	8	5	4	4	3	2
Ireland	20	21	20	19	20	20
Spain	30	30	31	28	33	33
Italy	34	39	41	41	42	44
Cyprus	-	53	54	54	40	36
Latvia	33	35	35	36	38	39
Lithuania	29	29	29	30	29	29
Luxembourg	21	20	24	21	28	30
Malta	-	-	-	-	-	-
Netherlands	4	6	9	6	7	8
Poland	38	37	36	33	32	30
Portugal	31	33	32	34	37	38
Romania	49	54	47	46	49	48
Slovakia	41	43	50	47	50	52
Slovenia	36	34	34	32	31	30
Finland	6	4	7	7	10	11
France	22	25	26	24	24	24
Croatia	44	48	44	51	52	54
Czech Republic	32	32	33	37	35	36
Sweden	3	2	3	3	4	4
Estonia	27	26	25	29	21	22

Systematized by (World Digital Competitiveness Ranking, 2016-2020, E-Governmental Index, 2022)

Fig. 2 shows the dynamics of changes in the WDCI index for Ukraine and the EU average.

As can be seen from the figure, in both Ukraine and the EU, the World Digital Competitiveness Index has a positive development trend (the indicator has the opposite meaning, the lower the number, the better). In Ukraine, the probability of the forecast is low - 23%, which indicates a lack of digital development, while in the EU it is average - 67%, which indicates a steady development of digitalization processes, without rapid growth.

The E-Government Development Index (EGDI) presents the state of e-government development in UN member states. Along with an assessment of a country's website development patterns, the

E-Government Development Index includes access characteristics such as infrastructure and education levels to reflect how a country is using information technology to promote access and engagement of its people.

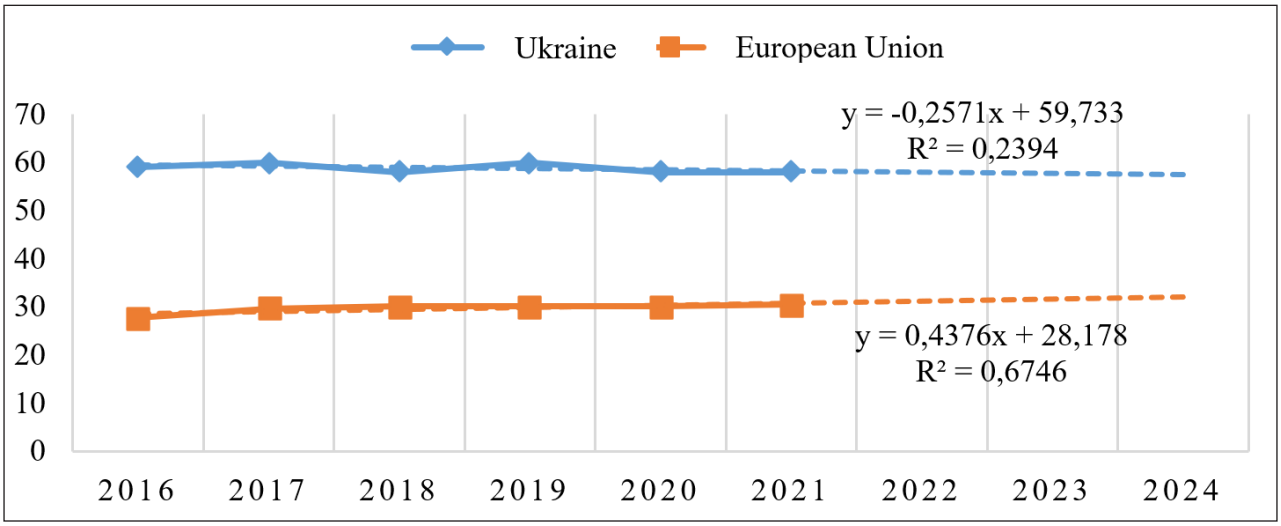

Fig. 2. Dynamics of changes in the WDCI index for Ukraine and the EU average (World Digital Competitiveness Ranking, 2016-2020, E-Governmental Index, 2022)

Table 3 shows data on the EGDI index in the dynamics from 2015 to 2021 for each of the EU countries and Ukraine.

Table 3. Dynamics of EGDI index changes in the EU countries and Ukraine

	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Ukraine	0,50	0,61	0,61	0,62	0,62	0,71	0,74
Austria	0,79	0,82	0,82	0,83	0,83	0,89	0,91
Belgium	0,76	0,79	0,79	0,81	0,81	0,80	0,81
Bulgaria	0,54	0,64	0,64	0,72	0,72	0,80	0,84
Hungary	0,66	0,67	0,67	0,73	0,73	0,77	0,80
Germany	0,79	0,82	0,82	0,88	0,88	0,85	0,87
Greece	0,71	0,69	0,69	0,78	0,78	0,80	0,83
Denmark	0,82	0,85	0,85	0,92	0,92	0,98	1,01
Ireland	0,78	0,77	0,77	0,83	0,83	0,84	0,86
Spain	0,84	0,81	0,81	0,84	0,84	0,88	0,89
Italy	0,76	0,78	0,78	0,82	0,82	0,82	0,84
Cyprus	0,60	0,60	0,60	0,77	0,77	0,87	0,93
Latvia	0,72	0,68	0,68	0,72	0,72	0,66	0,66
Lithuania	0,73	0,77	0,77	0,75	0,75	0,87	0,88
Luxembourg	0,76	0,77	0,77	0,83	0,83	0,83	0,84
Malta	0,65	0,74	0,74	0,80	0,80	0,85	0,89

	2015	2016	2017	2018	2019	2020	2021
Netherlands	0,89	0,87	0,87	0,88	0,88	0,92	0,93
Poland	0,65	0,72	0,72	0,79	0,79	0,85	0,89
Portugal	0,69	0,71	0,71	0,80	0,80	0,83	0,86
Romania	0,56	0,56	0,56	0,67	0,67	0,76	0,80
Slovakia	0,61	0,59	0,59	0,72	0,72	0,78	0,82
Slovenia	0,65	0,78	0,78	0,77	0,77	0,85	0,88
Finland	0,84	0,88	0,88	0,88	0,88	0,95	0,96
France	0,89	0,85	0,85	0,88	0,88	0,87	0,87
Croatia	0,63	0,72	0,72	0,70	0,70	0,77	0,79
Czech Republic	0,61	0,65	0,65	0,71	0,71	0,81	0,85
Sweden	0,82	0,87	0,87	0,89	0,89	0,94	0,95
Estonia	0,82	0,83	0,83	0,85	0,85	0,95	0,97

Systematized by (EGDI Methodology, 2022, Global Innovation Index 2015)

Fig. 3 shows the dynamics of changes in the EGDI index for Ukraine and the EU average.

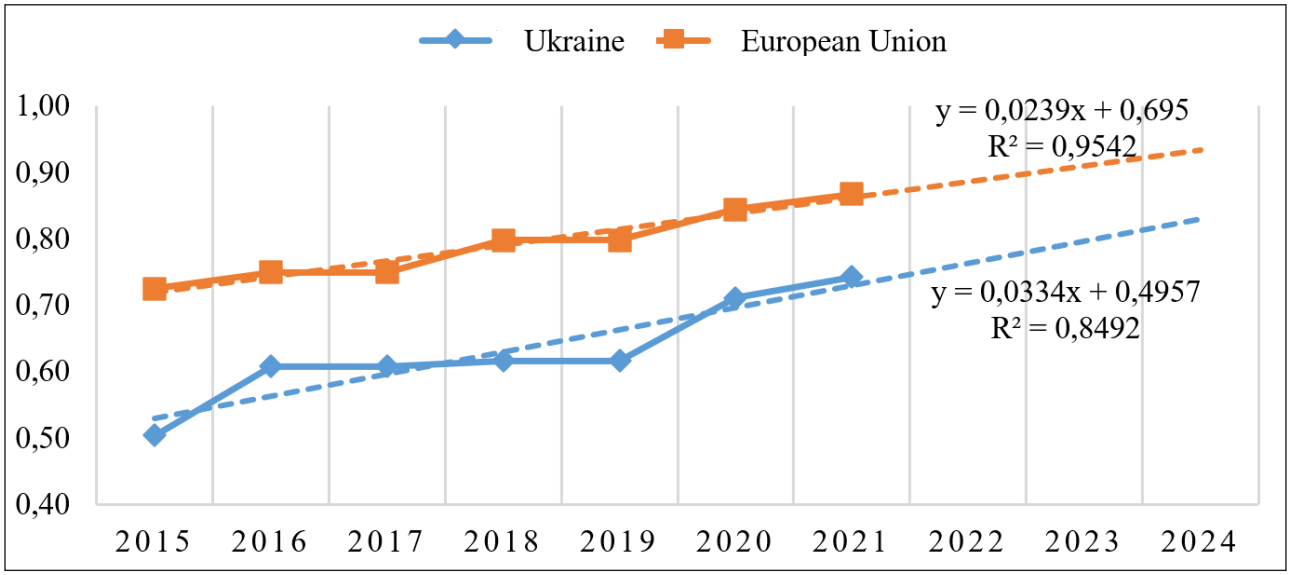

Figure 3. Dynamics of changes in the EGDI index for Ukraine and the EU average (EGDI Methodology, 2022, Global Innovation Index 2015)

As can be seen from the figure, both Ukraine and the EU have a positive trend in e-government development. In Ukraine, the probability of the forecast is slightly lower (84%) than in the EU (95%).

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. It consists of 80 indicators grouped by input and output innovation resources and reflects various aspects of innovation.

Table 4 shows the data on the GII index in the dynamics from 2015 to 2021 for each of the EU countries and Ukraine.

Table 4. Dynamics of changes in the GII index in the EU countries and Ukraine

	2015	2016	2017	2018	2019	2020	2021
Ukraine	36,45	35,72	37,62	38,52	37,4	36,32	35,6
Austria	54,07	52,65	53,1	51,32	50,94	50,13	50,9
Belgium	50,91	51,97	49,85	50,5	50,18	49,13	49,2
Bulgaria	42,16	41,42	42,84	42,65	40,35	39,98	42,4
Hungary	43	44,71	41,74	44,9	44,51	41,53	42,7
Germany	57,05	57,94	58,39	58,03	58,19	56,55	57,3
Greece	40,28	39,75	38,85	38,93	38,9	36,79	36,3
Denmark	57,7	58,45	58,7	58,39	58,44	57,53	57,3
Ireland	59,13	59,03	58,13	57,19	56,1	53,05	50,7
Spain	49,07	49,19	48,81	48,68	47,85	45,6	45,4
Italy	46,4	47,17	46,96	46,32	46,3	45,74	45,7
Cyprus	43,51	46,34	46,84	47,83	48,34	45,67	46,7
Latvia	45,51	44,33	44,61	43,18	43,23	41,11	40
Lithuania	42,26	41,76	41,17	41,19	41,46	39,18	39,9
Luxembourg	59,02	57,11	56,4	54,53	53,47	50,84	49
Malta	50,48	50,44	50,6	50,29	49,01	46,39	47,1
Netherlands	61,58	58,29	63,36	63,32	61,44	58,76	58,6
Poland	40,16	40,22	41,99	41,67	41,31	39,95	39,9
Portugal	46,61	46,45	46,05	45,71	44,65	43,51	44,2
Romania	38,2	37,9	39,16	37,59	36,76	35,95	35,6
Slovakia	42,99	41,7	43,43	42,88	42,05	39,7	40,2
Slovenia	48,49	45,97	45,8	46,87	45,25	42,91	44,1
Finland	59,97	59,9	58,49	59,63	59,83	57,02	58,4
France	53,59	54,04	54,18	54,36	54,25	53,66	55
Croatia	41,7	38,29	39,8	40,73	37,82	37,27	37,3
Czech Republic	51,32	49,4	50,98	48,75	49,43	48,34	49
Sweden	62,4	63,57	63,82	63,08	63,65	62,47	63,1
Estonia	52,81	51,73	50,93	50,51	49,97	48,28	49,9

Systematized by (Global Innovation Index 2016–2021)

Fig. 4 shows the dynamics of changes in the GII index for Ukraine and the EU average.

As can be seen from the figure, in both Ukraine and the EU, the level of innovation potential development in the EU is much higher than in Ukraine. It should be noted that there is a negative trend in the development of innovation potential both in the EU and in Ukraine.

To study the impact of the digital component on the development of entrepreneurship in the EU and Ukraine, it is proposed to conduct a correlation and regression analysis in order to build equations of influence on the level of entrepreneurship of the level of digitalization and innovation of the economy for each of the EU countries and Ukraine.

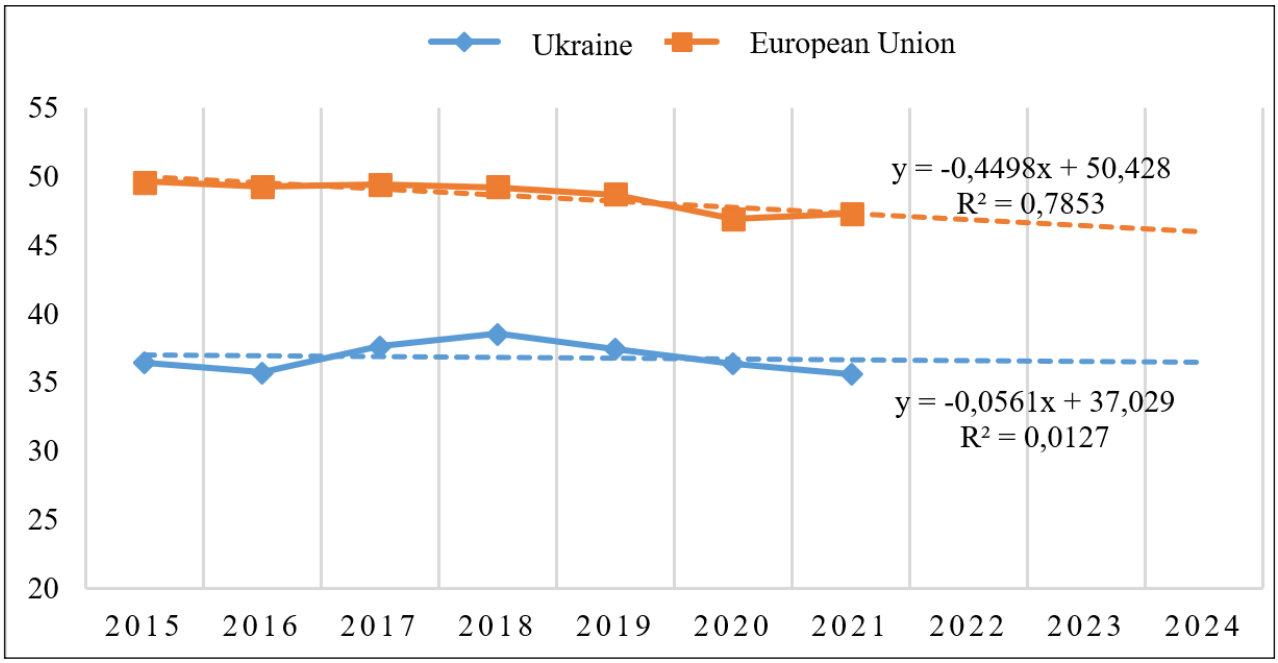

Fig. 4. Dynamics of changes in the GII index for Ukraine and the EU average (Global Innovation Index 2016–2021)

Let us consider the relationship between the Doing Business and EDGI indices, Fig. 5.

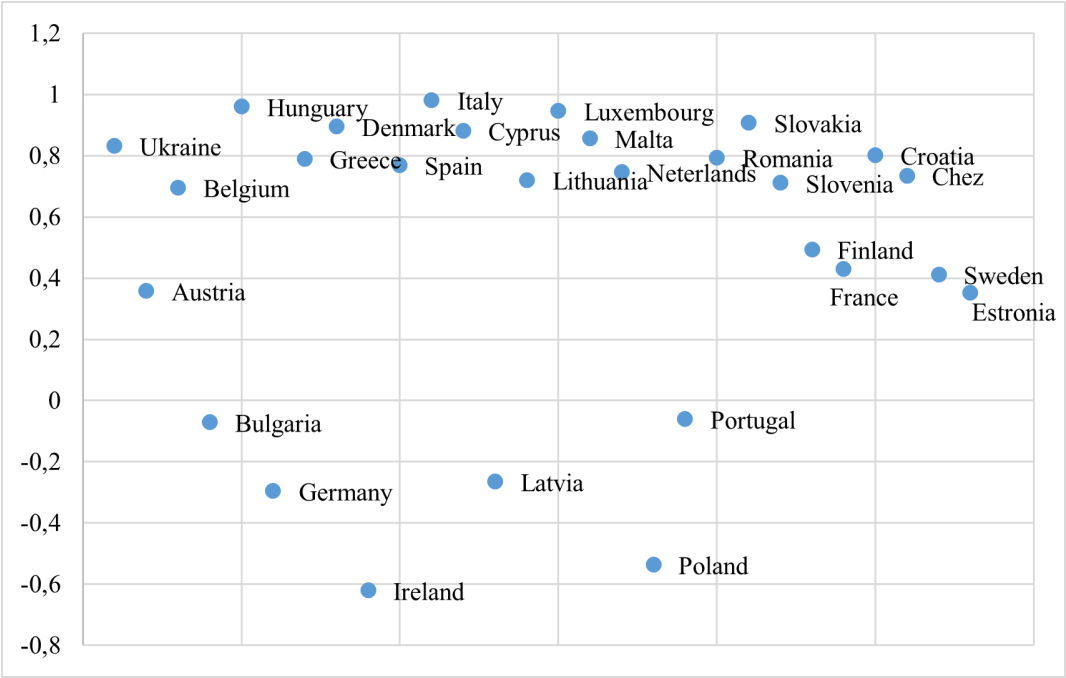

Fig. 5. Results of correlation analysis between Doing Business and EDGI indices of EU countries and Ukraine (Doing Business 2015-2020; World Digital Competitiveness Ranking 2016-2021; E-Governmental Development Index, 2022)

Consequently, the level of entrepreneurial activity in many EU countries and Ukraine has a direct high connection with the e-government development index, that is, entrepreneurial activity

in these countries directly depends on the development of digital infrastructure and the level of education, the degree of use of information technology to facilitate access and involvement of its people.

Countries such as Bulgaria, Germany, Ireland, Latvia, Portugal and Poland, on the contrary, have a low feedback, which on the one hand may be due to the still insufficient level of digitalization of the business environment, and on the other, as in Germany, be a consequence of the fact that the level of digitalization is not one of the main factors in the formation of a favorable business environment in the country.

Consider the relationship between the Doing Business (Business Activity Index) and WDCI (Digital Competitiveness Index), Fig. 6.

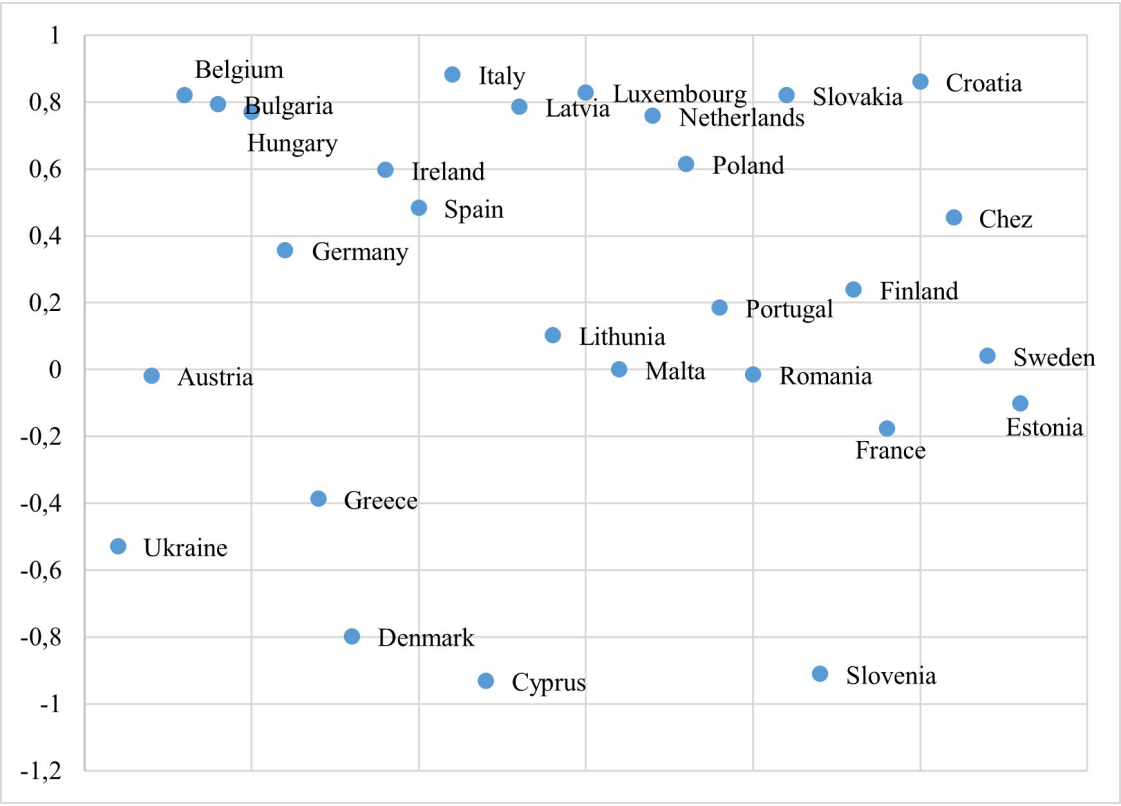

Fig. 6. Results of correlation analysis between Doing Business and WDCI indexes of EU countries and Ukraine (Doing Business 2015-2020; World Digital Competitiveness Ranking 2021; EGDI Methodology, 2022; Global Index, 2015)

Consequently, the level of entrepreneurial activity in many EU countries and Ukraine has a direct high connection with the digital competitiveness index, that is, entrepreneurial activity in these countries directly depends on the development of digital infrastructure and the level of introduction of information technology into the economy. Although the degree of dependence is much less compared to the e-government development index.

Countries such as Austria, Greece, Ukraine, Denmark, Cyprus, France, Estonia and Slovenia, on the contrary, have a low feedback, which on the one hand may be due to the still insufficient level of digitalization of the business environment, and on the other, as in Estonia, which is the world leader in digitalization, be a consequence of the fact that the level of digitalization is not one of the main factors in the formation of a favorable business environment in the country.

Consider the relationship between the Doing Business (Business Activity Index) and GII (Global Innovation Index), Fig. 7.

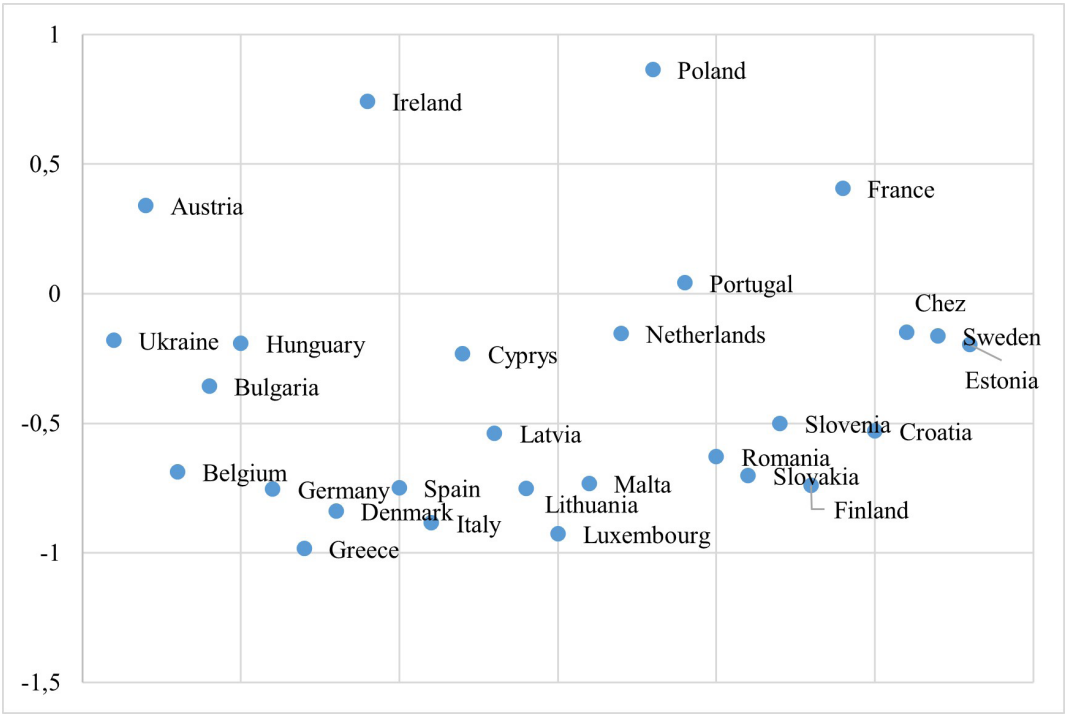

Fig. 7. Results of correlation analysis between Doing Business and GII indexes of EU countries and Ukraine (Doing Business 2015-2020; World Digital Competitiveness Ranking 2021; Global Innovation Index 2016-2021)

Consequently, the level of entrepreneurial activity in many EU countries and Ukraine mostly does not have a direct high connection with the global innovation index. Only Ireland and Poland have a high degree of relationship between entrepreneurship and innovation.

According to the results of calculations, an equation of influence on the level of entrepreneurial activity (in the form of the Doing Business index) was formed into three components, table 3.1:

X1 – EDGI (E-Government Development Index);

X2 – WDCI (Digital Competitiveness Index);

X3 – GII (Global Innovation Index).

Table 5. Variable matrix by EU countries and Ukraine The impact of digitalization on entrepreneurial activity

		X1	**X2**	**X3**
Austria	In =	0.358092	-0.01781	0.341439
Belgium	In =	0.69601	0.820947	-0.68694
Bulgaria	In =	-0.07121	0.793484	-0.35638
Greece	In =	0.789753	-0.38738	*-0.98344*
Denmark	In =	0.895199	*-0.79773*	*-0.8382*
Estonia	In =	0.352711	-0.10076	-0.19518
Ireland	In =	-0.62078	0.596574	0.742924
Spain	In =	0.769261	0.483896	*-0.7482*
Italy	In =	0.981779	0.88304	*-0.8849*

		X1	X2	X3
Cyprus	In =	0.881484	*-0.93106*	-0.23179
Latvia	In =	-0.2651	0.786141	-0.53825
Lithuania	In =	0.720491	0.102744	*-0.75035*
Luxembourg	In =	0.946333	0.829186	*-0.92627*
Malta	In =	0.856695	–	*-0.73137*
Netherlands	In =	0.74634	0.758232	-0.15315
Germany	In =	-0.29555	0.357153	*-0.75383*
Poland	In =	-0.53617	0.615267	0.865733
Portugal	In =	-0.06053	0.185572	0.042135
Romania	In =	0.793805	-0.01462	*-0.62833*
Slovakia	In =	0.90777	0.820362	*-0.70086*
Slovenia	In =	0.710735	*-0.91101*	-0.49987
Hungary	In =	0.95998	0.769893	-0.19066
Ukraine	In =	0.831978	-0.52879	-0.17943
Finland	In =	0.494057	0.239229	*-0.73861*
France	In =	0.42887	-0.17609	0.407056
Croatia	In =	0.801851	0.861619	-0.52883
Czech Republic	In =	0.73497	0.454382	-0.14907
Sweden	In =	0.411811	0.040611	-0.16224
Average impact value		0.50788	0.233324	-0.36275

Systematized by the authors for (Doing Business 2016–2020; World Digital Competitiveness Ranking 2016–2021; E-Governmental Index, 2022; EGDI Methodology, 2022; Global Innovation Index, 2015–2021).

There is no country that has a high influence on the development of entrepreneurship of all three variables, but countries such as Italy, Luxembourg, the Netherlands, Slovakia, Hungary and Croatia have a high flow of two variables of digitalization on entrepreneurial activity.

Consider the pain in detail the results of the calculations obtained.

Table 6. shows the grouping of countries in relation to the level of relationship between Doing Business and EDGI of EU countries and Ukraine.

Table 6. Levels of relationship between Doing Business and EDGI indices EU countries and Ukraine

The biggest relationship		**The smallest relationship**		**Negative relationship**	
Italy	0.981779	Belgium	0.69601	Portugal	-0.06053
Hungary	0.95998	Finland	0.494057	Bulgaria	-0.07121
Luxembourg	0.946333	France	0.42887	Latvia	-0.2651
Slovakia	0.90777	Sweden	0.411811	Germany	-0.29555
Denmark	0.895199	Austria	0.358092	Poland	-0.53617
Cyprus	0.881484	Estonia	0.352711	Ireland	-0.62078

The biggest relationship		The smallest relationship	Negative relationship
Malta	0.856695		
Ukraine	0.831978		
Croatia	0.801851		
Romania	0.793805		
Greece	0.789753		
Spain	0.769261		
Netherlands	0.74634		
Czech Republic	0.73497		
Lithuania	0.720491		
Slovenia	0.710735		

Systematized by the authors for (Doing Business 2016–2020; World Digital Competitiveness Ranking 2016–2021; E-Governmental Index, 2022; EGDI Methodology, 2022)

Table 7. shows the grouping of countries in relation to the level of relationship between Doing Business and WDCI countries of the EU and Ukraine

Table 7. Levels of relationship between Doing Business and WDCI indices EU countries and Ukraine

The biggest relationship		The smallest relationship		Negative relationship	
Italy	0.88304	Poland	0.615267	Romania	-0.01462
Croatia	0.861619	Ireland	0.596574	Austria	-0.01781
Luxembourg	0.829186	Spain	0.483896	Estonia	-0.10076
Belgium	0.820947	Czech Republic	0.454382	France	-0.17609
Slovakia	0.820362	Germany	0.357153	Greece	-0.38738
Bulgaria	0.793484	Finland	0.239229	Ukraine	-0.52879
Latvia	0.786141	Portugal	0.185572	Denmark	*-0.79773*
Hungary	0.769893	Lithuania	0.102744	Slovenia	*-0.91101*
Netherlands	0.758232	Sweden	0.040611	Cyprus	*-0.93106*

Systematized by the authors for (Doing Business 2015–2020; World Digital Competitiveness Ranking 2021; E-Governmental Index, 2022; EGDI Methodology, 2022)

Table 8 shows the grouping of countries in relation to the level of relationship between Doing Business and GII countries of the EU and Ukraine

Table 8. Levels of relationship between Doing Business and GII indices EU countries and Ukraine

The biggest relationship		The smallest relationship		Negative relationship			
Poland	0.865733	France	0.407056	Czech Republic	-0.14907	Belgium	-0.68694
Ireland	0.742924	Austria	0.341439	Netherlands	-0.15315	Slovakia	*-0.70086*

The biggest relationship		The smallest relationship		Negative relationship			
		Portugal	0.042135	Sweden	-0.16224	Malta	*-0.73137*
				Ukraine	-0.17943	Finland	*-0.73861*
				Hungary	-0.19066	Spain	*-0.7482*
				Estonia	-0.19518	Lithuania	*-0.75035*
				Cyprus	-0.23179	Germany	*-0.75383*
				Bulgaria	-0.35638	Denmark	*-0.8382*
				Slovenia	-0.49987	Italy	*-0.8849*
				Croatia	-0.52883	Luxembourg	*-0.92627*
				Latvia	-0.53825	Greece	*-0.98344*
				Romania	*-0.62833*		

Systematized by the authors for (Doing Business 2016–2020; World Digital Competitiveness Ranking 2021; Global Innovation Index, 2016–2021).

Since the greatest impact on the development of entrepreneurial activities have EDGI (End Government Development Index) and WDCI (Digital Competitiveness Index) – Figure 8 shows the correlation field of relationships between business development, digital government development index and digital competitiveness.

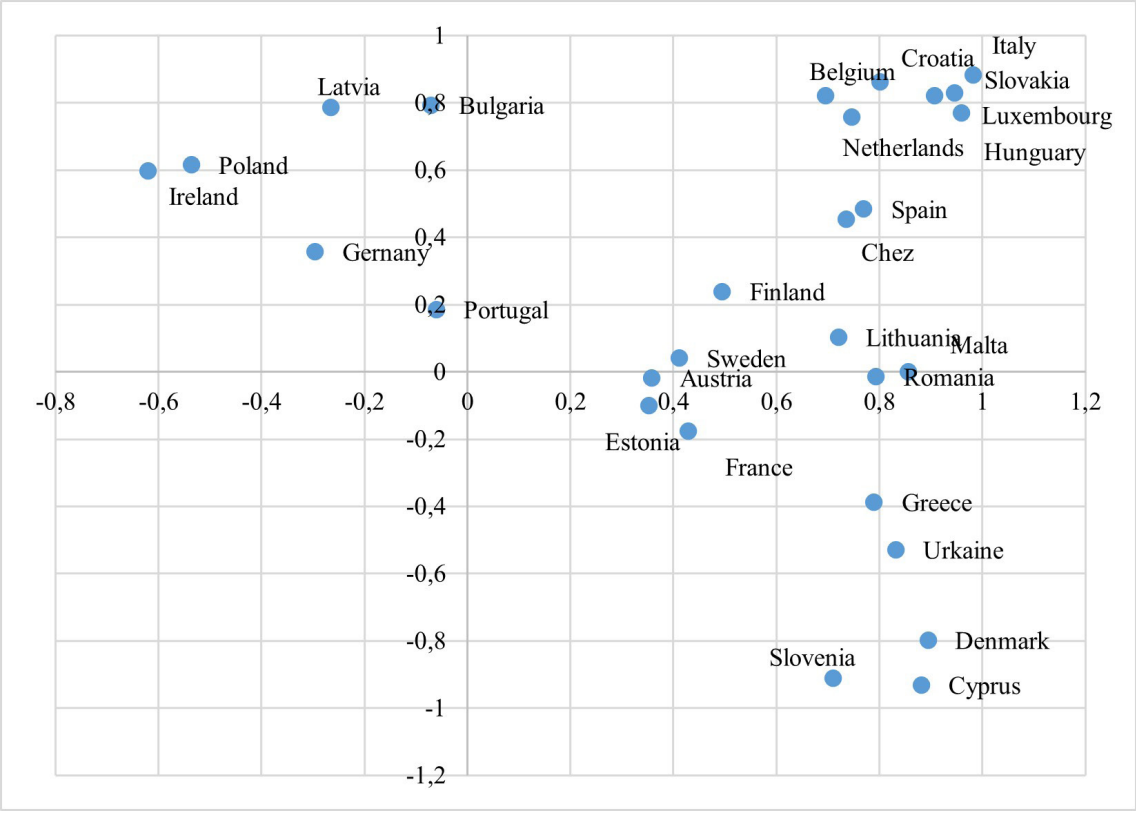

Fig. 8. Correlational field of relationships between business development, digital government development index and digital competitiveness of EU countries and Ukraine (Doing Business 2016–2020; World Digital Competitiveness Ranking 2016–2021; E-Governmental Index, 2022; EGDI Methodology, 2022; Global Innovation Index, 2015).

According to Figure 8, Belgium, Croatia, Italy, Slovakia, Luxembourg, the Netherlands, Hungary have the greatest direct relationship between the development of entrepreneurial activity, the digital government development index and digital competitiveness.

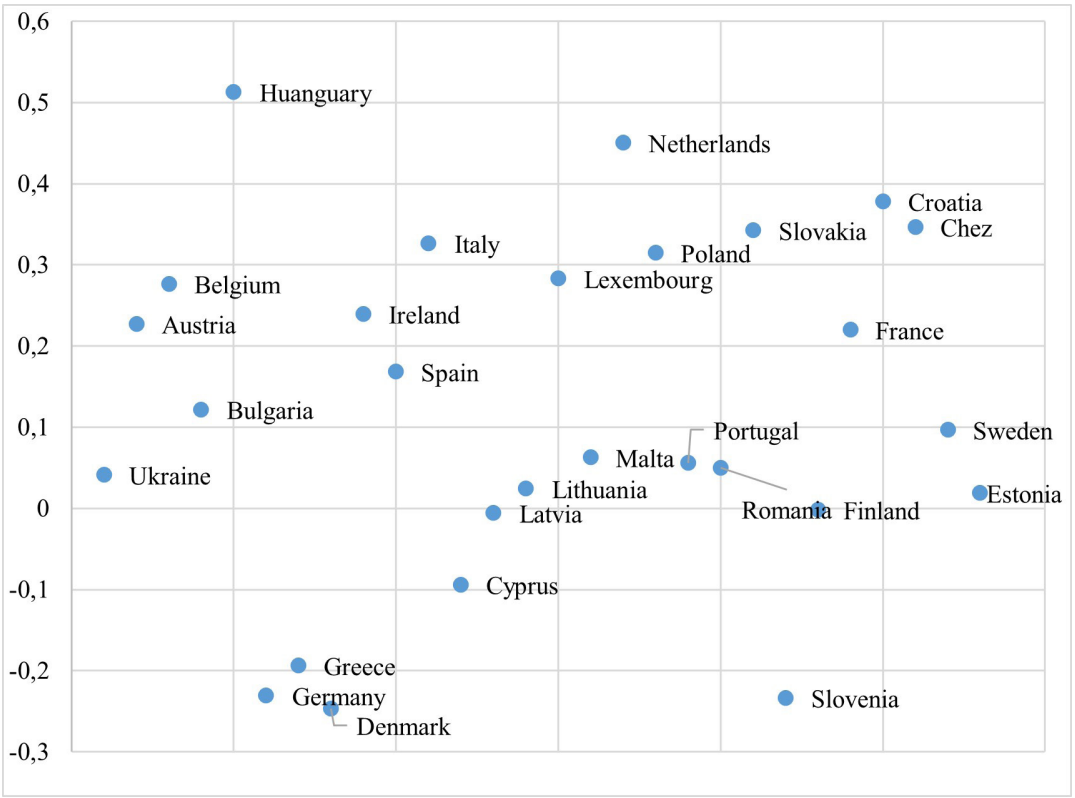

Fig. 9. distribution of EU countries and Ukraine by the total amount of influence on the under-intensive activities of the processes of digitalization of the economy (Doing Business 2016–2020; World Digital Competitiveness Ranking 2016–2021; E-Governmental Index, 2022; EGDI Methodology, 2022; Global Innovation Index, 2015–2021).

Summarizing the results of the calculations, we can conclude, Fig. 9, that only Hungary and the Netherlands can be singled out according to the total amount of influence on the sub-economic activities of the processes of digitalization of the economy. All other EU countries and Ukraine have either a minor link between these processes or an inverse relationship.

DISCUSSION

Considering the factors of political and economic instability, the development of corruption, the growth of inflation, military operations, and low values of indices, Ukraine needs changes and active actions to improve the business climate. Individual factors were studied in a number of works by Ukrainian authors. Thus, in his work, M. Kyzym (Kyzym, 2011) investigated the problems of assessing the business climate of EU countries and Ukraine, although he assessed the possibility of forming innovation-investment clusters even before the concept of a new industrial revolution and the introduction of a climate-neutral economy. In her work, V. Khaustova (Khaustova, 2015), using the example of electrical engineering enterprises of the Kharkiv region, assessed the possibility of introducing a more favourable business climate in the conditions of building a sustainable economy of Ukraine. At the same time, she did not consider the prospects of introducing the digital economy as a mechanism for improving the country's business climate. I. Yegorov and others. (Yegorov et al, 2016) and O. Salikhova (Salikhova, 2012) investigated the impact on the business climate of the EU

countries and Ukraine as a result of the introduction of high technologies into their economies and also assessed the indicators of the development of ICT, biotechnologies, nanotechnologies, new materials and nuclear technologies in the conditions of the formation of a sustainable economy. In addition, the studies of all these authors lack a comprehensive assessment of the business climate of EU countries and Ukraine under the conditions of the implementation of the digital economy.

L. Fedulova (Fedulova, 2011) also used many indicators to assess the entrepreneurial climate and prospects for trade in high-tech products, as well as to justify the national priorities of the country's socio-economic development on an innovative basis, although she determined only general indicators of the digital economy without taking into account the factors of the new industrial revolution and implementation Green Deal. In her work, G. Duginets (Duginets, 2018) analyzed the place of Ukraine in global chains of added value, in particular, determined the need to transform the entrepreneurial climate and foreign trade flows of the Ukrainian economy, substantiated the need for innovative investment development of the economy as a competitive advantage in global production, and also modeled the country's participation in global value chains in the formation of a sustainable economy. However, these authors did not have a comprehensive approach to the development of a methodology for researching the business climate of EU countries and Ukraine in the context of the implementation of the digital economy.

It is also appropriate to raise issues that receive little attention both in international ratings on the assessment of the economic state and in scientific works devoted to their analysis. We see that the indicators of the mentioned ratings usually take into account the current legal situation, but they focus more on the analysis of the consequences of the existing legal regulation, and not on the moderation and rationality of the structure of the legal system as such.

Thus, Doing Business indicators, among other things, provide for the assessment of such stages as: "Starting a business", "Working with building permits", "Obtaining electricity", "Registration of property", "Obtaining a loan", "Protection of minority investors", " Payment of Taxes", "International Trade", "Enforcement of Contracts" and "Insolvency Resolution". The new Business Ready (B-READY) business environment assessment methodology, which improves and replaces Doing Business, also includes a similar approach to considering legal indicators.

In order to assess how successfully Ukraine digitizes and simplifies the provision of public services in the specified areas, it is advisable to examine the services offered by the Unified State Web Portal of Electronic Services "Diya" (Resolution of CMU, No.1137, 2019), in particular, a separate portal for helping small and medium-sized businesses - "Diya.Business". "A more detailed review of this platform and its comparison with other public and private services was already conducted in a recent publication by one of the authors (Hlibko & Mamaiev, 2023).

1. As for the initial stage, the "Diya" website contains a separate page with a list of services that can be useful when creating a business. Among them are not only registration actions, such as "Automatic registration of FOP" or "Registration of fire protection declaration", but also start-up financial support services - a grant for your own business, a grant for a garden, a grant for a greenhouse, etc.

2. Obtaining construction permits has not yet been fully digitized, although the state is taking steps in this direction. So, on March 1, 2023, the beginning of the beta test of the updated service for obtaining a construction permit was announced on the Diya website. It is reported that the service will be directed to people and companies who want to start construction of SS2 and SS3 facilities (residential high-rise buildings, shopping and entertainment centers and industrial facilities). Additionally, it is known that this service is implemented by the Ministry of Digitization together with the Ministry of Community Development, Territories and Infrastructure with the support of the USAID/UK aid project "Transparency and Accountability in Public Administration and Services/ TAPAS".

3. The problem of obtaining electricity is particularly acute for domestic businesses: the threat of damage to the energy infrastructure as a result of Russian attacks and tariff increases reduce the availability of electricity. The "Actions" website provides the opportunity to receive subsidies for the payment of housing and communal services services, but this type of assistance applies to residential

premises, not entrepreneurs. Regarding the online availability of services related to obtaining electricity, on February 21, 2019, the National Commission for State Regulation in the Energy and Utilities Sectors, together with the analytical center DiXi Group, as part of the USAID "Transparent Energy" project, presented a mobile application " Energy Online", which set the goal of creating efficient consumer-oriented energy markets. As of the III quarter of 2023, the application has more than 100,000 downloads on Google Play and has a rating of 4.4 stars, but it is still in beta testing.

4. To simplify the registration of ownership rights, the website "Diya" offers the service of state registration of rights to real estate. This procedure is fully digitized and involves receiving a notification about the registration of an object of immovable property in the State Register of Property Rights to immovable property or a refusal, which will be sent to the citizen's personal account and to the e-mail address specified by him. At the same time, an extract in electronic form has the same legal force as a paper one and can be printed if necessary.

5. Although the web platform itself by its purpose does not provide business loans directly, it provides informational and consulting support to entrepreneurs who seek to find a suitable option for financial assistance. In order to increase awareness of the available offers, the "Marketplace of financial opportunities for business" has been launched on the web platform, which is positioned as a place where entrepreneurs can choose the necessary financial program for themselves, read the detailed conditions for obtaining financing and apply directly to banking or other institutions that it is offered.

6. The issue of protecting the rights of investors is more complicated, since there is no service that would serve as a certain "single window" for considering complaints and problems of investors. At the same time, the Ministry of Digital has experience in creating information platforms that, among other things, are aimed at increasing investors' awareness of Ukrainian business. Thus, the online portal "360 Tech Ecosystem Overview" offers services for finding business information about IT companies, people, investors and, in general, the entire technological ecosystem of Ukraine. The collected information, in particular, includes data on the current development of IT companies, information on founders and persons in management positions, classification of companies by industry, investments and financing, mergers and acquisitions, company news and trends in the industry.

7. In the field of tax payment, the most digitalised is the procedure for the sole proprietorship. Today, they have the opportunity to submit the "Declaration of a single taxpayer" directly through the Diya platform. In addition, the site provides some consulting materials on taxation (for example, offers to take a test to determine the taxation model), but its help is limited to this.

8. The promotion of international economic relations is quite complex and relatively unified. Thus, in order to simplify international trade, a single export web portal export.gov.ua was created on the Diya.Business platform, which consolidates and unites all available information for exporters and companies interested in exporting. Such support of interested subjects takes place in several directions: information, opportunities, services, services and data on foreign markets.

9. There is no information on the active privatisation of actions related to contract enforcement on the Diya website. However, it can be considered that this is facilitated by the improvement of the judicial system as a whole, in particular the "Electronic Court" service, which functions as a subsystem of the Unified Judicial Information and Telecommunication System and provides the opportunity for users to create and send procedural or other documents to the court in electronic form in cases provided for by law, other bodies and institutions in the justice system, as well as receive information about the status and results of consideration of such documents or other documents.

10. Regarding the resolution of insolvency issues, in accordance with the Code of Ukraine on bankruptcy procedures, the automated system "Bankruptcy and Insolvency" operates in Ukraine. This system is a set of software, technical and telecommunication tools that ensure the collection, storage, accounting, search, summarisation, provision of information on the progress of proceedings in the case of bankruptcy (insolvency) and financial and economic indicators of the debtor, the formation of the Unified register of debtors, in relation to which proceedings have been opened in the case of bankruptcy (insolvency), the Unified Register of Arbitration Managers of Ukraine, the functioning of the electronic office of the arbitration manager and protection against unauthorised access. In addition, the sale of the debtor's property at the auction takes place using the Electronic Trading System. However, the

bankruptcy procedure can still be assessed as quite complex and long, as it requires the collection and processing of a considerable number of documents from various interested parties.

Thus, in general, there is an opportunity to talk about the gradual digitalization of public services, which contributes to the simplification of doing business in Ukraine. However, individual areas still cannot be considered to provide sufficient expected support.

At the same time, the analysis of the services offered on the considered web platform raises a logical question: on what legal basis are the relevant registration and other actions carried out, and is there no actual replacement of the legally defined procedures, in particular, their subject composition?

In accordance with the specified powers, the Ministry of Justice of Ukraine (Resolution of CMU, No. 228, 2014) is engaged in the formation of state policy in the field of state registration, as well as regulatory, methodological and information support in the field of state registration. At the same time, many registration actions are offered through the "Diya" website, located in the Ministry of Digital Affairs (Resolution of CMU, No. 856, 2019).

On the example of the Law of Ukraine "On State Registration of Legal Entities, Individuals - Entrepreneurs and Public Organizations" (Law of Ukraine, No. 755-IV, 2003) (hereinafter - Law No. 755-IV) we can see that Part 1 of Art. 14 allows submission of documents for state registration in both paper and electronic form.

At the same time, Part 3 of Art. 14 Law No. 755-IV indicates that documents are submitted in electronic form by the applicant using the Unified State Web Portal of Electronic Services in the manner determined by the Ministry of Justice of Ukraine and the central executive body, which ensures the formation and implementation of state policy in the field of electronic and administrative services. Today, such a central body is the Ministry of Digital Transformation, and the Unified State Web Portal of electronic services is "Diya".

Regarding the services that the specified web portal does not provide, documents are submitted through the electronic services portal in the manner specified by the Ministry of Justice of Ukraine in the Procedure for State Registration of Legal Entities, Individual Entrepreneurs and Public Organisations that do not have the status of a legal entity, provided that the applicant signs statements using means of electronic identification with a high level of confidence.

Article 25-1 of the Law of Ukraine "On State Registration of Legal Entities, Individuals - Entrepreneurs and Public Organisations" provides for the features of registration actions in automatic mode. According to the content of this article, it is allowed to carry out a number of registration actions in the Unified State Register without the participation of the state registrar, that is, in automatic mode using the Unified State Web Portal of Electronic Services ("Diya"). The list of registration actions that can be carried out in this format is contained in Part 1 of Art. 25-1 of Law No. 755-IV and includes seven items, including state registration of a sole proprietorship, registration of creation of a legal entity based on a model statute, registration of a decision to terminate a legal entity, etc.

The technical side of such registration is disclosed in Part 3 of Art. 25-1 of Law No. 755-IV and provides that the software of the Unified State Register establishes in real time the presence (absence) of a ban on registration actions and/or the presence (absence) of information on the corresponding registration. In the absence of such information, the Unified State Register software ensures state registration.

The legal nature of entering information into the register and the possibility of appealing illegal actions is provided for in Part 5 of Art. 25-1 of Law No. 755-IV, which emphasises that the registration action in the Unified State Register, carried out automatically, is considered the action of the technical administrator of the Unified State Register and can be appealed to the court or the Ministry of Justice of Ukraine.

Of course, the state of national legislation can affect the speed and convenience of established procedures in each of the above-mentioned areas. At the same time, in our opinion, attention should be paid to the very structure of the legal system and the effectiveness of the accompanying legal processes: the speed of making changes, the adequacy of response to crisis phenomena, the possibility of receiving feedback and proposals from interested parties, etc. It is important that the system

encourages the identification and resolution of problems that hinder successful economic development.

In addition, given the existence of a strong statistical relationship between the ease of doing business index and the country's economic development (Pyvovar & Makarenko, 2022), it may be appropriate to take their indicators into account when planning public policy or forming national strategies and plans. In general, it should be recognised as positive that in our country, at the state level, the need for the formation of a digital economy and Digitale Market society is recognised, and digital technologies in science, economy and management are considered one of the main drivers of sustainable development. However, solving digitalization issues on a practical level today is only possible thanks to the timely adoption of state programs and strategies for implementing the achievements of open science (in particular, statistical research) into business, economy, grid, cloud infrastructure, etc. (Pasmor & Hlibko, 2019). Such an assumption manifests itself precisely in periods of crisis for the economy, such as a full-scale war against Ukraine, when problems arise in the legislation's response to the need for changes in the conditions of doing business in the state. For example, after the start of the war against Ukraine on February 24, 2022, all economic ties and business conditions were disrupted due to force majeure. Micro and small businesses were the most affected. However, quite appropriate support measures appeared in the legislation only on April 1, 2022 with the adoption of Law of Ukraine No. 2173-IX (Law of Ukraine No, 2173-IX, 2022), which introduced a single tax of 2% for entrepreneurs with an annual income of up to UAH 10 billion. In our opinion, such a reaction of the legislative body simultaneously plays opposite roles - helping to neutralise the negative consequences of the war and removing it from real financial support for business, in which financial assistance is provided on a competitive basis to economic entities.

Such situations are a criterion of the quality of business management, which reflects the systematic legal regulation of a certain issue, and such an instant reaction of the legislator to the problems of conducting business has greater consequences for the creation of a favourable business environment or for its decline than a change in economic cooperation with long-term lags of expected improvement.

The authors of the article consider the further perspective of their research to be an assessment of the opportunities for the development of the business environment of Ukraine and the EU countries within the framework of the formation of joint chains of added value and the implementation of digital economy programs.

CONCLUSIONS

The work proposes a methodical approach to the analysis of the development of entrepreneurial activity in the EU countries and Ukraine in the conditions of digitalisation, which consists of three stages.

The dynamics of changes in the entrepreneurial activity of the EU countries and Ukraine in the conditions of digitalisation of the economy have been studied. The WDCR, NRI, and GII indices combine mainly institutional, economic, and technological indicators that reflect the development of the regulatory and research base, the use of ICT in business, and information security. The EGDI index has a more social orientation and reflects socio-economic integration - it is designed to assess the level of development of the information society. It should also be noted that, despite the fact that Ukraine has worse indicators for all the studied indices, the development trends both in the EU as a whole and in Ukraine clearly coincide.

The influence of the digital component on the development of entrepreneurial activity in EU countries and Ukraine was studied using correlation-regression analysis. Data from the EDGI - Electronic Government Development Index were used as variables; WDCI – World Digital Competitiveness Index; GII - Global Innovation Index. It has been established that the level of entrepreneurial activity in many EU countries and Ukraine has a direct high correlation with the e-government development index, that is, entrepreneurial activity in these countries directly depends on the development of digital infrastructure and the level of education, the degree of use of information technology to facilitate access and attract their people.

It is shown that the level of entrepreneurial activity in many countries of the EU and Ukraine has a direct high connection with the digital competitiveness index, that is, entrepreneurial activity in these countries directly depends on the development of digital infrastructure and the level of introduction of information technology into the economy. Although the degree of dependence is much smaller compared to the e-government development index. It has been proven that the level of entrepreneurial activity in many EU countries and Ukraine mostly does not have a direct high correlation with the global innovation index. Only Ireland and Poland have a high degree of correlation between entrepreneurship and innovation.

It was noted that the level of digitalisation does not affect the speed of the legislative body's reaction to eliminate the deterioration of business conditions. It should be taken into account that the establishment of index indicators only according to the adopted normative legal acts does not take into account the effectiveness of the implementation of legislative changes in the field of entrepreneurial activity. In addition, it is necessary to correlate the identified indicators with the actual business environment and market conditions.

It is proved that among the three variables, the development of entrepreneurial activity has the greatest impact on the e-government development index. The correlation field of relationships between the development of entrepreneurship, the digital government development index, and digital competitiveness showed that Belgium, Croatia, Italy, Slovakia, Luxembourg, the Netherlands, Hungary have the largest direct relationship between the development of entrepreneurship, the digital government development index, and digital competitiveness. It is shown that only Hungary and the Netherlands can be singled out in terms of the total impact on the entrepreneurial activity of the processes of digitisation of the economy. All other EU countries and Ukraine have either an insignificant relationship between these processes, or the opposite.

The authors of the article consider the assessment of the opportunities for the development of the business environment of Ukraine and the EU countries in the framework of the formation of joint chains of added value and the implementation of digital economy programs to be a research perspective. Also essential for the development of entrepreneurial activity is the establishment of a methodology for rapid response to the deterioration of the business environment by adopting relevant legal acts.

REFERENCES

Adams, P., Fontana, R., & Malerba, F. (2016). User-industry spin-outs: downstream knowledge as a source of entry and survival. Organization Science, 27(1), 18–35. https://doi.org/10.1287/orsc.2015.1029.

Cantner, U. (2016). Foundations of economic change—an extended Schumpeterian perspective. Journal of Evolutionary Economics, 26(4), 701–736. https://doi.org/10.1007/s00191-016-0479-z.

Doing Business (2015). Retrieved from : https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB15-Full-Report.pdf.

Doing Business (2016). Retrieved from : https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB16-Full-Report.pdf.

Doing Business (2017). Retrieved from : https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB17-Report.pdf.

Doing Business (2018). Retrieved from : https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf.

Doing Business (2019). Retrieved from : https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf.

Doing Business (2020) Retrieved from : https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf.

Dorosh-Kizym M., Dadak O., Dorosh M., Babych L. Digitalization in Ukraine's economy in the context of world digitization. Науковий вісник Львівського національного університету ветеринарної меди цини та біотехнологій імені С.З. Ґжицького. Серія: Економічні науки. 2020. Т. 22. № 96. С. 9–14.

Duginec, G. (2018). Hlobal'ni lantsyuhy vartosti: monohrafiya [Global value chains: A monograph]. Kyiv National Trading-Economics University.

EGDI Methodology. (2022) Retrieved from : https://publicadministration.un.org/egovkb/en-us/About/E-Government-at-Local-Level/Application-of-LOSI-methodology-in-countries.

E-Government Development Index. (2022). Retrieved from : https://publicadministration.un.org/egovkb/en-us/Data-Center.

Fedulova, L. (Ed.). (2011). Tekhnolohichnyy imperatyv stratehiyi sotsial'no-ekonomichnoho rozvytku Ukrayiny [The technological imperative of the strategy of socio-economic development of Ukraine]. Kyiv, NAS of Ukraine.

Global Index (2015). Retrieved from : https://www.wipo.int/edocs/pubdocs/en/wipo_gii_2015.pdf.

Global Innovation Index (2016). Retrieved from : https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2016.pdf.

Global Innovation Index (2017). Retrieved from : https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2017.pdf.

Global Innovation Index (2018). Retrieved from : https://www.wipo.int/publications/ru/details.jsp?id=4330.

Global Innovation Index (2019). Retrieved from : https://www.wipo.int/publications/ru/details.jsp?id=4434.

Global Innovation Index (2020). Retrieved from : https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020.pdf.

Global Innovation Index (2021). Retrieved from : https://www.wipo.int/global_innovation_index/en/2021/.

Hlibko S. V., Mamaiev I. O. (2023). Review and comparative characteristics of services contributing to information provision of innovation. *Law and innovations*, *2*(42). DOI: https://doi.org/10.37772/2518-1718-2023-2(42)-6.

Khaustova, V. (2015). Promyslova polityka v Ukrayini: formuvannya ta prohnozuvannya [Industrial Policy in Ukraine: Formation and Forecasting]. Kharkiv, PH INZHEK.

Klepper, S. (2015). Experimental capitalism: the nanoeconomics of American high-tech industries. Princeton: Princeton University Press.

Krafft, J., Quatraro, F., & Saviotti, P. (2014). The dynamics of knowledge-intensive sectors' knowledge base: evidence from biotechnology and telecommunications. *Industry and Innovation*, 21(3), 215– 242. https://doi.org/10.1080/13662716.2014.919762.

Kyzym, M. (2011). Promyslova polityka ta klasteryzatsiya ekonomiky Ukrayiny [Industrial policy and clustering of Ukrainian economy]. Kharkiv, PH INZHEK.

Law of Ukraine on State Registration of Legal Entities and Natural Persons - Entrepreneurs, No. 755-IV (2003, May 15). Retrieved from: https://zakon.rada.gov.ua/laws/show/en/755-15#Text.

Lee, K., & Malerba, F. (2017). Catch-up cycles and changes in industrial leadership: Windows of opportunity and responses of firms and countries in the evolution of sectoral systems. *Research Policy*, 42(1), 338– 351. https://doi.org/10.1016/j.respol.2016.09.006.

Malerba, F. and McKelvey, M. (2018). Knowledge-intensive innovative entrepreneurship. Foundations and Trends in Entrepreneurship.

Malerba, F., & McKelvey, M. (2020). Knowledge-intensive innovative entrepreneurship integrating Schumpeter, evolutionary economics and innovation systems. *Small Business Economics*. Vol. 54. Pp. 503–522.

Pasmor Yu. V., Hlibko S. V. (2019). Chapter 2.6. The impact of digitalization processes on the development of open innovations in Ukraine. *Legal support for virtualization of the infrastructure of the national economy of Ukraine*. 166–180. Retrieved from: https://ndipzir.org.ua/wp-content/uploads/2020/02/Strizhkova19Mono/%D0%9C%D0%BE%D0%BD%D0%BE_%D0%A1%D1%82%D1%80%D0%B8%D0%B6%D0%BA%D0%BE%D0%B2%D0%B0_2019_%D0%BF%D0%B21.pdf.

Pyvovar P. V., Makarenko O. M. (2022). Doing Business Index as an indicator of business development in Ukraine. *Ekonomika ta derzhava*, *4*, 76–83. DOI: 10.32702/2306-6806.2022.4.76.

Resolution of the Cabinet of Ministers of Ukraine on Issues of the Unified State Web Portal of Electronic Services and the Register of Administrative Services, No. 1137 (2019 December 4). Retrieved from: https://zakon.rada.gov.ua/laws/show/1137-2019-%D0%BF#Text.

Resolution of the Cabinet of Ministers of Ukraine on Issues of the Ministry of Digital Transformation, No. 856 (2019, September 18). Retrieved from: https://zakon.rada.gov.ua/laws/show/856-2019-%D0%BF#n12.

Resolution of the Cabinet of Ministers of Ukraine on the approval of the Regulation on the Ministry of Justice of Ukraine, No. 228 (2014, July 2). Retrieved from: https://zakon.rada.gov.ua/laws/show/228-2014-%D0%BF#Text.

Salihova, O. (2012). Vysokotekhnolohichne vyrobnytstvo: vid metodolohiy I otsinky do pidnesennya v Ukrayini / High-tech manufacturing: from valuation methodology to uplift in Ukraine. Kyiv, NAS of Ukraine.

The Law of Ukraine on Amendments to the Tax Code of Ukraine and other legislative acts of Ukraine on the administration of individual taxes in the period of martial law, emergency, No. 2173-IX (2022, April 1). Retrieved from: https://zakon.rada.gov.ua/laws/show/2173-20#Text

Winter, S. (2016). The place of entreprenership in the Economics that might have been. *Small Business Economics*, 47(1), 15– 34. https://doi.org/10.1007/s11187-016-9701-5.

World Digital Competitiveness Ranking (2016). Retrieved from : https://www.imd.org/wcc/docs/release-2016

World Digital Competitiveness Ranking (2017). Retrieved from : https://www.imd.org/wcc/docs/release-2017

World Digital Competitiveness Ranking (2018). Retrieved from : https://www.imd.org/wcc/docs/release-2018

World Digital Competitiveness Ranking (2019). Retrieved from : https://www.imd.org/wcc/docs/release-2019

World Digital Competitiveness Ranking (2020). Retrieved from : https://www.imd.org/wcc/docs/release-2020

World Digital Competitiveness Ranking (2021). Retrieved from : https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/.

Yegorov, I., Odotyuk, I. &Salikhova, O. (Eds.). (2016). Implementatsiya vysokykh tekhnolohiy v ekonomiku Ukrayiny [Implementation of high technologies in the economy of Ukraine]. Kyiv, NAS of Ukraine.

ОЦІНКА ВПЛИВУ ЦИФРОВІЗАЦІЇ НА РОЗВИТОК БІЗНЕСУ В КРАЇНАХ ЄС ТА УКРАЇНІ

Анотація. В статті проведено оцінку перспектив розвитку підприємницької діяльності країн ЄС і України в умовах цифровізації економіки. Сформовано методичний підхід для аналізу розвитку підприємницької діяльності країн ЄС і України в умовах цифровізації економіки, який складається з трьох етапів. Акцентовано увагу, що індекси WDCR, NRI, GII об›єднують переважно інституційні, економічні та технологічні показники, що відображають розвиненість нормативно-правової та науково-дослідної бази, використання ІКТ у бізнесі, інформаційну безпеку. Індекс EGDI має більш соціальну спрямованість та відображають соціально-економічну інтеграцію – він призначений для оцінки рівня розвитку інформаційного суспільства. Проведено аналіз динаміки змін підприємницької діяльності країн ЄС та України в умовах цифровізації економіки. Встановлено, що незважаючи на нижчий рівень розвитку цифровізації в Україні у порівнянні з країнами ЄС, тренди розвитку як в цілому по ЄС, так й України поясністю співпадають. Змодельовано за допомогою кореляційно-регресійного аналізу вплив цифрової складової на розвиток підприємницької діяльності країн ЄС та України. Відмічено, що рівень цифровізації не впливає на швидкість реакції законодавчого органу з метою усунення погіршення умов підприємницької діяльності, а встановлення індикаторів індексів тільки по прийнятим нормативно-правовим актам не враховує ефективності реалізації законодавчих змін в сфері підприємницької діяльності. Зроблено висновок, що серед трьох змінних найбільший вплив розвиток підприємницької діяльності має саме Індекс розвитку електронного уряду. Найбільший прямий взаємозв'язок розвитком підприємницької діяльності, індексом розвитку цифрового уряду та цифровою конкурентоспроможністю мають Бельгія, Хорватія, Італія, Словаччина, Люксембург, Нідерланди, Угорщина.

Ключові слова: євроінтеграція, кореляційно-регресійна модель, міжнародні індекси цифрової конкурентоспроможності, розвиток підприємництва, цифровізація економіки, правове середовище, закони і бізнес.

ASSESSMENT OF THE IMPACT OF DIGITALIZATION ON BUSINESS DEVELOPMENT IN EU COUNTRIES AND UKRAINE

Abstract. The article assesses the prospects for the development of entrepreneurial activity in the EU and Ukraine in the conditions of digitalization of the economy. A methodical approach for the analysis of the development of entrepreneurial activity in the EU countries and Ukraine in the context of the digitalization of the economy has been formed, which consists of three stages. Attention is drawn to the fact that the WDCR, NRI, GII indices combine mainly institutional, economic and technological indicators that reflect the development of regulatory and legal research base, use of ICT in business, information security. The EGDI index has a more

social orientation and reflects socio-economic integration - it is designed to assess the level of development of the information society. An analysis of the dynamics of changes in entrepreneurial activity in EU countries and Ukraine in the conditions of digitalization of the economy was carried out. It was established that despite the lower level of development of digitalization in Ukraine compared to the EU countries, the development trends both in the EU as a whole and in Ukraine clearly coincide. The impact of the digital component on the development of entrepreneurial activity in EU countries and Ukraine was modeled using correlation-regression analysis. It was noted that the level of digitalization does not affect the speed of the legislative body's reaction to eliminate the deterioration of the conditions of business activity, and the establishment of index indicators only according to the adopted normative legal acts does not take into account the effectiveness of the implementation of legislative changes in the field of business activity. It was concluded that among the three variables, the e-government development index has the greatest influence on the development of entrepreneurial activity. Belgium, Croatia, Italy, Slovakia, Luxembourg, the Netherlands, and Hungary have the greatest direct relationship between the development of entrepreneurial activity, the digital government development index, and digital competitiveness.

Key words: European integration, correlation-regression model, international indices of digital competitiveness, development of entrepreneurship, digitalization of the economy, legal environment, law and business.

Cite this article: Matyushenko I., Hlibko S., Khanova O., Korytin D. (2023). Asessment of the impact of digitalization on business development in EU countries and Ukraine, *Law and innovative Society*, 1 (20), 42–64. doi: https://doi.org/10.37772/2309-9275-2023-1(20)-4.