

ORGANIZATIONAL AND ECONOMIC CONDITIONS OF DEVELOPMENT AND COMPONENTS OF MARKET SUCCESS OF ENTERPRISES IN THE CONTEXT OF DIGITALIZATION, INNOVATION AND SOCIALIZATION OF THE NATIONAL ECONOMY

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Organizational and Economic Conditions of Development and Components of Market Success of Enterprises in the Context of Digitalization, Innovation and Socialization of the National Economy

The aim of the article is to study the organizational and economic conditions of development and the components of market success of enterprises in the context of digitalization of the economy on the basis of the computed impact of significant attributes on the market success of different types of economic entities (large, medium, small and micro enterprises) in 2010 and 2022 using a multi-attribute model. The authors present the dynamics of changes in the market success of different types of economic entities in 2010–2022 under the influence of significant attributes according to the multi-attribute model. The article analyzes the current state of digital transformation in the context of regions of Ukraine. In 2023, we have a group of regions in which digital transformation has slowed down, namely: Sumy ($\downarrow 0.356$), Zaporizhzhia ($\downarrow 0.081$), Kherson ($\downarrow 0.184$), Donetsk ($\downarrow 0.11$), Odesa ($\downarrow 0.051$), Cherkasy ($\downarrow 0.044$) regions. Digitalization accelerated in Lviv ($\uparrow 0.092$), Volyn ($\uparrow 0.111$), Kyiv ($\uparrow 0.096$), and Khmelnytskyi ($\uparrow 0.01$) regions. Pursuing the goal of digital transformation of business processes in enterprises, there should be no gaps in innovation, as digital technologies are developing much faster than the government and public institutions can define and present policies to regulate digital technologies and use the benefits that technology brings to enterprises, businesses, individuals. The relevance of digitalization of the economy is substantiated. Digital business must become socialized due to flexibility to the needs of the client, quick response to his requests. A modern virtual business must be ready to produce goods and provide not only «today for tomorrow», but also «today for today» services. It is proposed to include the development of a new product and the expansion of the customer base to the effective organizational and economic conditions of business adaptation in the face of modern challenges. For a digital enterprise, expand the line of digital services to retain established customers but provide them with a wider range of digital services. The authors take the position that it is necessary to expand virtual business opportunities, namely the search for new markets through work on digital online platforms with round-the-clock consultations of managers.

Keywords: digital enterprises, market conditions, digital transformation of regions, innovation, organizational and economic conditions, socialization, multi-attribute model, virtual mobility of business.

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Краус К. М., Краус Н. М. Організаційно-економічні умови розвитку та складові ринкового успіху підприємств в умовах цифровізації, інновації та соціалізації національної економіки

Метою статті є дослідження організаційно-економічних умов розвитку та складових ринкового успіху підприємств в умовах цифровізації економіки на основі проведених розрахунків впливу вагомих атрибутів на ринковий успіх різних типів суб'єктів господарювання (великі, середні, малі і мікро-підприємства) у 2010 та 2022 роках із використанням мультиатрибутивної моделі. Автори представили динаміку зміни ринкового успіху різних типів суб'єктів господарювання у 2010–2022 роках під впливом вагомих атрибутів за мультиатрибутивною моделлю. У статті проаналізовано сучасний стан цифрової трансформації в розрізі областей України. За 2023 рік маємо групу областей, в яких уповільнилася цифрова трансформація, а саме: Сумська ($\downarrow 0,356$), Запорізька ($\downarrow 0,081$), Херсонська ($\downarrow 0,184$), Донецька ($\downarrow 0,11$), Одеська ($\downarrow 0,051$), Черкаська ($\downarrow 0,044$) області. Прискорилася

цифровізація у Львівській ($\uparrow 0,092$), Волинській ($\uparrow 0,111$), Київській ($\uparrow 0,096$), Хмельницькій ($\uparrow 0,01$) областях. Переслідуючи мету цифрової трансформації бізнес-процесів на підприємствах не повинно бути прогалянин в інноваціях, оскільки цифрові технології розвиваються набагато швидше, ніж уряд і державні інституції можуть визначати і представляти політику для регулювання цифрових технологій та використовувати переваги, які технології несуть для підприємств, бізнесів, індивідуумів. Обґрунтовано актуальність цифровізації економіки. Цифровий бізнес повинен ставати соціалізованим за рахунок гнучкості під потреби клієнта, швидкого реагування на його запити. Сучасний віртуальний бізнес має бути готовим продукувати товар і надавати послугу не лише «сьогодні на завтра», а й «сьогодні на сьогодні». Запропоновано до дієвих організаційно-економічних умов адаптації бізнесу в умовах сучасних викликів віднести розробку нового продукту та розширення клієнтської бази. Для цифрового підприємства розширити лінійку цифрових послуг, щоб утримати «старих» клієнтів, але надати їм ширший спектр цифрових послуг. Автори стоять на позиції того, що варто розширити віртуальні можливості бізнесу, а саме пошук нових ринків збуту через роботу на цифрових онлайн-платформах з цілодобовими консультаціями менеджерів.

Ключові слова: цифрові підприємства, ринкові умови, цифрова трансформація регіонів, інновацізація, організаційно-економічні умови, соціалізація, мультиатрибутивна модель, віртуальна мобільність бізнесу.

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Introduction. The relevance of digitalization of the economy of Ukraine is evidenced by digital development programs, plans for digitalization of education for 2021–2027 [1], by order of the Cabinet of Ministers of Ukraine on approval of the list of indicators of the Digital Economy and Society Index [2], projects on regional digital transformation of Ukraine for 2019–2023 [3], development of ways and methods of restoration of innovation of the national economy based on socialization, institutional, structural changes. Currently, the issues of digitizing the infrastructure, improving logistics, developing the latest educational programs for teaching the young generation digital skills, with the further prospect of their rapid involvement in the processes of business virtualization during the post-war recovery, remain relevant.

A study conducted at the initiative of the Ministry of Digital Transformation of Ukraine with the support of the Swiss-Ukrainian EGAP Program [4] testified that in recent years there has been a positive dynamic in the digitalization's development of Ukrainian society with a subsequent positive impact on the general socio-economic situation in the country in terms of its digital transformation. The report states that Internet banking has gained popularity, interest in online education for adults has increased (+42.2% in 2023 compared to 2019), the importance of digital technologies in the workplace for people with hearing impairments has increased (+22,8% in 2023 compared to 2019) [4, p. 8]. The digital skills of Ukrainians add €110.8 billion to the annual GDP of Ukraine. Research has shown that '81.3% is the wage gap between workers who have gained digital skills and those who have not... The income gap between digital

and non-digital workers is the largest in the Central regions of Ukraine – €0.57 thousand, which is almost twice as low as the most developed macro-regions: the West (€1.04 thousand) and the South (€1.04 thousand)' [4, p. 9].

A team of Ukrainian researchers, in particular Chapran S., Koshuta V., Vankovych M., in their research emphasize the importance of creating smart innovative companies, including smart production, virtual and digital companies, raise questions about their effective integration and the formation of the concept of intellectualization of all production and business processes. They emphasize that 'the term 'factory of the future' is more extensive and includes not only 'smart factories' but also digital and virtual enterprises' [5, p. 136].

The ideas and views of the young Ukrainian researcher Lebid O. deserve scientific support, who attempted to analyze digital information technologies in the management of business entities [6, p. 4–5]. He studied the directions of digitization through the prism of digital transformation of enterprises, quality of digital security, digitalization of society, and infrastructure. We believe the researcher managed to offer a sufficiently constructive solution to the digital transformation of businesses for successful adaptation to new digital realities and deeply analyze the impact of digitalization on traditional industries and sectors of the economy [6, p. 7–8]. Lebid O. emphasized the need to increase the amount of data and analytics, change the corporate culture, ensure cyber security, attract talent and more clients.

Ukrainian researchers of the Kharkiv School of Economics, namely Raevneva O., Aksyonova I. and Brovko O., pre-

sented an interesting comparative rating analysis of the state and trends of digitalization of Ukrainian society and economy, through the prism of decomposition of WDCR by components, sub-factors and indicators [7, p. 60]. Scientists have revealed the reasons for dynamic changes in the ranking positions of countries according to the indices of global and digital competitiveness.

They carried out a clustering of the countries of the world according to the development of the processes of digitization of society for the years 2020–2021 and ‘cluster migration’, which allowed them to present the author’s vision of the scenarios of the development of digitalization processes in Ukraine [7, p. 62–63]. The study carried out by the scientist Kovshova I. on the presentation of the features of the application of the multi-attributive model in the management of marketing of domestic industrial enterprises is worthy of attention [8].

In our previously published works, we conducted a thorough study of the digitalization of business processes at the enterprise and the formation of Industry 4.0 ecosystem with the aim of economic recovery of the post-war economy [9]. We tried to present the innovation of business activity and analyze the advantages of the application of the Internet of Things, digital doubles, chatbots, artificial intelligence, robots [10].

A significant number of issues, such as the sources and tools of the post-war reconstruction of the Ukrainian economy, the digitalization of the entrepreneurship institute, organizational and economic conditions and components of the market success of domestic enterprises, which will have priority during the reconstruction of the Ukrainian economy, and the economic mechanisms of the functioning of the market in conditions of innovation and socialization of the national economy, remain poorly studied. In addition, there is no clear understanding of the role of the digital transformation of Ukraine’s economy on the market success of various types of business entities.

To present the general dynamics of changes in the market success of various types of economic entities in 2010–2022 under the influence of weighty attributes according to the multi-attributive model. Show and compare the digital transforma-

tion index of Ukraine by region for 2022 and 2023. Provide the author’s calculation of the impact of important attributes on the market success of various types of business entities (large, medium, small and micro enterprises) in 2010 and 2022 using a multi-attributive model. Based on the calculations made by the authors, determine the organizational and economic conditions of innovative and digital development and the components of the market success of enterprises in the conditions of martial law.

Considering the existing scientific developments in digitalization of the economy, business processes, clarification of the mechanisms of market success of enterprises, the digital transformation of entrepreneurship and businesses under the influence of innovations, the latest technologies and development of the components of market success of domestic economic entities remains unexplored. Based on dialectical, systemic methods and model analysis, an attempt was made to investigate the influence of important attributes on the market success of large, medium, small and micro enterprises, in order to present effective organizational and economic conditions for business adaptation to modern challenges, whether it is the sped up digitalization of business processes, based on this knowledge, or the conditions of martial law. A comparison of the index of digital transformation of the regions of Ukraine by year was used, which allows to identify weaknesses, ‘sags’ of the digitalization process through the analysis of sub-indices of digital transformation.

The value of the digital transformation index in Ukraine as a whole (Fig. 1) shows a deterioration of the indicator in 2023 compared to 2022 by 0.019. The reasons for this are the state of war in the country and the systematic shelling of the front-line territories, which makes it impossible for the team of employees dealing with digital transformation issues to fully fulfill the assigned tasks. In particular, we are talking about the quality and speed of implementation of the strategy of digital transformation of regions, the regional informatization program for 2023, policy in the field of cyber security, promotion of access to infrastructure.

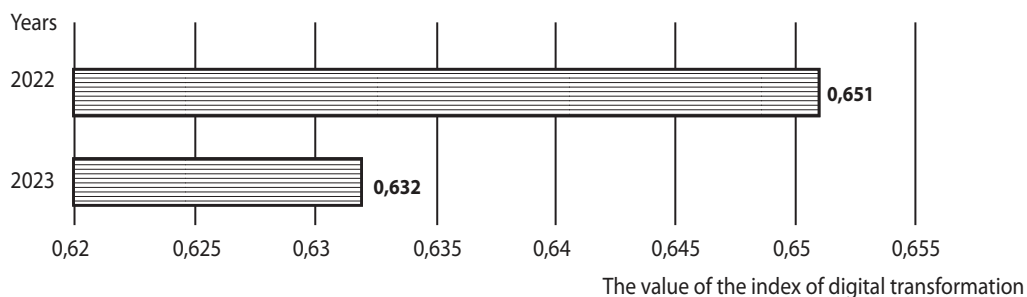


Fig. 1. Digital transformation index for Ukraine in general in 2022–2023

Source: compiled on the basis of [12, p. 8; 13, p. 7]

But still there are several positive results. We are talking about ‘the rapid pace of development of the system of providing public e-services and electronic identification ... and bringing e-commerce into line, ... harmonization of the electronic trade system between Ukraine and the EU ... by introducing electronic residency’ [11, p. 8]. In the development of the na-

tional ICT ecosystem, innovations and startups in ICT, several prerequisites for international cooperation were created. From the middle of 2019, the Committee on Digital Transformation of the Verkhovna Rada of Ukraine (performs a legislative function) and the Ministry of Digital Transformation of Ukraine (the main body in the system of central bodies of executive

power, which ensures the formation and implementation of state policy in comprehensive digitalization) began their work [11, p. 9–10].

Figures 2 and 3 show the data of the digital transformation index of Ukraine by region in 2023 and 2022. For 2023,

we have a group of regions in which the digital transformation worsened, namely: Sumy (↓0.356), Zaporizhzhya (↓0.081), Kherson (↓0.184), Donetsk (↓0.11), Odesa (↓0.051), Cherkasy (↓0.044) region. Digitization sped up in Lviv (↑0.092), Volyn (↑0.111), Kyiv (↑0.096), Khmelnytskyi (↑0.01) regions.

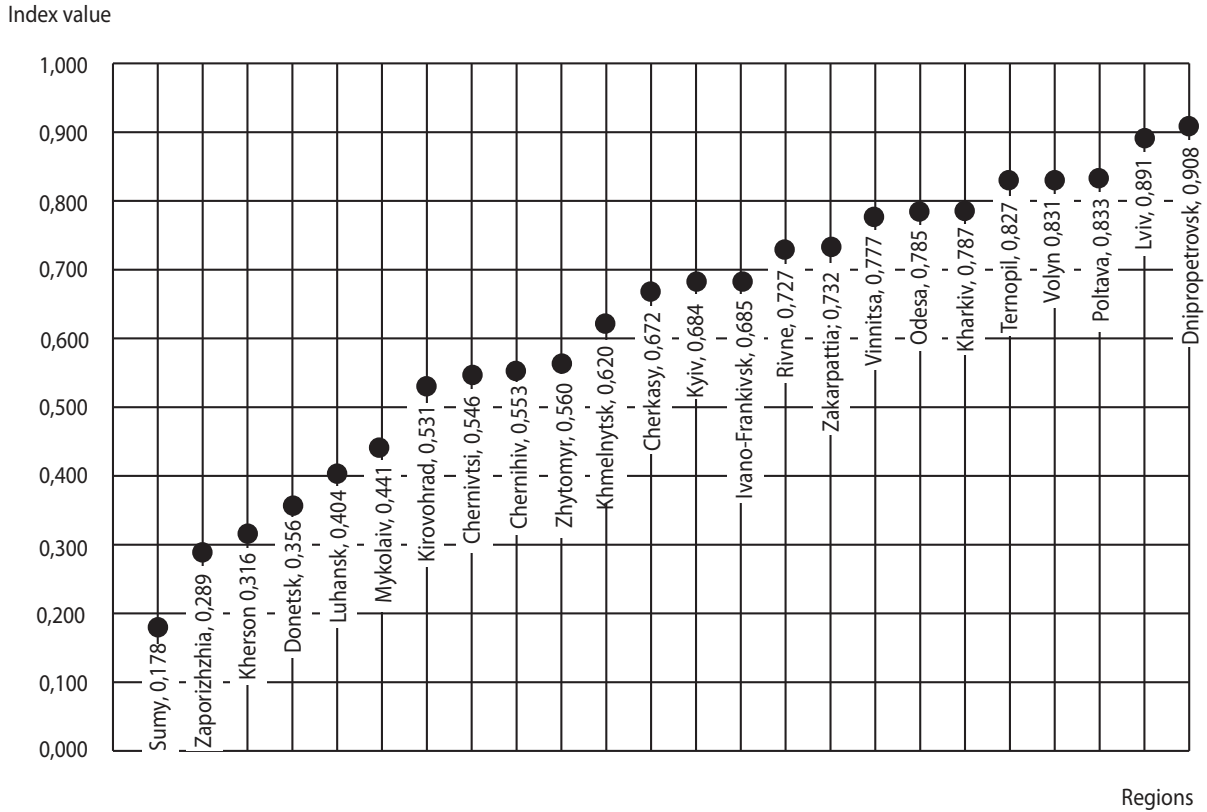


Fig. 2. Digital transformation index of Ukraine by region in 2023

Source: compiled on the basis of [12, p. 8]

Thus, in 2023, compared to 2022, the number of points for sharing digital documents increased by 49.3% (15 thousand); functional Action Centers by 52.2% (or 67 units); users working in the Unified Information System of the Social Sphere by 61.3% (or 21.7 thousand); bureau of technical inventory, which are connected to the state register of property rights for 78.9% (or 38 units) [12, p. 10]. Pursuing the goal of strengthening the institutional capacity of the regions in 2023, 333.1 million UAH was allocated from the state budget for implementing of 16 approved regional informatization programs. In several regions, there is a need for specialists in innovative and digital technologies in state authorities [12, p. 12].

Comprehensive digitization of Ukraine’s economy is primarily aimed at improving the quality of the state’s provision of services to individuals and legal entities. The efficiency and speed of service provision by state institutions affects the performance of enterprises and businesses. Currently, the largest enterprises are in Dnipro, Lviv, Kyiv and Odesa. We are convinced that interaction and its synergistic effects and constructive dialogue between government and business lie in the coordinate system of digital transformation at all levels of economic aggregation.

Many business entities operate on the market, differing among themselves in terms of size, the number of people employed by them, the volume of products sold, capital investments, etc. The contribution of each of these types of business entities to the country’s economy is excellent. In order to find out the role of various attributes of influence on the market success of business entities, we will conduct research using a multi-attribute model. Let’s consider 8 main attributes that distinguish business entities (large, medium, small and micro enterprises) and affect their market success (Table 1).

Each type of economic entity possesses, to a certain extent, some characteristics (attributes) a_p , $i = 1, \dots, n$, and each of them is in the range from 0 to 1 ($0 \leq a_i \leq 1$). Each attribute has its weight in the market for business entities (w_p , $i = 1, \dots, n$) and also ranges from 0 to 1 ($0 < w_i < 1$) $\sum_{i=1}^n w_i = 1$. The total weight of all attributes is 1 (or 100%). The satisfaction of business entities of different types from each of the 8 attributes is measured as power function of satisfaction: $u(x) = x^a$, where $0 < a < 1$. The indicator σ (standard deviation) depends on the level of competition regarding the values of this attribute between economic entities of different types, and therefore, if

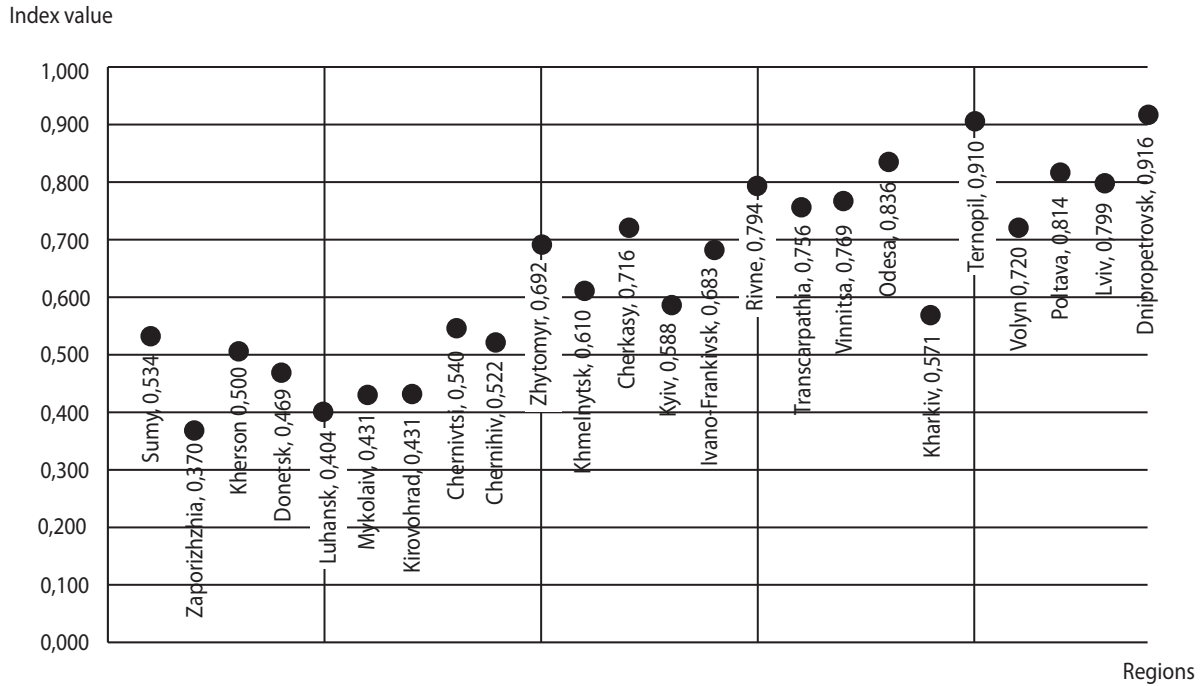


Fig. 3. Digital transformation index of Ukraine by region in 2022

Source: compiled on the basis of [13, c. 7]

Table 1

The dynamics of changes in the market success of types of economic entities in 2010–2022 under the influence of significant attributes according to the multi-attributive model

Type of economic entities	Market success in 2010, %	Market success in 2022, %	Change in the indicator in 2022 versus 2010 (+/-)
Large enterprises	29,54%	27,54%	-2,00
Medium enterprises	30,65%	32,16%	+1,51
Small enterprises	23,33%	23,72%	+0,39
of them – micro enterprises	16,48%	16,58%	+0,1
Together	100,00%	100,00%	X

Source: calculated on the basis of source data [14, p. 42–45]

the level of deviation from the average value of some attribute is large, then the value of the coefficient and should be smaller. The relationship between σ and a will be described using the formula:

$$a = \max(1 - 3 \times \sigma, 0.05). \quad (1)$$

We have 4 types of economic entities (large, medium, small and micro enterprises), and therefore the integrated indicator can be represented by the formula:

$$I(X) = \sum_{i=1}^4 w_i \times X_i^a, \quad (2)$$

where X – type of business entity, and

X_i – the value of the corresponding attribute of the business entity $X, i = 1, \dots, 4$.

Considering that the importance of individual attributes changes over time (under the influence of the political situation, the state of the economy, the processes of digitization and innovation), we will conduct the corresponding calculations using the multi-attribute model for two periods – 2010 and 2022 (Table 2) and we will try to find out which business entities had greater market success under the influence of the 8 attributes considered. The research results for 2010 and 2022 are presented in Table 2.

Among the effective organizational and economic conditions for business adaptation to modern challenges, it is worth mentioning the development of a new product and the expansion of the client base, as an option, reorientation in the content of business activities can be considered. It would not be wrong

Table 2

Assessment of the influence of important attributes on the market success of types of economic entities (large, medium, small and micro enterprises) in 2010 and 2022 using a multi-attributive model

(coefficients)

Influence attribute	The importance of the attribute	Type of economic entities				The average value of the influence attribute	Standard deviation, σ	Value, a
		Large enterprises	Medium enterprises	Small enterprises	Micro-enterprises			
2010								
Number of active units	0,08	0,002	0,055	0,943	0,793	0,45	0,49	0,05
Number of employed workers	0,12	0,302	0,426	0,272	0,105	0,28	0,13	0,60
Number of employees	0,18	0,306	0,433	0,261	0,097	0,27	0,14	0,58
Personnel costs	0,14	0,453	0,407	0,14	0,045	0,26	0,20	0,40
Labor costs	0,16	0,447	0,41	0,143	0,046	0,26	0,20	0,41
Deductions for social events	0,07	0,47	0,398	0,132	0,043	0,26	0,21	0,38
Volume of sold products	0,13	0,416	0,415	0,169	0,054	0,26	0,18	0,45
Capital investments	0,12	0,452	0,386	0,162	0,05	0,26	0,19	0,43
Integrated indicator		0,65	0,68	0,50	0,33			
2022								
Number of active units	0,07	0,002	0,056	0,942	0,787	0,45	0,49	0,05
Number of employed workers	0,14	0,254	0,48	0,266	0,108	0,28	0,15	0,54
Number of employees	0,16	0,257	0,484	0,259	0,102	0,28	0,16	0,53
Personnel costs	0,19	0,351	0,483	0,166	0,053	0,26	0,19	0,43
Labor costs	0,17	0,352	0,485	0,163	0,051	0,26	0,19	0,42
Deductions for social events	0,08	0,343	0,476	0,181	0,062	0,27	0,18	0,46
Volume of sold products	0,11	0,365	0,445	0,19	0,061	0,27	0,17	0,48
Capital investments	0,08	0,446	0,392	0,162	0,037	0,26	0,19	0,42
Integrated indicator		0,60	0,71	0,51	0,33			

Source: calculated on the basis of source data [14, p. 42–45]

for a digital enterprise to expand the line of digital services to retain 'old' customers, but to provide them with a wider range of digital services. Market success is influenced by the expansion of virtual business opportunities, namely the search for new sales markets through work on digital online platforms with round-the-clock consultations of managers.

Digital business must become socialized because of flexibility to the client's needs, quick response to his requests. A modern virtual business must be ready to produce goods and provide services not only 'today for tomorrow' but also 'today for today'.

Conclusion. We are convinced that in pursuit of the goal of digital transformation of business processes in enterprises, there should be no gaps in innovation, since digital technologies are developing much faster than the government, authorities and public institutions can define and present policies to regulate digital technologies and use the advantages that technologies bring for enterprises, businesses, individuals.

Among the conditions that would contribute to the market success of enterprises, it is worth mentioning the reduction of regional trade barriers in order to increase the volume of

cross-border trade and expand business opportunities for businesses in all border regions, specifically in e-commerce. In order to expand opportunities for innovation-digital ecosystems, it is worth emphasizing the creation of conditions for rapid adoption, dissemination and scaling of existing innovations, support of digital entrepreneurship at the regional level, and promotion of low-cost innovations.

We believe that the improvement of digital foundations, tools and mechanisms in order to form functionally modern/up-to-date digital platforms to create conditions for the development of operational clusters in Ukraine is one for the directions of its progressive digital development.

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