

# Diagnosics of entrepreneurial activity in Ukraine in the context of information support for sustainable development of territories

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**Abstract.** The relevance of the research topic is due to the need to use the tools of economic diagnostics to identify problems of entrepreneurship development in the regions of Ukraine and develop measures for state support of the private sector of the economy, which is especially important in the context of overcoming the consequences of hostilities and ensuring sustainable development of territories. In view of this, the aim of the article is to formulate recommendations for diagnosing the level of entrepreneurship development in the regions of Ukraine in the context of information support for sustainable development of territories. To achieve this goal, the article substantiates the criteria that characterize the regions of Ukraine, considering the main factors of entrepreneurship development. To generalize the primary information, the work uses the method of normalization, which made it possible to apply the method of integral assessment and determine the integral indicator of entrepreneurship development for each region. According to the results of the ranking of regions according to this criterion, the article identifies both regions with high business activity of business entities (Dnipropetrovsk, Kyiv, Lviv, Odesa and Kharkiv) and those that need state support in the field of organization of entrepreneurial activity (Ternopil, Sumy, Rivne, Chernihiv, Kherson, Chernivtsi, and Luhansk). According to the results of the study, a high level of disproportionality of entrepreneurship development in the regions of Ukraine has been identified, which is due to the centralization of financial, material, and intellectual resources at the present stage of development of the State. In practice, the key results of the study can be the basis for the development and improvement of the strategy for the development of entrepreneurship in Ukraine at the regional level. The article also formulates the most important promising directions for studying the problems of entrepreneurship development at the regional level using methods of economic diagnostics in the context of sustainable development.



## 1. Introduction

The 17 Sustainable Development Goals (SDGs), adopted in 2015, reflect the generalized problems facing humanity, as well as the ways to solve them [1]. These Goals, based on the analysis and revision of the Millennium Development Goals, set themselves the goal of achievement by 2030. They are the foundation for strategic development documents of the European Union and individual European countries. It is obvious that the Sustainable Development Goals are complex [2]. Thus, the research is based on such elements of development as economic growth, innovation, and sustainable development of cities and communities. The degree of achievement of these goals is monitored through the achievement of a set of indicators.

Goal 8. Decent work and economic growth. Indicators covered by the study: Share of exports of goods using high and medium-level technologies in production in the total volume of exports of goods; The number of employees in medium and small businesses; Ukraine's place in the rating of ease of doing business, Doing Business, etc.

Goal 9. Industry, innovation, and infrastructure. Indicators covered by the study: Volume of transported goods, Number of transported passengers, etc.

Goal 11. Sustainable development of cities and communities. Indicators covered by the study: Number of employees employed by tourism business entities, Coverage of territorial units of Ukraine (regions), programs to provide affordable housing for various categories of citizens, etc.

The goals stated in the study of the SDGs are important for ensuring the sustainable development of both individual regions and Ukraine as a whole. However, it is important to pay attention to entrepreneurial activity.

Today, the development of entrepreneurship is one of the priority tasks for Ukraine, where market transformations have been carried out in recent years. Due to the development of entrepreneurship, new jobs appear (which reduces the level of social tension in society), and the incomes of citizens and revenues to the budgets of different levels increase (which, in turn, makes it possible to significantly increase the investment potential of the state and entities representing the private sector of the economy). Noting the need for the development of entrepreneurship, it is also necessary to pay attention to the fact that the justification and implementation of practical measures in this area requires a preliminary assessment of the development of entrepreneurship as of a certain period or point in time. If the necessary information is available, such an assessment can be carried out considering the types of activities of business entities (BEs) or their location. In the latter case, we are talking about entrepreneurial activity within the regions of Ukraine in the context of ensuring their sustainable development. Information provision of the process of sustainable development of territories covers the implementation and use of open access information resources for effective management and decision-making in the field of sustainable development. Through the sustainable development of territories, we understand an approach to development that provides a balanced integrated development of economic, social, and ecological aspects of territories to meet the needs of the present generation without harming the opportunities of future generations. This approach includes many aspects that contribute to the balanced, efficient, and sustainable development of cities and regions.

The development of Ukraine's regions is marked by disproportionality (because they all have different potential). Therefore, it is important to identify both promising regions and those that conditionally belong to "outsiders" and need state support. One of the most effective ways to determine the state of entrepreneurship in the regions of Ukraine is the use of methods of economic diagnostics, which is combined with integral methods (which provide for the calculation of the

integral indicator of entrepreneurship development and the interpretation of the results of diagnostics).

Considering the above, the paper aims to develop scientific proposals in the field of diagnostics of the level of development of entrepreneurship in Ukraine in the context of information support for the sustainable development of territories.

## 2. Literature Review

The importance of the development of entrepreneurial activity for the economy and society is confirmed by legislative acts, scientific publications of both Ukrainian and foreign scientists. In the Law of Ukraine “On Entrepreneurship”, entrepreneurial activity is defined as a direct independent, systematic, at one own risk activity in the production of products, performance of works, and provision of services to obtain profit, which is carried out by individuals and legal entities registered as subjects of entrepreneurial activity. activities in the manner established by law [3]. Scientists consider such aspects of entrepreneurial activity as investment placement mechanisms that have been used in the private sector for the development and support of small and medium-sized innovative entrepreneurship, which has its specifics and sources in the European Union [4]. Grădinaru *et al.* [5] investigated the development and evolution of entrepreneurship in the top ten countries of the world, considering the new National Index of Entrepreneurship Context. The paper [6] analyzes the entrepreneurial activity of Poland, considering the useful evidence of the approach to supporting entrepreneurship in the study of the economic downturn in the country. Kuckertz *et al.* [7], analyzed in his study the stimulating and transformative role of entrepreneurship by conducting a structured literature review and thematic analysis. This approach allowed the author to identify implicit views on entrepreneurs and their enterprises, which can be found in the literature on bioeconomy. The Mmbaga *et al.* [8] proposed the prerequisites of entrepreneurial identity, the different forms they take, and their initial impact on the course of the creation of new enterprises. The impact of digitalization and the development of social entrepreneurship on the national welfare economy has been studied by the Torres & Augusto [9]. Also, the study of scientists [10] analyzes the development of digitalization in the context of academic entrepreneurship.

Special attention should be paid to the works of scientists who considered entrepreneurial activity as the basis for the development and sustainable development of territories. Thus, Chernov *et al.* [11] analyzed the state of business entities and developed recommendations for determining the level of financial potential, considering a comprehensive assessment of the indicators of financial and economic activity of enterprises of the machine-building industry in the Kharkiv region. In the study of Garazha *et al.* [12], it is proved that entrepreneurship is a prerequisite for the economic development of territorial communities in the context of the completion of administrative-territorial and land reforms. In the paper of Yakushyk *et al.* [13] it is proved that economic (entrepreneurial activity) and non-economic factors cannot be considered in isolation from each other. Such factors affect the economic growth of both individual territories and the country and are an integral system consisting of separate interrelated elements. Some scientific works of Ukrainian researchers are of an analytical nature, in particular, Melnyk & Leshchukh [14], studying the trends and features of entrepreneurship development on the example of the Zaporizhzhia region, carefully analyze the dynamics of statistical indicators, but do not offer any measures based on the results of the analysis (which somewhat reduces the practical value of this work). In addition, limiting themselves to the data of only one region, the authors of the article do not have the opportunity to compare the achievements of the Zaporizhzhia region with the results of other

regions of Ukraine. Sotnyk *et al.* in the study [15], examines the impact of hostilities on the territory of Ukraine in the context of ensuring the agro-industrial complex and the activities of business structures in the territories of Ukraine. Orlova *et al.* [16] substantiated the obstacles to the resumption and development of entrepreneurial activity during martial law in different territories of Ukraine. The main obstacles are as follows: lack of financial resources; continuation of hostilities; interruptions in electricity, water, and heat supply; destruction of logistics; growth of production costs; insufficient number of solvent customers. The development of entrepreneurship is also explored in the papers of the authors He *et al.* [17], Galvao *et al.* [18], and Kyzym *et al.* [19].

Thus, a review of scientific literature has shown that there is no single view on the assessment and analysis of the development of entrepreneurial activity, which makes our study especially relevant. Therefore, this study is devoted to the diagnostics of entrepreneurial activity in ensuring sustainable development of the territories of Ukraine.

### 3. Research Methodology

The information base of the research is official information from open sources, namely: publicly available statistical materials and information from the State Statistics Service of Ukraine [20, 21]. Since it is a toolkit of economic diagnostics, preference is given to data that reflect the current state of entrepreneurship in the regions of Ukraine (considering the restrictions associated with placing current information in open access) [22].

Speaking about the international experience of applying diagnostic methods for the analysis of territories, it is worth noting that the methods of determining the competitiveness of regions, the application of which involves the calculation of the integral criterion of competitiveness, have become the most widespread. Among such methods, the following deserve special attention:

- a) the methodology of the World Economic Forum (WEF), which involves a comprehensive analysis of the countries of the world with the involvement of experts, the determination of indicators divided into 12 groups and the calculation of the global competitiveness index (the Global competitiveness index – GCI) [23];
- b) the method of determining the regional competitiveness index (Regional competitiveness index – RCI), which involves the division of regions into basic, efficient and innovative and also involves the involvement of experts [24];
- c) the method of calculating the European Competitiveness Index (ECI) was developed by Robert Huggins, which became widespread in Great Britain and involves the use of a three-factor model and the transformation of primary data into logarithmic form to avoid extreme calculation results [25];
- d) the method of Huovari *et al.*, which has become widespread in Finland and involves determining the competitiveness index of regions using the ratios of the specific weight of the region's economic indicators relative to national indicators and the specific weight of the region's population [26].

Recognizing the practical value of the listed methods, it should be noted that they cannot be correctly applied in this study, because the first two of them involve the involvement of experts, the third is quite specific and is used in a specific country, and the last one involves the use of a share of the population of the region in the process definition of indicators and therefore needs adaptation for diagnosing entrepreneurial activity in Ukraine.

To realize the goals of this research, a universal technique for calculating indicators characterizing entrepreneurial activity in the regions of Ukraine is necessary. For this, the min-max method (1) was chosen:

$$FN_i = \frac{x_i - x_{min}}{x_{max} - x_{min}}, \quad (1)$$

where  $N_i$  is the standardized value of the  $i$ -th indicator, fraction of a unit;  $x_i$  is the actual value of the  $i$ -th indicator, fraction of a unit;  $x_{min}$  is the minimum value of a number of indicators;  $x_{max}$  is the maximum value of a number of indicators.

The main advantages of this method are:

- a) the ability to compare and summarize data that originally have different units of measurement;
- b) the possibility to use not only relative but also absolute indicators, which as a result of normalization are proportionally distributed in the interval [0:1];
- c) the use of normalized values makes it possible to determine an integral criterion for the development of entrepreneurship in the territories of Ukraine.

Having decided on the method of determining the indicators, we specify the main stages of the research.

*Stage 1.* Selection, ordering, and grouping of indicators for diagnostics of entrepreneurial activity in the regions.

The choice of indicators for assessing the regional development of entrepreneurship involves the formation of groups that reflect the direction of its development at the regional level. Based on the analysis of the available statistical information, indicators have been selected for diagnosing the development of entrepreneurship in the regions, which are formed into three main groups, which are presented below (Table 1).

**Table 1.** Groups of Indicators for Integral Assessment of Entrepreneurship Development in Regions, developed by the authors based on [20, 21]

Group of indicators	Indicators	Denomination	Unit of measure
1. Domestic trade turnover and exports	Retail turnover	F <sub>11</sub>	Mln. UAH.
	Wholesale turnover	F <sub>12</sub>	Mln. UAH.
	Export of goods	F <sub>13</sub>	Mln. USD.
	Export of services	F <sub>14</sub>	Mln. USD.
2. Key sectors of the economy			
a) Industry	volume of industrial products sold	F <sub>21</sub>	Mln. UAH.
	the share of industrial enterprises in their total number	F <sub>22</sub>	%

b) construction	Commissioning of residential buildings in urban areas	F <sub>23</sub>	Th. m <sup>2</sup>
	Commissioning of residential buildings in rural areas	F <sub>24</sub>	Th. m <sup>2</sup>
c) Agriculture & Forestry	Production of cereals and legumes	F <sub>25</sub>	Th. t.
	Meat production	F <sub>26</sub>	Th. tons of slaughterweight
	Milk production	F <sub>27</sub>	Th. t
	Timber harvesting	F <sub>28</sub>	Th. m <sup>3</sup>
3. Business entities	Gross regional product, mln. UAH.	F <sub>31</sub>	Mln. UAH.
	share of profitable business entities in their total number	F <sub>32</sub>	%
	Number of active individual entrepreneurs	F <sub>33</sub>	Units
	Labor costs for staff of small enterprises	F <sub>34</sub>	Th. UAH.

Regarding the choice of indicators and sources of information for an integral assessment of the development of entrepreneurship in the regions, it is necessary to note the following:

1. Domestic and foreign trade in goods and services is traditionally the sphere of realization of the interests of business entities, which explains the choice of indicators of the first group. In addition, the use of indicators (F<sub>13</sub>, F<sub>14</sub>) makes it possible to consider the export opportunities of the regions of Ukraine.
2. Industry, construction, as well as agriculture and forestry are the key sectors of the economy of our country (their total contribution to GDP at the end of 2021 was about 50% of GDP in actual prices this year), which gives grounds for using the indicators of the second group (F<sub>21</sub> – F<sub>28</sub>).
3. The use of indicators of the third group (F<sub>31</sub> – F<sub>34</sub>) in the calculations is explained by the topic of research. At the same time, the indicators of the gross regional product, the share of profitable business entities and the number of active entrepreneurs, (F<sub>31</sub> – F<sub>33</sub>) characterize the potential and effectiveness of business entities in the regions. The choice of labor costs for the staff of small enterprises to assess the level of development of entrepreneurship in the regions is explained by the fact that:
  - a) about 95.1% of business entities in 2021 functioned as small enterprises;
  - b) the increase in the number of wages of the staff of small enterprises has a motivating effect and contributes to the improvement of the quality of products, works and services, which has a positive effect on the development of entrepreneurship in the regions and the country as a whole.
4. The calculation of indicators of entrepreneurship development is carried out without considering the data of the city of Kyiv, since the capital belongs to the cities and is distinguished in the statistical data as a separate territorial entity. On the other hand,

considering the indicators of the city of Kyiv (separately or as part of the Kyiv region) would lead to significant discrepancies in the results of the assessment of the level of entrepreneurship development in the regions of Ukraine (because the indicators of the capital exceed them several times).

Next, the values of the previously selected indicators for 2021 for individual regions of Ukraine will be presented, dividing them into groups and considering the previously mentioned abbreviations. The information is presented in an abbreviated form to facilitate the perception of information (Tables 2–4).

**Table 2.** Indicators of domestic trade turnover and exports of goods and services (group 1), developed by the authors based on [20, 21]

Region	Indicators			
	F <sub>11</sub>	F <sub>12</sub>	F <sub>13</sub>	F <sub>14</sub>
Vinnitsa	41569.6	39539.8	1309.3	204.7
Volyn	26598.4	42162.6	832.5	87.0
Dnipropetrovsk	132227.3	246921.1	12163.8	250.6
Donetsk	43635.0	106240.2	7037.6	87.7
...				
Khmelnitsky	33622.9	24538.3	918.1	29.1
Cherkassy	36836.2	66824.4	884.1	51.8
Chernivtsi	22030.8	10882.4	207.3	50.2
Chernihiv	26744.5	20305.4	1189.4	44.2

**Table 3.** Indicators characterizing the key sectors of the Ukrainian economy (group 2), developed by the authors based on [20, 21]

Region	Indicators							
	F <sub>21</sub>	F <sub>22</sub>	F <sub>23</sub>	F <sub>24</sub>	F <sub>25</sub>	F <sub>26</sub>	F <sub>27</sub>	F <sub>28</sub>
Vinnitsa	90655.9	6.2	241	125	6535	471	686	579.5
Volyn	43489.0	5.9	147	194	1509	117	338	1040.1
Dnipropetrovsk	670478.3	6.4	334	40	4949	290	246	69.5
Donetsk	387869.5	5.6	36	12	2228	85	144	53.4
...								
Khmelnitsky	64357.5	6.4	284	58	4831	64	654	710.2
Cherkassy	93617.4	7.0	144	31	5150	348	436	782.0
Chernivtsi	19410.8	6.8	168	206	729	37	236	552.0
Chernihiv	39512.7	6.5	86	10	5977	33	442	1568.5

*Stage 2.* Application of minimax normalization – involves the calculation of normalized values of indicators using (1).

*Stage 3.* Averaging the normalized values of indicators by groups and calculating the integral development of entrepreneurship

**Table 4.** Indicators characterizing business entities (group 3), developed by authors based on [20, 21]

Region	Indicators			
	F <sub>31</sub>	F <sub>32</sub>	F <sub>33</sub>	F <sub>34</sub>
Vinnitsa	173531	76,8	58052	4386391.5
Volyn	92535	74.5	34809	2456293.1
Dnipropetrovsk	582363	75.2	122749	11810623.6
Donetsk	283326	76.2	52549	3556918.0
...				
Khmelnitsky	119876	77.3	54209	2916856.5
Cherkassy	131154	76.7	45916	3447168.8
Chernivtsi	54582	78.4	36182	1449358.5
Chernihiv	113474	70.2	35113	2449608.5

The selected groups include a different number of indicators, so there was a need to average the normalized values and calculate the integral indicators of entrepreneurship development by groups. For this purpose, the arithmetic mean is used, since according to (1) each series of data has one zero value (which makes it difficult to use the geometric mean). Based on the results of normalization and generalization of indicators, three integral indicators are determined for each region (according to the number of groups). Certain groups of indicators reflect different spheres of activity of business entities, but to get a general idea of the level of development of entrepreneurship in the regions of Ukraine, it is proposed to average their values and calculate the integral indicator of entrepreneurship development. The formulas for calculating the group integral indicators and the final indicator of entrepreneurship development are presented below (2), (3). The integral indicator of entrepreneurship development for each region can be determined using the geometric mean (because the group integral indicators do not acquire zero values)

$$I_k = \frac{FN_{k1} + FN_{k2} + \dots + FN_{kn}}{nk}, \quad (2)$$

$$IED = \sqrt[k]{I_1 \times I_2 \times \dots \times I_k}, \quad (3)$$

where is  $I_k$  is the integral coefficient of group  $k$ , fraction of one;  $FN_{k1}, \dots, FN_{kn}$  are the normalized values of group  $k$ , fraction of one;  $nk$  is the number of indicators in group  $k$ ;  $IED$  is an integral indicator of the development of entrepreneurship in the region, the share of one.

To achieve the objectives of the article, the ranking of the results of the calculation of integral indicators (3) is applied, which allows to identify the most promising regions and those that need state and other support to ensure the development of entrepreneurship.

#### 4. Results and Discussion

According to the research methodology, it is necessary to determine the normalized values of the indicators chosen as indicators of entrepreneurship development in the regions of Ukraine (according to (1), the maximum value of the series is one, and the minimum value is zero). The data does not include the temporarily occupied territory of Crimea and the city of Kyiv, which has a



special status under current legislation. The results of normalization of indicators by groups are presented below (Tables 5–7). The results of the normalization of indicators of entrepreneurship development indicate quite high results of the Dnipropetrovsk region. This can be explained by the significant business activity of business entities (as indicated by high indicators of domestic turnover), the highest volumes of industrial production and gross regional product. On the other hand, Chernivtsi and Chernihiv regions are marked, respectively, by the minimum indicators of industrial products sold, the share of profitable business entities. The next stage of the study is the calculation of integral indicators of entrepreneurship development in the regions of the state by groups of indicators (Table 8).

**Table 5.** Normalized indicators of domestic trade and exports goods and services (group 1), developed by the authors based on [20, 21]

Region	Indicators			
	F <sub>11</sub>	F <sub>12</sub>	F <sub>13</sub>	F <sub>14</sub>
Vinnitsa	0.238684	0.136891	0.095149	0.192245
Volyn	0.11296	0.147806	0.055402	0.064045
Dnipropetrovsk	1.0	1.0	1.0	0.242239
Donetsk	0.256028	0.414494	0.572671	0.064808
...				
Khmelnitsky	0.17195	0.074455	0.062538	0.00098
Cherkassy	0.198934	0.250448	0.059704	0.025705
Chernivtsi	0.074603	0.01762	0.003284	0.023963
Chernihiv	0.114187	0.056838	0.085154	0.017427

**Table 6.** Normalized Indicators Characterizing Key Sectors of Ukraine's Economy (group 2), identified by the authors based on [20, 21]

Region	Indicators							
	F <sub>21</sub>	F <sub>22</sub>	F <sub>23</sub>	F <sub>24</sub>	F <sub>25</sub>	F <sub>26</sub>	F <sub>27</sub>	F <sub>28</sub>
Vinnitsa	0.109428	0.30	0.260821	0.276786	1.0	1.0	0.991511	0.209012
Volyn	0.036983	0.24	0.156493	0.430804	0.185677	0.233766	0.400679	0.379978
Dnipropetrovsk	1.0	0.34	0.36404	0.087054	0.743033	0.608225	0.244482	0.01971
Donetsk	0.56593	0.18	0.033296	0.024554	0.302171	0.164502	0.071307	0.013734
...								
Khmelnitsky	0.069035	0.34	0.308546	0.127232	0.723914	0.119048	0.937182	0.257526
Cherkassy	0.113977	0.46	0.153163	0.066964	0.775599	0.733766	0.567063	0.284177
Chernivtsi	0.0	0.42	0.1798	0.457589	0.0593	0.060606	0.227504	0.198805
Chernihiv	0.030875	0.36	0.08879	0.020089	0.909592	0.051948	0.57725	0.576111

**Table 7.** Normalized indicators characterizing business entities (group 3), identified by the authors based on [20, 21]

Region	Indicators			
	F <sub>31</sub>	F <sub>32</sub>	F <sub>33</sub>	F <sub>34</sub>
Vinnitsa	0.228951	0.584071	0.324749	0.296413
Volyn	0.076194	0.380531	0.137529	0.113499
Dnipropetrovsk	1.0	0,442478	0.845878	1.0
Donetsk	0.436022	0.530973	0.280423	0.217804
...				
Khmelnitsky	0.127758	0.628319	0.293795	0.157146
Cherkassy	0.149028	0.575221	0.226995	0.207403
Chernivtsi	0.004615	0.725664	0.148589	0.018073
Chernihiv	0.115684	0.0	0.139978	0.112865

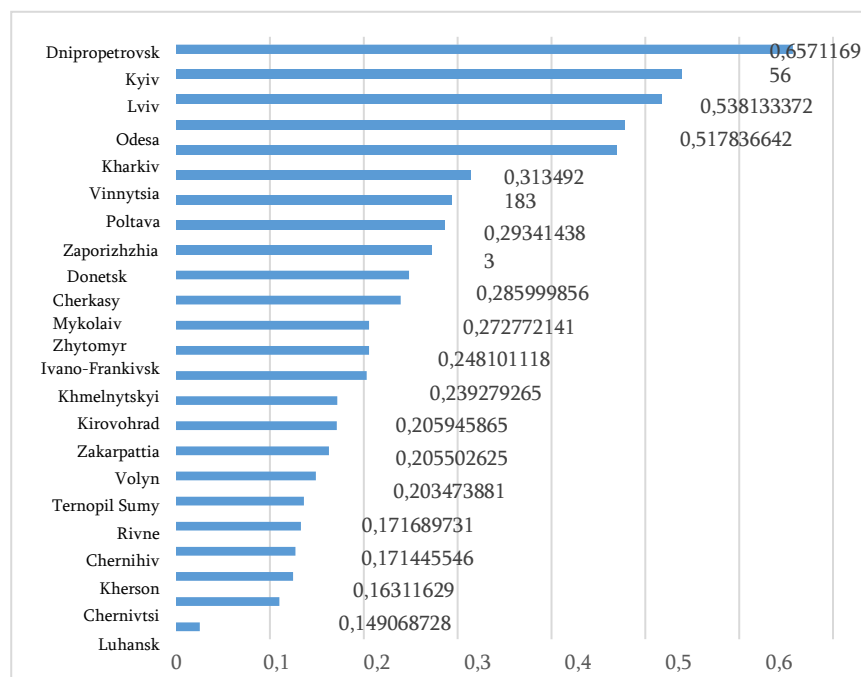
**Table 8.** Integral Indicators of Entrepreneurship Development of Regions by Groups, identified by the authors based on [20, 21]

Region	Groups of indicators		
	1. Domestic trade turnover and exports	2. Key sectors of the economy	3. Business entities
Vinnitsa	0,165742	0.518445	0.358546
Volyn	0.095054	0.258048	0.176938
Dnipropetrovsk	0.81056	0.425818	0.822089
Donetsk	0.327	0.169437	0.366306
Zhytomyr	0.101065	0.447354	0.1932
Zakarpattia	0.160457	0.234838	0.133737
Zaporizhzhia	0.291962	0.216555	0.370001
Ivano-Frankivsk	0.093167	0.318408	0.292554
Kyiv	0.548312	0.492726	0.576815
Kirovograd	0.078121	0.192657	0.336264
Lugansk	0.001634	0.063179	0.159292
Lviv	0.582458	0.47157	0.505554
Mykolaiv	0.330185	0.135618	0.305943
Odessa	0.635125	0.344691	0.499196
Poltava	0.178424	0.389508	0.363475
Rivne	0.069715	0.281357	0.119649
Sumy	0.068919	0.256726	0.142986
Ternopil	0.0747	0.309908	0.143089
Kharkiv	0.455094	0.386976	0.58851
Kherson	0.054436	0.135516	0.264873
Khmelnitsky	0.077481	0.36031	0.301755
Cherkassy	0.133698	0.394339	0.289662

Chernivtsi	0.029867	0.200451	0.224235
Chernihiv	0.068402	0.326832	0.092132

The results of the previous stages of the study make it possible to determine the integral indicator of entrepreneurship development in the regions of Ukraine and to rank them (Figure 1).

Thus, because of the consistent implementation of the stages described above, the paper identifies an integral criterion for the development of entrepreneurship in the regions of Ukraine. The results of the calculations show that the leadership belongs to the Dnipropetrovsk region, which is characterized by a high level of trade development and surpasses other regions of Ukraine in terms of sales of industrial products (which has a positive effect on the gross regional product). The group of leaders also includes Kyiv, Lviv, Odesa and Kharkiv regions, which are characterized by a high value of the integral indicator of entrepreneurship development (in the range of 0.46–0.66). The advantage of the Lviv region is a significant volume of exports of services (which is achieved through the development of tourism). In 2021, the Kyiv region was marked by high rates of housing commissioning, internal and external circulation of goods, and remuneration of employees of small enterprises. The Odessa region was characterized by significant indicators of trade turnover and exports (due to the development of port infrastructure), as well as the presence of a significant number of business entities and production volumes of grain and leguminous crops. The positive features of the Kharkiv region include the high business activity of business entities, and a high level of remuneration for the staff of small enterprises. At the same time, the conditional outsiders of the presented rating include regions with a value of the integral indicator of entrepreneurship development less than 0.15, namely: Ternopil, Sumy, Rivne, Chernihiv, Kherson, Chernivtsi, and Luhansk regions.



**Figure 1.** Results of ranking the regions of Ukraine depending on the integral indicator of entrepreneurship development, 2021, identified by the authors based on [20, 21]

The latter is marked by the minimum values for 10 out of 16 selected indicators. The main reasons for the low level of entrepreneurship development in these regions are insufficient development of trade and industry, unsatisfactory level of remuneration of employees, lack of proper conditions for the emergence of new business entities, and other factors. To improve the situation, it is necessary to improve the quality of regional management of entrepreneurship development processes, with a focus on European experience in this area.

In the conditions of the war waged by the Russian Federation on the territory of Ukraine, such regions as Dnipropetrovsk, Kharkiv, Zaporizhzhia, which were among the leading regions, have suffered and are suffering significant destruction, which forces businesses to relocate to safer places, a large amount of property is destroyed, and lands mined. According to data [27], in a year and a half from the beginning of the full-scale invasion, as of the end of September 2023, 840 enterprises in Ukraine used the state business relocation program, of which 667 are already working in a new location. Zakarpattia and Lviv regions were chosen most often for a new place of work – 120 and 199 companies, respectively; Chernivtsi region – 78 resettles, and Ivano-Frankivsk region – 70 were also among the most popular safe regions.

Accordingly, the existing pre-war asymmetry in the development of territories, where leadership was held by the eastern regions, turns into asymmetry with the leadership of regions closer to the western border or more secure. The selected indicators are characterized by universality and fully describe entrepreneurial activity in the region both in the pre-war and post-war periods, which will allow for a comparative analysis in the future. So, the practical aspect of the study is that the integral indicator can be used as a basis for making management decisions regarding the development and implementation of a program to support entrepreneurship in the region, as well as in the formation of the state strategy for regional development of the country, development of plans and recommendations.

The following are the most promising areas of using the results of diagnostics of entrepreneurial activity in the regions of Ukraine, in the context of information support for their sustainable development:

1. The use of the above-defined integral criterion in the process of comprehensive substantiation of measures to stimulate the activity of the most successful regions of Ukraine, which provides for the implementation of an individual approach to diagnosing the potential of each region in the context of information and analytical support for the processes of their development. The same applies to measures to support temporarily depressed regions that require the introduction of special economic regimes, improvement of the investment climate, etc.
2. The methodology described in this paper can also be successfully used to diagnose the competitive status of the regions of Ukraine (which is especially important in the case of substantiating the amount of their state funding). This approach is fully consistent with European and world practices since the assessment of the competitiveness of regions or countries is quite common today.
3. Improvement of the methodology of integral diagnostics of the level of entrepreneurship development in the regions, considering variation in the influence of factors and conditions of entrepreneurial activity in Ukraine (under conditions of more complete disclosure of official information and systematic diagnostics). In addition, it is important to use methods

of expert evaluation in the process of identifying stimulators and disincentives for the development of entrepreneurship at the regional level.

## 5. Conclusion

The paper presents recommendations for determining the level of development of entrepreneurship in the regions of Ukraine with the use of tools for economic diagnostics in combination with integral methods that are actively used to assess the competitive status of subjects at different levels of the economy, which fully corresponds to the above goal of the study. Also, the relevance of the topic is substantiated, and the methods and main stages of the study are described (which correspond in content to the main stages of economic diagnostics, which are described in the scientific literature).

In the process of systematization of primary information from statistical sources, within the framework of information support for the sustainable development of territories, the article substantiates a list of indicators that reflect the development of entrepreneurship in the regions of Ukraine and generally characterize domestic trade and exports, key sectors of the economy of Ukraine and the presence and effectiveness of activities of business entities (Table 1). For a correct comparison of indicators of entrepreneurship development, the article carries out their normalization in accordance with the “min-max” method, the advantages of which are universality and the possibility of using absolute indicators in the process of economic diagnostics (Tables 5–7).

Based on the results of normalization, the article determines the group integral indicators for the selected groups (Table 8). The result of the work is the determination of an integral indicator of entrepreneurship development in the regions of Ukraine. The ranking of regions by this indicator (see Figure 1) made it possible to identify the most promising regions (which include Dnipropetrovsk, Kyiv, Lviv, Odesa and Kharkiv regions) and those in need of state support in the field of organization and improvement of the efficiency of entrepreneurial activity (these include Ternopil, Sumy, Rivne, Chernihiv, Kherson, Chernivtsi, and Luhansk regions). According to the results of the study, a significant disproportionality of regional development in Ukraine has been identified, which indicates the need for a more rational distribution of available financial, material, and intellectual resources.

Among the promising directions for further research, it is worth highlighting the improvement of the methodology of integral diagnostics of entrepreneurship development through a combination of quantitative and expert methods of processing and generalization of information, with further consideration of a set of factors that will determine the prospective development of entrepreneurship. It is also important to apply the above recommendations for diagnosing and forecasting the competitiveness of Ukrainian regions in the context of information support for sustainable development of territories.

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