

Экономика и инновации / Economy and Innovations

Original article / Оригинальная статья

<https://doi.org/10.31432/1994-2443.2025.01>

УДК 339.137.22(478)

Measuring and mapping the competitiveness of small and medium enterprises at the district level: evidence from Moldova

Tatiana G. Gutium ✉

*National Institute of Economic Research,
Academy of Economic Studies of Moldova, Chisinau, Republic of Moldova
45 Ion Creanga str., MD-2064, Chisinau, Moldova
✉ gutium.tatiana@ase.md*

Abstract. Most enterprises in Moldova are small and medium-sized enterprises (SMEs). Therefore, to improve the efficiency of regional development in Moldova, develop a strategy for sustainable economic growth, and identify problem areas and potential growth points, it is necessary to assess the competitiveness of SMEs by district in the country. In Moldova, there is no single comprehensive system for evaluating the competitiveness of SMEs. Therefore, the novelty of this study lies in developing an SME competitiveness index, which can be used for district-level assessments and assessments by type of activity. The developed index can be used to assess the effectiveness of state programs, regional development strategies, or those aimed at developing SMEs. The primary methods employed in this study are normalization and the construction of a composite index. The results obtained showed that SMEs by districts are not developing stably. In 2023, the most competitive SMEs were located in the Chisinau municipality and the adjacent districts of Straseni and Ialoveni. In contrast, in 2019, enterprises from the Briceni and Cimislia districts were in the lead.

Keywords: entrepreneurship, small and medium-sized enterprises (SME), District SME Competitiveness Index, profitability, financial stability

Funding. No funding.

For citation: Gutium T.G. Measuring and mapping the competitiveness of small and medium enterprises at the district level: evidence from Moldova. *Information and Innovations*. 2025;20(1):5-15. <https://doi.org/10.31432/1994-2443.2025.01>

Измерение и картирование конкурентоспособности малых и средних предприятий на районном уровне: опыт Республики Молдова

Т.Г. Гутюм ✉

Национальный Институт Экономических Исследований,
Академия экономического образования Молдовы, Кишинёв, Республика Молдова
ул. Ион Крянгэ, д. 45, MD-2064, г. Кишинёв, Молдова

✉ gutium.tatiana@ase.md

Аннотация. Большинство предприятий в Молдове относятся к малым и средним предприятиям (МСП), поэтому для повышения эффективности регионального развития Молдовы, для разработки стратегии по обеспечению устойчивого экономического роста, для выявления проблемных зон и потенциальных точек роста необходимо оценить конкурентоспособность МСП по районам страны. В Молдове отсутствует единая комплексная система оценки конкурентоспособности МСП, поэтому новизной данного исследования является разработка индекса конкурентоспособности МСП, который может быть использован как для оценки в разрезе районов, так и в разрезе видов деятельности. Разработанный индекс может быть использован для оценки эффективности государственных программ, стратегий регионального развития, либо направленных на развитие МСП. Основными методами, использованными в исследовании, являются метод нормализации и метод построения композитного индекса. Полученные результаты показали, что МСП по районам развивается не стабильно. В 2023 году, наиболее конкурентоспособными оказались МСП муниципия Кишинёв, а также прилегающих к нему Страшенского и Яловенского районов, тогда как в 2019 году лидировали предприятия Бричанского и Чимишлийского районов.

Ключевые слова: предпринимательство, малые и средние предприятия (МСП), индекс конкурентоспособности МСП по районам, рентабельность, финансовая устойчивость

Финансирование. Финансирование отсутствовало.

Для цитирования: Гутюм Т.Г. Измерение и картирование конкурентоспособности малых и средних предприятий на районном уровне: опыт Республики Молдова. *Информация и инновации*. 2025;20(1):5-15. <https://doi.org/10.31432/1994-2443.2025.01>

INTRODUCTION

Small and medium-sized enterprises (SMEs) comprise the majority of enterprises in Moldova, accounting for 99.2% of the total in 2023. Long-term financial investments in SMEs represented 63.5% of all long-term investments. This sector is the most significant source of employment, accounting for 56.2% [1]. Considering the abovementioned aspects, the development of a District SME Competitiveness Index becomes relevant. This index can identify problem areas, allowing the government to allocate resources more accurately and improve the conditions for business development in each district.

Currently, no comprehensive system is in place to assess the competitiveness of SMEs in Moldova. The novelty of this study is to fill this gap: to develop an SME competitiveness index. This index can be used to assess the competitiveness of SMEs not only territorially but also by type of activity. The use of this index will enable the identification of district differences, pinpoint areas with low levels of entrepreneurial activity and low-competitive SMEs, and facilitate more effective decisions to support SMEs.

The District SME Competitiveness Index has not yet been developed, which is evidence of the novelty of this study. When studying scientific publications in which the subject of the study is the competitiveness of SMEs, the following groups of scientific articles can be distinguished:

- Articles that study the influence of a particular factor (innovation [2], digitalization [3], intellectual capital [4], access to finance [5]) on the competitive advantage of SMEs;

- Articles that assess the competitiveness of enterprises in specific sectors, such as agriculture [6], energy [7], and tourism [8];

- Articles that examine the impact of SME competitiveness on economic growth [9].

Scientific articles also differ in the methodologies used: surveys of SMEs with subsequent analysis of the results [10], expert assessment, comparative analysis [11], structural equation modeling [12], PLS-SEM analysis [13], and the partial least squares method (SmartPLS 3.0) [14].

The subject of this study is SMEs' competitiveness in the district division. The study aims to develop a **District SME Competitiveness Index (DSCI)**. The relevance of this study is that the developed index can become one of the main tools with which it is possible to identify districts in need of strategic measures to support SMEs, to assess the effectiveness of current measures of state support for SMEs, SME assistance programs, the effectiveness of developed regional strategies and programs aimed at improving the business environment and competitiveness. This index can also be used to monitor the implementation of regional development strategies and programs.

METHODOLOGY

The method of constructing a composite index was used to assess the competitiveness of SMEs at the district level because this method allows for taking into account various indicators, from those reflecting the enterprise's financial situation to those reflecting the position of the enterprise on the market. The advantages of this method are that the index enables ranking districts according to their level of SME competitiveness, identifying risk areas, growth reserves, and factors that require improvement, and monitoring the implementation of programs and strate-

gies for entrepreneurship development and regional growth.

The National Bureau of Statistics of Moldova has regularly changed the methodology for calculating indicators over the past ten years, leading to a break in the data series. This situation was created because the Bureau, considering that the Republic of Moldova government has chosen the path of integration into the European Union, proposed to switch to calculating indicators using the methods used in Eurostat. Considering that the method for constructing a composite index contains a data normalization stage, in the case of Moldova, this indicates another advantage of this method. Data normalization and district ranking allow for comparative analysis.

The composite index was constructed in four stages. The first stage involved selecting relevant indicators based on the available data that could be used to calculate them. Twelve indicators listed in Figure 1 were chosen to construct the DSCI.

In the second stage, all twelve indicators, differing in units of measurement, were reduced to a single scale using the normalization method. For this purpose, the following formula Min-Max Normalization was used:

$$x' = \frac{x - x_{\min}}{x_{\max} - x_{\min}} \quad (1)$$

where:

x_{\max} – the maximum value of the variable x ;

x_{\min} – the minimum value of the variable x .

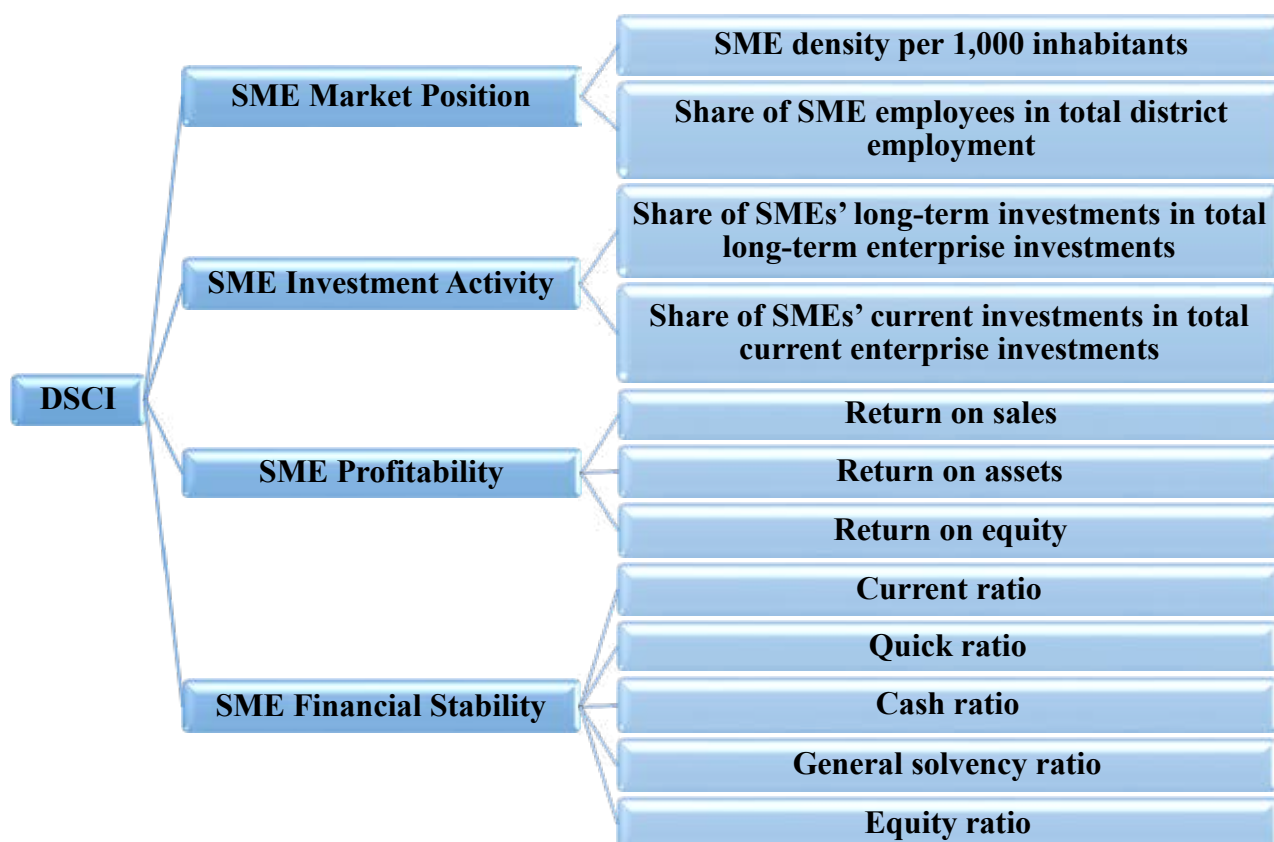


Fig. 1. Structure of the composite index "District SME Competitiveness Index"

Рис. 1. Структура сводного индекса «Индекс конкурентоспособности МСП по районам»

In the third stage, a weighted aggregation of indicators is carried out, which are grouped into sub-indices SI (pillars). The structure of the composite index is built (Fig. 1). For this purpose, one of the following methods is used: weighted arithmetic mean, weighted geometric mean, weighted harmonic mean, principal component analysis (PCA) – based aggregation, analytic hierarchy process (AHP), data envelopment analysis (DEA), etc. In this study, the simple arithmetic mean method is used:

$$SI = \frac{1}{n} \sum_{i=1}^n x_i \quad (2)$$

At the final fourth stage, the DSCI is calculated using the formula (3), and the final index is interpreted and visualized on the map (Fig. 2) and in the form of a rating table.

$$DSCI = \frac{1}{4} (SMP + SIA + SP + SFS) \quad (3)$$

where:

SMP – sub-index: SME Market Position;

SIA – sub-index: SME Investment Activity;

SP – sub-index: SME Profitability;

SFS – sub-index: SME Financial Stability.

ASSESSMENT OF THE DISTRICT SME COMPETITIVENESS INDEX

The assessment of SME competitiveness by districts in Moldova for 2023 showed that the highest level was achieved by the following districts and municipalities: Chisinau, Straseni, Ialoveni, Soldanesti, Calarasi (central region), Riscani, Briceni (northern region), Cahul, Cimislia (southern region) (Fig. 2). Districts with a high level of SME competitiveness are not evenly distributed in the country. However, the comparative analysis showed that in the central region, on average, the level of competitiveness is higher than in the northern and southern regions.

The results of the DSCI calculation for 2019-2023 are presented in Table 1. Most districts show variability in the index throughout the analyzed period, indicating instability of business conditions. The instability is caused by the influence of various external factors, such as the COVID-19 pandemic and lockdown (2020), the energy crisis (September 2021 - 2022), high inflation (2022), and weather disasters (drought in 2020 and 2022), regional geopolitical instability, sanctions policy pursued by the USA and the European Union which affected the countries of Western and Eastern Europe.

The most stable growth trend (except for the year of the pandemic) was demonstrated by such districts as Donduseni, Telenesti, and Basarabasca. For example, the DSCI of the Donduseni district increased from 0.399 in 2019 to 0.581 in 2023, the Telenesti district – from 0.376 to 0.549, and the Basarabasca district – from 0.349 to 0.534. According to the ranking in Table 2, the positions of Straseni and Ialoveni districts — adjacent to the Chisinau municipality — have improved, which can be explained by the agglomeration effect and their proximity to the economic center.

The lowest competitiveness level in 2023 was recorded by SMEs in the following districts: Cantemir (0.310) and Taraclia (0.348) in the southern region, Floresti (0.357) and Edinet (0.391) in the northern region. These areas are characterized by less favorable conditions for business development, limited by access to infrastructure and financial resources, and the Cantemir and Taraclia are prone to drought and water deficiency. The most significant declines in the competitiveness of SMEs in 2023 compared to 2019 were recorded in the following districts: Leova (-0.104), Briceni (-0.087), Cimislia (-0.086), Singerei (-0.066), Stefan Voda (-0.054), Hincesti (-0.052).

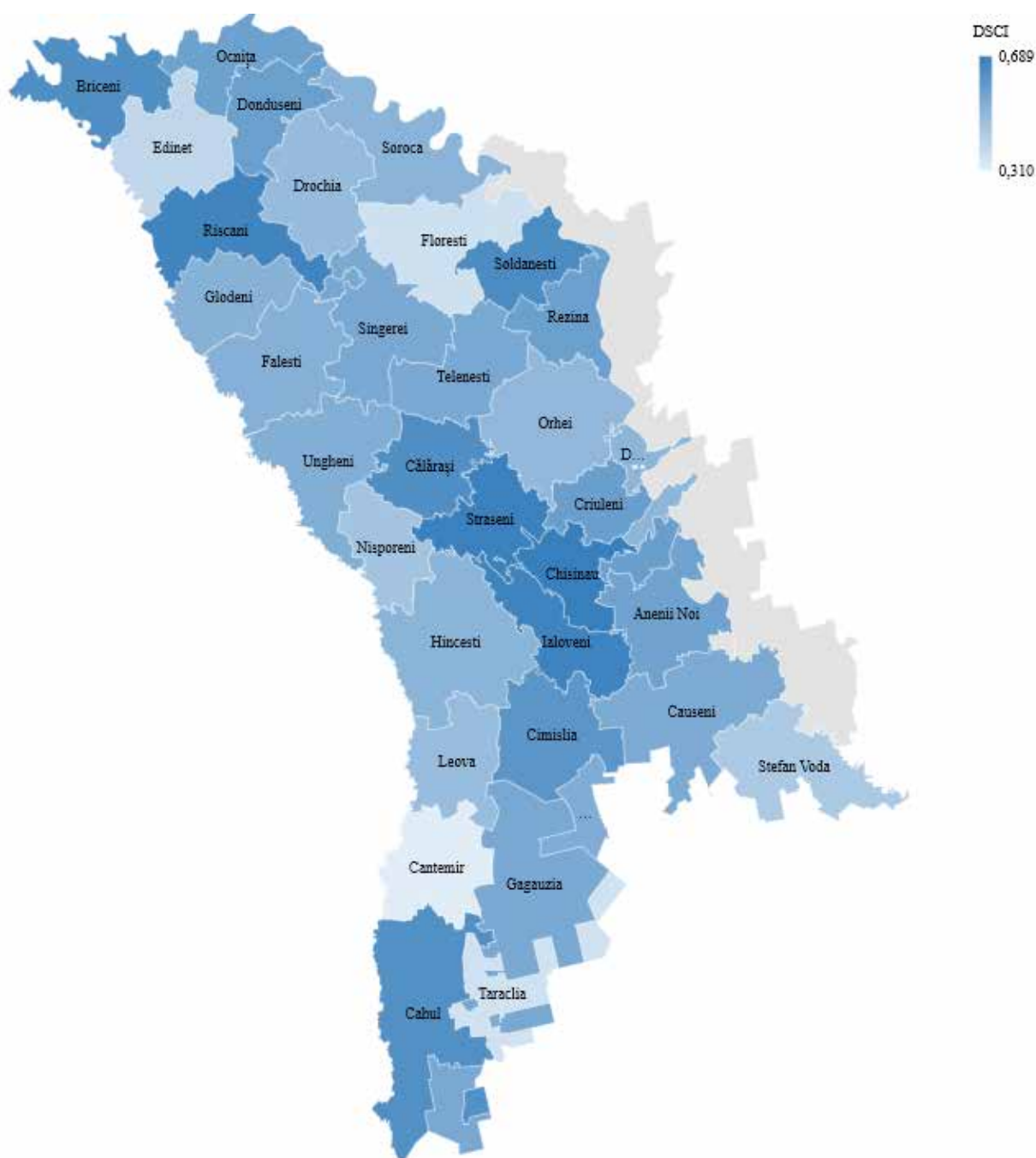


Fig. 2. District SME Competitiveness Index in Moldova, 2023

Рис. 2. Индекс конкурентоспособности МСП по районам в Молдове, 2023 г.

The most negative effect of the pandemic manifested itself in the districts of Leova (DSCI decreased by 0.191) and Sîngerei (DSCI decreased by 0.111). However, if SMEs in the Leova district restored their pre-pandemic level of competitiveness in 2021, then SMEs in the Sîngerei district

could not restore the 2019 level. Based on the data presented in Tables 1 and 2, you can identify districts that were most significantly affected by the COVID-19 pandemic in 2020 and, at the same time, could not restore the level of SME competitiveness in 2021.

Таблица 1. Индекс конкурентоспособности МСП по районам, 2019 - 2023 гг.
Table 1. District SME Competitiveness Index, 2019-2023

District	2019	2020	2021	2022	2023
Balti	0.550	0.571	0.431	0.454	0.549
Briceni	0.726	0.775	0.579	0.625	0.638
Donduseni	0.399	0.344	0.379	0.554	0.581
Drochia	0.493	0.429	0.397	0.510	0.485
Edinet	0.391	0.394	0.374	0.442	0.391
Falesti	0.503	0.552	0.464	0.465	0.522
Floresti	0.323	0.301	0.310	0.388	0.357
Glodeni	0.557	0.623	0.536	0.587	0.520
Ocnita	0.476	0.560	0.533	0.632	0.575
Riscani	0.582	0.737	0.653	0.621	0.669
Singerei	0.614	0.503	0.531	0.580	0.548
Soroca	0.435	0.457	0.406	0.484	0.511
Chisinau	0.671	0.646	0.534	0.643	0.689
Anenii Noi	0.478	0.474	0.394	0.543	0.569
Calarasi	0.533	0.644	0.471	0.581	0.637
Criuleni	0.469	0.405	0.297	0.371	0.584
Dubasari	0.405	0.493	0.420	0.571	0.507
Hincesti	0.562	0.484	0.449	0.573	0.510
Ialoveni	0.568	0.566	0.456	0.591	0.674
Nisporeni	0.411	0.352	0.235	0.376	0.455
Orhei	0.479	0.498	0.388	0.482	0.496
Rezina	0.528	0.487	0.300	0.611	0.578
Straseni	0.505	0.498	0.494	0.629	0.681
Soldanesti	0.665	0.596	0.558	0.654	0.648
Telenesti	0.376	0.317	0.425	0.500	0.549
Ungheni	0.478	0.411	0.392	0.399	0.530
Basarabasca	0.349	0.371	0.522	0.532	0.534
Cahul	0.469	0.554	0.604	0.590	0.633
Cantemir	0.355	0.299	0.579	0.310	0.310
Causeni	0.503	0.431	0.451	0.485	0.542
Cimislia	0.700	0.634	0.593	0.634	0.614
Leova	0.583	0.392	0.600	0.597	0.479
Stefan Voda	0.489	0.402	0.422	0.477	0.435
Taraclia	0.263	0.350	0.363	0.434	0.348
Gagauzia	0.472	0.492	0.506	0.588	0.550

Таблица 2. Рейтинг районов по индексу конкурентоспособности МСП, 2019 - 2023 гг.
Table 2. Ranking of districts by the SME Competitiveness Index, 2019-2023

District	2019	2020	2021	2022	2023
Chisinau	3	3	9	2	1
Straseni	14	14	14	5	2
Ialoveni	8	9	17	10	3
Riscani	7	2	1	7	4
Soldanesti	4	7	7	1	5
Briceni	1	1	5	6	6
Calarasi	12	4	15	14	7
Cahul	24	11	2	11	8
Cimislia	2	5	4	3	9
Criuleni	25	25	34	34	10
Donduseni	29	32	29	18	11
Rezina	13	18	33	8	12
Ocnita	22	10	10	4	13
Anenii Noi	20	20	26	19	14
Gagauzia	23	17	13	12	15
Balti	11	8	20	28	16
Telenesti	31	33	21	22	17
Singerei	5	13	11	15	18
Causeni	16	22	18	23	19
Basarabeasca	33	29	12	20	20
Ungheni	21	24	27	31	21
Falesti	15	12	16	27	22
Glodeni	10	6	8	13	23
Soroca	26	21	24	24	24
Hincesti	9	19	19	16	25
Dubasari	28	16	23	17	26
Orhei	19	15	28	25	27
Drochia	17	23	25	21	28
Leova	6	28	3	9	29
Nisporeni	27	30	35	33	30
Stefan Voda	18	26	22	26	31
Edinet	30	27	30	29	32
Floresti	34	34	32	32	33
Taraclia	35	31	31	30	34
Cantemir	32	35	6	35	35

The competitiveness of SMEs in the Rezina district decreased in 2021 compared to 2019 by 0.228, in the Nisporeni district by 0.176, and in the Criuleni district by 0.172. As a result, their rankings dropped to the following positions in 2021: Rezina (33rd), Criuleni (34th), and Nisporeni (35th). Thus, these districts should be paid special attention in forming a policy of support and restoration of the economy after a pandemic or other shocks.

CONCLUSION

Using the District SME Competitiveness Index highlights the instability of business conditions caused by various external factors. Significant differences in the competitiveness of SMEs are due to infrastructure, economic, and administrative factors. The highest level of competitiveness is observed in the central areas adjacent to the capital of Moldova, as well as in some of the northern districts (Riscani, Briceni) and some of the southern districts (Cahul, Cimislia).

Most SMEs are in the capital of Moldova, in the municipality of Chisinau (60.2% in 2023). An essential factor in the competitiveness of SMEs is the territorial proximity to large economic centers, such as Chisinau. It emphasizes the need for further regional infrastructure development and improving business conditions in the country's peripheral areas.

The results of this study confirm the relevance of the developed index and the need for regular use. This index allows you to identify problem areas and form a directed policy of supporting and stimulating the development of SMEs in different districts. Based on the analysis, it is recommended to pay special attention to areas with a low level of competitiveness (Cantemir, Taraclia, Floresti, Edinet, Stefan Voda, and Nisporeni). It is necessary to develop special business support programs for these districts, including access to financing, improving infrastructure, and information support for entrepreneurship.

CONTRIBUTION OF THE AUTHOR

Tatiana G. Gutium – the concept, collection and analysis of information, preparation and editing of the text.

ВКЛАД АВТОРА

Т.Г. Гутюм – концепция, сбор и анализ информации, подготовка и редактирование текста.

CONFLICT OF INTERESTS

The author declares no relevant conflict of interests.

КОНФЛИКТ ИНТЕРЕСОВ

Автор заявляет об отсутствии конфликта интересов.

REFERENCES

1. National Bureau of Statistics of the Republic of Moldova. 2024. Entrepreneurship. https://statistica.gov.md/en/statistic_indicator_details/22
2. Damanik M.J.R., Aisyah N. The Effect of Product Innovation and Entrepreneurial Marketing on SME Competitive Advantage. *Golden Ratio of Data in Summary*. 2024;4(2):1010–1016. <https://doi.org/10.52970/grdis.v4i2.739>

3. Meier A., Eller R., Peters M. Creating competitiveness in incumbent small- and medium-sized enterprises: A revised perspective on digital transformation. *Journal of Business Research*. 2025;186:115028. <https://doi.org/10.1016/j.jbusres.2024.115028>
4. Sari S.A., Ahmad N.H. Enhancing Competitiveness of Small Medium-sized Enterprises during the Post-Pandemic through Intellectual Capital and Technology Capabilities. *Global Business Review*. 2025;1. <https://doi.org/10.1177/09721509241301147>
5. Gutium T., Speian O. Access to finance by Moldovan small and medium enterprises: main obstacles and solutions. *The Journal Contemporary Economy*. 2022;7(3):97–108.
6. Abad-Segura E., Castillo-Díaz F.J., Batlles-de-laFuente A., Belmonte-Ureña L.J. Enhancing competitiveness and sustainability in Spanish agriculture: The role of technological innovation and corporate social responsibility. *Business Strategy and Development*. 2024;7(4):e70021. <https://doi.org/10.1002/bsd2.70021>
7. AlKhars M., Masoud M., AlNasser A., Alsubaie M. Sustainable practices and firm competitiveness: an empirical analysis of the Saudi Arabian energy sector. *Discover Sustainability*. 2024;5:146. <https://doi.org/10.1007/s43621-024-00347-7>
8. Kovačić S., Cimbalević M., Pavluković V., Jovanović S. Exploring tourism competitiveness in developing economies: residents' perspective. *Discover Sustainability*. 2024;5:201. <https://doi.org/10.1007/s43621-024-00416-x>
9. Inegbedion H., Thikan P., David J., Ajani J., Peter F. Small and medium enterprise (SME) competitiveness and employment creation: the mediating role of SME growth. *Humanities and social sciences communications*. 2024;11:11. <https://doi.org/10.1057/s41599-023-02434-y>
10. Ismail M., Haeruddin M., Sahabuddin R., Aslam A., Hamka R., Hasdiansa I. SMEs Competitiveness on Market and Resource Based Integration. *Quality - Access to Success*. 2023;24(195):197–203. <https://doi.org/10.47750/QAS/24.195.23>
11. Gutium T. Competitivitatea bunurilor autohtone pe piața internă și piețele externe. Creșterea economică calitativă: aspecte teoretice și practice. Chișinău: ASEM, 2014:131–138. (In Romanian).
12. Abdul Rahman A.A., Chong P.L., Ong T.S., Teh B.H., Ong T.C. Business network and balanced scorecard: an analysis of small and medium enterprises in Malaysia. *Arab Gulf Journal of Scientific Research*. 2024;42(3):621–635. <https://doi.org/10.1108/AGJSR-10-2022-0218>
13. Fang T.M., Ahmad N.H., Halim H.A., Iqbal Q., Ramayah T. Pathway towards SME competitiveness: Digital capability and digital business model innovation. *Technology in Society*. 2024;79:102728. <https://doi.org/10.1016/j.techsoc.2024.102728>
14. Jaaffar A.H., Abd Majid N., Kasavan S., Isa A., Alwi M.N.R., Zahari A.R. The effect of innovative mindset and behavior on innovation performance and competitive advantage: a case of halal SMEs owner-managers from Malaysian energy-intensive industry. *Journal of Innovation and Entrepreneurship*. 2024;13(1). <https://doi.org/10.1186/s13731-023-00359-z>

INFORMATION ABOUT THE AUTHOR

Tatiana G. Gutium, Doctor of Economic Sciences, Associate Professor, Leading Scientific Researcher, National Institute of Economic Research, Academy of Economic Studies of Moldova, Chisinau, Republic of Moldova; ORCID: <https://orcid.org/0000-0002-8884-3269>, Scopus ID: 55769213600, Web of Science Researcher ID: AAN-2569-2021; e-mail: gutium.tatiana@ase.md

ИНФОРМАЦИЯ ОБ АВТОРЕ

Татьяна Георгиевна Гутюм, кандидат экономических наук, доцент, ведущий научный сотрудник, Национальный Институт Экономических Исследований, Академия экономического образования Молдовы, Кишинёв, Республика Молдова; ORCID: <https://orcid.org/0000-0002-8884-3269>, Scopus ID: 55769213600, Web of Science Researcher ID: AAN-2569-2021; e-mail: gutium.tatiana@ase.md

Received / Поступила 18.03.2025

Accepted / Принята 09.04.2025