

## APPLICABILITY OF THEORIES OF COMPETITIVE ADVANTAGE FOR ENTERPRISES FROM GAGAUZ REGION

**Ph.D. Student, Svetlana ZLATOVA**

Comrat State University, Republic of Moldova

E-mail: svetlanazlatova@mail.ru

**Abstract.** *In the context of increasing global competition, companies in the Gagauzia Autonomous Region of the Republic of Moldova are faced with the need to identify sustainable sources of competitive advantage, given that the impact of innovation, recognized as a key factor of regional development and sustainable competitiveness, on regional competitiveness is manifested through a number of indirect channels, such as infrastructure, human capital and institutional interactions. However, methodological challenges, lack of consistency and strategic fragmentation remain pressing, and the application of modern methods for assessing the impact of innovation on the competitive advantage of the region presents a complex methodological challenge due to the multidimensionality of indicators, the time lag between implementation and impact, the institutional characteristics of the regions and the specificity of the approaches used. The article presents an analysis of the region's positioning in the innovation coordinate system and the applicability of innovation activity assessment systems and modern theories of enterprise competitive advantage.*

**Keywords:** *theories, competitive advantage, enterprises, global competition, Gagauzia.*

**JEL Classification:** *Q1, R1, H254.*

### 1. Introduction

In the last two decades have been made various attempts to mechanically adapt and borrow Western European innovation strategies by Central and Eastern European countries, without proper localization. Eastern European countries, and especially Moldova and its autonomous region of Gagauzia, are characterized by active but still unstable attempts to form clusters, often with the participation of international donors and without sustainable internal synergy mechanisms.

In the academic literature, theories of regional competitive advantage and regional competitive advantage often overlap, but their focus and origins differ. Theories of regional competitive advantage focus on adapting general theories such as RBV, DCT, relational perspective, institutional theory and triple helix to the regional level and are applied to a focused analysis of regions as independent agents. Meanwhile, theories of regional competitive advantage, such as cluster theory, regional innovation systems (RIS), built advantage, smart specialization and agglomeration theories, are applied to a focused analysis of regions as independent agents and initially focus on regions as systems, examining the type of competitive advantage specific to regions as entities and explaining regional sources and mechanisms of competitiveness. For example, a comparative study of clustering and smart specialization strategies in Romania, Bulgaria and Moldova (Roman et al., 2022) highlights the dependence of many clusters on external financing (mainly EU funds). The authors conclude that while Romania has experienced successful localized practices (e.g. the IT cluster in Cluj-Napoca), clustering initiatives in Moldova are more often formal in nature and lack consistent signs of self-organization, competition and specialization.

Publications by moldovan researchers show that the Republic of Moldova offers fragmentary examples (the wine cluster, Tekwill, cluster initiatives in the forest fruit industry (Pomoşoarele Moldovei), the clothing industry (Din inima) and the tourism sector (Pomul vieţii)), but, overall, suffers from a lack of a mature market and cluster institutions, while a real innovative synergy and a sustainable cluster structure, as well as still unstable attempts to

form clusters, are created with the participation of international donors or exclusively through external support. Thus, I. Certan and E. Malcova analyze the potential for implementing innovative clusters in Moldova, identifying priority sectors (media, ICT, agri-food production) and emphasize the need to transition from an agricultural model to a clustering strategy based on scientific and technological foundations. A. Levitskaia, analyzing the current cluster formation policy in Gagauzia, emphasizes the unique institutional and territorial characteristics of Gagauzia and the importance of educational and innovative proximity between actors. T. Buyse et al. demonstrate a methodological framework for cluster identification using specialist assessments and cluster maturity indicators, based on qualitative mapping of clusters in the regions of Moldova (Center, South, Gagauzia) and a peer-reviewed expert evaluation methodology, based on an assessment of concentration, RDI, internationalization and cooperation. E. Benea Popușoi analyzes a real textile cluster as an environment for competitive cooperation, models of cooperation between firms, joint projects, export practices, problems of competitive interaction and deficiencies of cluster management, as well as the cluster's capacity for competitive cooperation within small enterprises. UNDP Blog 2024 presents real data from cases in Gagauzia: the case of the "Heart of the Nistru" tourism cluster (Košnița, Gagauzia), where in the period 2021-2024 the number of tourist attractions increased by over 50, and the turnover increased from 5 million to 30 million lei; the furniture cluster in Ungheni (southern Moldova) as a successful example of SME diversification; nine clusters supported by UNDP, certified according to the ESCA Bronze Label, are described. Babin A. et al. studying the need for dual use of cluster infrastructures, their role in digital transformation, SME internationalization and increasing resilience in times of crisis (COVID-19, the war in Ukraine), and considering universities as key elements for accessing global value chains and increasing competitiveness, highlights the role of clusters in increasing the resilience of businesses in the Republic of Moldova and international integration in times of crisis. Ilie's (2021) study focuses on the agro-industrial sector in southern Moldova, including Gagauzia.

The author raises the issue of the lack of horizontal linkages between agricultural research institutes, SMEs and universities, which hinders the development of innovation systems. Although the region has experienced isolated successful agricultural modernization projects (for example, within the framework of UNDP and IFAD programs), these are implemented in a fragmented manner and do not lead to a sustainable institutionalization of innovation.

## **2. Problem description**

Several studies from Central and Eastern European countries raise the issue of the uneven development of Regional Innovation Systems in countries with economies in transition (Lengyel and Leydesdorff, 2011). In 2022, the United Nations Economic Commission for Europe (UNECE) published the Innovation for Sustainable Development Review of Moldova, which examines the concept of RIS as a central element of sustainable development. The document provides an in-depth analysis of regional disparities and identifies systemic limitations of RIS in Moldova. It highlights extremely low levels of investment in research and development (less than 0.3% of GDP), the lack of technology transfer mechanisms and weak regional participation in innovation programs, the situation being particularly critical in the southern regions of the country, including Gagauzia, where sustainable scientific-industrial linkages are lacking (UNECE, 2022).

Additional methodological support for the assessment of the SIR in Moldova is provided by a series of JRC studies led by Hollanders (2017–2021), which included mapping the regional innovation potential. According to the analysis, Gagauzia has a low density of knowledge-based industries (less than 20), while significantly lagging behind Chisinau (over 60 industries). At the same time, the region's indicators are comparable to those of other central regions of the country, which allows Gagauzia to be considered an “innovative and promising” but “institutionally fragmented” region. Thus, the analysis demonstrates that innovation systems develop unevenly and face a number of institutional barriers: lack of coordination between stakeholders, weak regional research and development, and insufficient support for technology transfer. Gagauzia, as an example of a peripheral region, suffers from a lack of both infrastructure and human resources to develop a full-fledged regional innovation system. However, due to localized growth points, participation in international initiatives (Horizon Europe, Interreg, EIT) and donor support, the region can be considered a promising area for pilot implementation of RIS elements.

### **3. Review of the specialized literature**

Recent publications confirm that the theoretical construct of a regional innovation system is adapted and modeled in various countries, including those in Eastern Europe. However, Moldova and the autonomous region of Gagauzia remain in the early stages of RIS development: infrastructure is underdeveloped, interactions between universities, companies and government agencies are limited, and innovation potential is concentrated around the capital. Analyses of JRC (Hollanders) and UNECE datasets demonstrate the existence of potential, but its underutilization.

In Moldova, academic publications that directly address the application of the Built Advantage theory, which provides an analytical framework for active modeling of regional competitive advantages, including platform interactions between various types of knowledge and actors, are few. In Europe and Poland, examples of its application are formalized, while in Moldova and Gagauzia, it is implemented through pilot clusters and donor platforms, although it is not officially designated as such. In order to integrate built advantage into local regional policies, it is important to develop platforms (e.g., technology parks, educational centers), inter-sectoral spillovers, and institutional coordination. Thus, C. Morcan (2024) in the work “Moldova's Clusters: Key Drivers for Innovation and EU Integration”, on the Cluster Collaboration platform, emphasizes that the exchange of experience between Moldovan and European clusters (cluster exchange) is an important strategy for building regional advantage, and this is an example of a strategy characteristic of platform policy. The Cluster Mapping Report for the Republic of Moldova (EC SERV Report) presents ministerial and specialist analyses on cluster mapping, assessing the potential of the platform-based approach and building a regional advantage through inter-cluster and cross-sector links.

The 2024 European Commission report notes that Moldova is only at the initial stage of developing and implementing the Smart Specialization Concept (S3), which is an approach to regional innovation policy based on prioritizing sectors in which each region has the greatest growth potential, assuming that regions should identify and prioritize their strongest or most promising innovation, entrepreneurship and research activities, and emphasizes the need to implement a corresponding strategy and action plan. Thus, in the study conducted by H. Hollanders et al. (2024) S3 priority areas were identified for four regions: North, Center, South and Gagauzia, for which agriculture and food processing are common areas of

economic activity. Gagauzia also noted the potential in the field of textiles, biomedicine and electrical equipment. In the presentation of A. Topala (2020), Gagauzia's industrial clusters within the S3 framework were listed, in particular textiles, pharmaceuticals, wood processing, agro-processed products and others, and indicated the potential for creating clusters in these areas. E. Ilie (2021) notes that the implementation of S3 in Moldova is often demonstrated formally, resulting in the declarative nature of S3 activity in the context of a complete or partial absence of real mechanisms of interaction between the government and the business environment. This is especially characteristic of Gagauzia. The research of the JRC platform confirms that Gagauzia is among the regions with potential for S3, but in practice it requires specific institutional support, including coordination at the local level, i.e. local platforms, intersectoral coalitions and support. In addition, key recommendations for improving S3 capacity in Moldova and the Gagauz region include the need to develop a roadmap for S3 implementation based on the identified priorities (RIS mapping), strengthening the institutional capacity of the region (government, business environment and universities), adapting the Elite entrepreneurial discovery method by involving local actors, ensuring financing and establishing sustainable local S3 governance mechanisms.

To date, no publications have been found in the academic literature directly dedicated to the application of the Learning Regions theory in Moldova or Gagauzia. However, a number of authors have examined related aspects, especially in the fields of education, regional development and intersectoral collaboration. For example, Ebru Eren (2021) provides an analysis of educational policy in Gagauzia, highlighting the multilingual reality of the region, the role of identity and the need for adaptive approaches to education. H. Küçükler and A. Curdoglo (2021) examine changes in the language of instruction, highlighting the importance of multilingual education for social inclusion and sustainable development in the region. In addition, there is some evidence of educational initiatives that promote the development of learning regions through infrastructure and platform solutions. The EduLIFE Hub project, implemented by UNFPA and Orange Moldova, has created an innovative educational space for young people, as an example of action learning and intersectoral collaboration. The UNDP digital transformation project for 46 schools in Gagauzia is focused on strengthening the sustainability and quality of education, as a step towards a regional learning center. The EU4Moldova: Focal Regions (2024) initiative aims to train teachers in the regions in the application of AI and STEAM approaches, which is a step towards creating a modern educational environment that facilitates knowledge transfer. The Moldova Education Reform Project (2024)/MERP (2024) initiative aims to renovate schools, equip them with STEM laboratories and use smart boards and interactive equipment, all of which will transform educational institutions into regional learning centers. Thus, although there are few direct studies on Learning Regions in Moldova in the scientific literature, existing research, initiatives and educational projects in the field of education and coworking reflect elements of the concept, in particular the active implementation of innovative teaching methods, a platform for knowledge exchange and the gradual consolidation of the regional educational environment and can be considered empirical attempts to form elements of Learning Regions.

Although direct academic research on the application of the theory of institutional complementarity in Moldova and the Gagauzia region is lacking, there is indirect evidence in the analyses of the regional innovation system, and their regional implications are important and require rethinking. According to the JRC (Hollanders et al., 2021), Gagauzia has

approximately 20 industries with innovation potential comparable to that of the central regions, indicating institutional premises for complementarity at the regional level. However, according to Ilie (2021), only 13% of innovative firms collaborate with universities or research institutes, indicating weak horizontal institutions - and, consequently, low complementarity. Thus, at the regional level, institutional complementarity manifests itself through: coordinating horizontal links between universities, companies and government; vertical links between regional and national institutions; creating platforms for the exchange of experience (e.g. Interreg); and initiating institutional networking as the main source of innovative potential. For Gagauzia and Moldova, an important task is to strengthen these links through educational, research and clustering initiatives, taking into account the principles of inter-level networking and coordination.

One of the most influential approaches, which has had a significant impact on strategic management and competitive analysis, is the Resource-Based View (RBV) theory (Barney, 1991, Wernerfelt, 1984), which focuses on a firm's resources as sources of sustainable competitive advantage and organizational capability. European research adapts the RBV to innovative contexts, emphasizing the role of intellectual capital and organizational competencies, demonstrating how research and development, knowledge, and organizational processes enhance competitiveness.

Dynamic Capabilities Theory (DCT) (Teece, Pisano and Shuen, 1997) provides an extension of the resource-based view (RBV),

The Relational View Theory (Dyer & Singh, 1998) postulates that sustainable competitive advantage can be formed not only within a firm, but also through relationships with external partners (suppliers, customers and allies) as a result of interorganizational networks and alliances in which rents are created through interactions. Eastern European countries are increasingly applying bottom-up logics, focused on long-term partnerships, specialized sectors and sustainable economic transformation through relational assets. Countries new to innovation policy are successfully adapting the R&D approach through EIT, Horizon and Interreg. A key challenge remains the capacity of regions to maintain sustainable partnerships and develop local innovation ecosystems. Moldova is actively developing relational links through the Tekwill and EU4Innovation/StartupCityCahul programs - projects are carried out with the participation of universities, businesses and the general public, including in the regions (Cahul, Balti). The specifics of the relational approach in the Gagauz region include triple and quadruple partnerships (university→local business→donors→public), as well as knowledge localization (creation of training courses, IT schools with the support of Tekwill and ATIC) and regional internationalization through the participation of the region in cross-border projects through Interreg Black Sea and CBC-UA-MD.

The concept of Institutional Complementarity proposed by Hall, P. A., & Soskice, D. (2001), which emphasizes synergies between institutions, intellectual property and human capital, is applicable to European SMEs, especially in peripheral regions. European researchers demonstrate how the combination of open resources (CBV) can provide a competitive advantage even without unique assets (Bruno Amable (2000, 2016), Hall & Gingerich (2009), Deeg (2005).

The Composition Based View (CBV) theory proposed by Luo & Child (2015), which explains the growth of firms without unique resources that create competitive advantages by creatively combining open resources and integrating external components (knowledge,

technology, services), as well as the Triple Helix theory of Etzkowitz & Leydesdorff (2000), which emphasizes the integration, co-evolution and co-creation of new knowledge and technologies in innovation policy practice, have served as the basis for more comprehensive models.

The Quadruple Helix and Quintuple Helix theories developed by Carayannis & Campbell (2010, 2012) develop the Triple Helix model by adding new dimensions: civil society and the natural environment, involving not only universities, businesses and government in innovation processes, but also NGOs, media and environmental factors. The theory was elaborated and further developed in the work of Nicolescu and Popa (2017) in their study on the role of universities in shaping regional ESG sustainability.

Our study used innovation assessment systems (EUROSTAT/Community Innovation Survey (CIS), OECD-Oslo Manual (2018), OECD - MSTI/STI Indicators, European Innovation Scoreboard (EIS), Regional Innovation Scoreboard (RIS), JRC - Methodological Support for Neighboring Countries (Moldova), UNECE - Innovation for Sustainable Development Review (Moldova), a set of analytical and methodological documents of the Innovation for Sustainable Development Review initiative (I4SDR, 2022), Roadmap on Innovation and Technology Transfer for Moldova (2022), capacity-building research, and Interim Sub-regional Innovation Policy Outlook (IIPO, 2023), which provided a comparative analysis of development dynamics and identified opportunities to take into account the specifics of territorial units, including Gagauzia. This document expanded the context of strategic planning, allowing the integration of international best practices into local models and the adjustment of priorities taking into account the resource, institutional and socio-cultural characteristics of the region. Thus, the combination of these documents and tools formed a comprehensive cycle of innovative development management - from analytical to diagnostic to practical implementation and adaptation of strategies, which is especially important for Gagauzia in the context of the need for accelerated economic diversification and increased competitiveness within the framework of the SDG 2030.

#### **4. Methodology and data sources**

The analysis of innovation activity in Gagauzia was carried out using key indicators - the number of innovative enterprises, their activity profile and their share in the total business environment of the region.

Share of innovative enterprises in the region. According to official statistics\* from the statistical survey on innovation activity for the period 2017–2022 (National Statistics, NBS) and the European Innovation Scoreboard 2025, the "Innovative Enterprises" component for 2022 of the EU Commission for the period 2021–2022, approximately 17.4% of enterprises in Gagauzia are innovative, below the national average of 18.2%. In Chisinau, this figure is 18.8%, in the north - 19%, and in the south - 22.3%. In 2019–2020, the share of innovative enterprises was 12.6%, and in 2017–2018 the highest share was recorded - 18%, which may reflect the effort of the first years of active implementation of innovation. In Moldova, the value of the indicator has been constantly decreasing from 18% in 2017-2018, 12.6% in 2019-2020, 11.4% in 2021-2022 and 10.6% in 2022-2024. Regarding the number and distribution of enterprises, according to the report of the General Department for Economic Development of the Executive Committee of the Gagauz Autonomy (GDER, 2023), there are 7141 registered enterprises in Gagauzia, of which 2828 are legal entities, 3564 are individual entrepreneurs, and SMEs constitute 99% of the total number in the region.

Although sectoral data are not fully disaggregated for Gagauzia, data on the sectoral distribution of innovative enterprises (according to the Statistical Classification of Economic Activities in the European Community CAEN Rev.2) and the dynamics of the number and structure of innovative enterprises demonstrate some general trends according to which: (1) manufacturing represents the largest sector of innovative activity – approximately 46.2% of the total number of innovative firms in Moldova, where 89.8% of the total number of innovative enterprises are small and medium-sized enterprises; (2) there is a tendency towards a decrease in the total number of innovative enterprises, which indicates structural limitations in the national innovation system, mainly related to limited access of enterprises to financing and weak integration between science and business; (3) in the distribution of innovative firms by size of employees, small enterprises (10-49 employees) predominate, which indicates the dominance of small firms in the innovation sector, typical of economies with limited industrial potential and highly fragmented markets; (4) the ratio of innovation activity in industry and services remains relatively equal, although regional differences are significant. In Gagauzia and the southern regions, manufacturing enterprises show higher innovation activity (up to 78% of innovative enterprises), while in Chisinau, the service sector is the leader (about 62%), reflecting regional specializations, especially agro-processing and winemaking in the south, and IT and financial and business services in the capital; (5) regional differences are also evident in the size structure of enterprises, thus, in Gagauzia, small enterprises dominate among innovative firms (63-68%), indicating a lack of diversified production and limited resources for large-scale innovative investments, which contrasts with the center and the capital, where the share of medium and large enterprises is higher due to the concentration of industrial complexes and IT companies.

## 5. Results

The regional profile of innovation activity demonstrates duality. On the one hand, innovation relies heavily on small businesses with limited scalability, and on the other hand, small businesses are important drivers of the adaptation of new technologies in niche segments. For Gagauzia, this requires institutional support for small and medium-sized businesses, including grant and credit mechanisms, as well as the development of cooperative formats (clusters, technology parks) that could compensate for the lack of large innovative players. Volumes and structure of innovation costs by types of innovation activities are presented in table 1.

**Table 1. Volumes of innovation expenditures among the regions of the Republic of Moldova, million lei**

| Regions   | Total | including by regions              |      |                                                  |                                   |                             |
|-----------|-------|-----------------------------------|------|--------------------------------------------------|-----------------------------------|-----------------------------|
|           |       | Research and internal development |      | Acquisition of machinery, equipment and software | Acquisition of external knowledge | Other innovation activities |
| 2022-2024 | 1190  | 120                               | 40   | 780                                              | 110                               | 140                         |
| 2022      |       |                                   |      |                                                  |                                   |                             |
| Total     | 759,0 | 93,7                              | 80,7 | 409,7                                            | 18,3                              | 156,7                       |
| Chisinau  | 565,5 | 33,5                              | 79,9 | 291,0                                            | 16,5                              | 144,7                       |
| North     | 44,9  | 19,8                              | 0,2  | 24,0                                             | 0,8                               | 0,1                         |

|              |       |       |      |       |      |      |
|--------------|-------|-------|------|-------|------|------|
| Center       | 117,9 | 40,1  | 0,4  | 65,4  | 1,0  | 11,0 |
| South        | 14,2  | 0,2   | 0,1  | 13,7  | 0,1  | 0,2  |
| UTA Gagauzia | 16,6  | 0,2   | 0,0  | 15,6  | 0,0  | 0,8  |
| 2019-2020    |       |       |      |       |      |      |
| Total        | 867,4 | 168,4 | 35,7 | 633,7 | 10,1 | 19,5 |
| Chisinau     | 609,0 | 119,8 | 24,9 | 446,6 | 6,3  | 11,4 |
| North        | 95,6  | 24,1  | 10,0 | 56,6  | 0,8  | 4,1  |
| Center       | 132,4 | 21,0  | 0,7  | 103,8 | 2,9  | 4,0  |
| South        | 24,7  | 3,5   | 0,1  | 21,0  | 0,1  | 0,0  |
| UTA Gagauzia | 5,7   | -     | -    | 5,7   | -    | -    |
| 2017-2018    |       |       |      |       |      |      |
| Total        | 828,6 | 185,5 | 21,3 | 540,8 | 8,1  | 72,9 |
| Chisinau     | 346,3 | 58,1  | 18,9 | 202,7 | 7,2  | 59,4 |
| North        | 306,4 | 58,8  | 2,1  | 244,8 | 0,2  | 0,5  |
| Center       | 107,5 | 41,1  | 0,3  | 62,9  | 0,5  | 2,7  |
| South        | 47,6  | 27,0  | -    | 20,4  | 0,2  | -    |
| UTA Gagauzia | 20,8  | 0,5   | -    | 10,0  | -    | 10,3 |

Source: elaborated by the author based on NBS data

The data presented in Table no. 1 reveal significant differences in the structure and volume of innovation expenditures between the regions of Moldova for the period 2017–2022, including ATU Gagauzia. Thus, total expenditures for innovation activities in the country decreased from 867.4 million lei in 2020 to 759.0 million in 2022, reflecting a general decline in investment activity in innovation. In 2017–2018, the Gagauzia region allocated 20.8 million lei for innovation, a significant share of which was allocated to the purchase of equipment (10.0 million) and “other innovative activities” (10.3 million). In 2020, there was a sharp decrease to 5.7 million lei, without investments in research and development or external development, probably due to a weak scientific and technological base and limited resources. In 2022, the volume of investments increased to 16.6 million lei, but the structure remained extremely unbalanced: almost 94% of the funds were spent on the purchase of equipment and software, indicating a technological catch-up rather than internal development. At the same time, the data reveal some structural differences between regions, for example, internal research and development is actively developing in Chisinau and the center, but is almost non-existent in Gagauzia and the south. Gagauzia had extremely low expenditures in 2020, but in 2022 they increased from 5.7 to 16.6 million lei, mainly due to the modernization of equipment, which may indicate local modernization programs. Expenditures on the acquisition of external knowledge (licenses, patents) remain extremely low in all regions, indicating weak integration into international technological chains. External research and development is minimal throughout the country, except for certain periods in Chisinau and the north. The acquisition of machinery, equipment and software is the main expenditure in most regions, reflecting the focus of enterprises on technological innovation. The acquisition of external knowledge (purchase of patents, licenses and know-how) has a very small share, especially in Gagauzia, limiting the rapid adoption of modern technologies.

Thus, the specific structure and volume of innovation spending in the regions of the country allow drawing certain conclusions regarding the need to stimulate the growth of innovation spending in regions outside the capital through targeted grants, tax incentives and

support for technology transfer, which is also valid for regional policy in Gagauzia. Specifically, a regional innovation strategy should include the development of domestic research and development, at least at the level of small-scale applied research in the agricultural, winemaking and renewable energy sectors. Participation in technology transfer programs and cooperation with universities in the Republic of Moldova and abroad should also be intensified. In addition, the high share of equipment spending should be accompanied by parallel skills development, so that investments in technology are transformed into productivity growth and the production of innovative products. Thus, for Gagauzia it is important to continue the program of modernization of its production base, complementing it with measures to develop its own R&D skills and attract external knowledge, while for the southern region as a whole it is important to develop clusters around agri-food and energy technologies, taking into account the following trends:

- Decrease in domestic R&D spending. In almost all regions, including Ceadir-Lunga and Comrat, domestic R&D decreased between 2017–2018 and 2022. The decrease was particularly significant in Chisinau (from 58.1 million to 33.5 million lei) and the North (from 58.8 to 19.8 million lei). This may reflect a decrease in investment activity, a lack of personnel and a reallocation of resources towards the acquisition of ready-to-use technologies.

- A sharp increase in external R&D in 2022. After moderate levels in 2017–2020, a sharp increase in external R&D was observed in 2022 (from 35.7 to 80.7 million lei nationally). Chisinau had the largest contribution (79.9 million lei). However, in Gagauzia, this indicator remained at zero, indicating weak interaction with external research organizations and low integration into international projects.

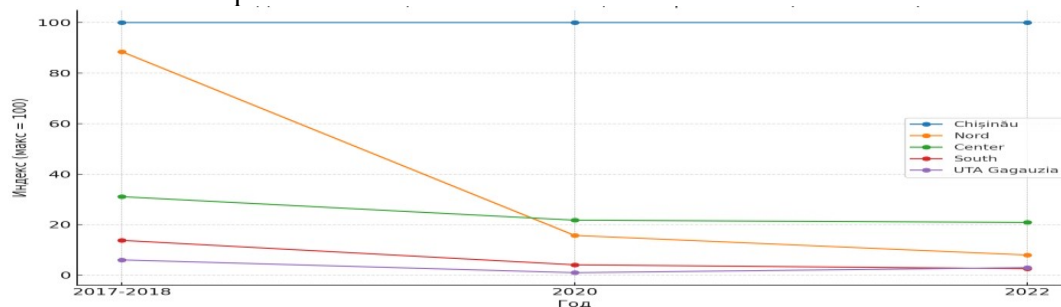
- Procurement of equipment and software is a key priority. Throughout the entire period, the largest expenditure on innovation was the purchase of machinery, equipment and software. In 2020, a peak was recorded (633.7 million lei nationwide), but by 2022, spending had decreased to 409.7 million. Gagauzia, however, demonstrated an increase (from 5.7 million in 2020 to 15.6 million in 2022), which may indicate technological modernization of individual enterprises in the region.

- A sharp contrast between regions. Chisinau consistently holds the vast majority of innovation spending (over 70% in each category), while the share of Gagauzia, the South and the North regions remains minimal. This confirms the centralization of innovation activity in the capital.

The implications for Gagauzia include the following: (i) low levels of internal and external research and development require the creation of incentive programs and support for scientific partnerships; (ii) increased investments in equipment should be complemented by staff training and the introduction of new business models so that technology is used efficiently; (iii) regional programs for external research and development should be developed, including technology transfer through cooperation with universities and foreign partners.

Analysis of the innovation investment index by region for the period 2017–2022, according to the data in Figure 1, revealed significant territorial disparities. Chisinau remains the leader in the analyzed period, due to the concentration of national research and development centers, a significant share of companies with internal research and access to external sources of innovation financing. Despite a moderate decline in the index after its peak in 2020, the capital maintains its dominant position due to the developed infrastructure supporting startups and the influx of qualified personnel. The North region in 2017–2018

demonstrated high innovation activity, but after 2018 a decline was observed, probably due to the decrease in industrial production and weakening cooperation with external partners. The Central region is characterized by a relative stability of the index values, which may be due to a robust but limited segment of agri-food processing and a low level of diversification of innovation sectors. The South, and especially the Gagauzia Autonomous Region, have significantly lower scores. In 2020, Gagauzia recorded a sharp decline in innovation activity (nearly zero in several areas, such as domestic and foreign research and development), reflecting the region's high dependence on external factors, including COVID-19 and the decline in foreign demand for agricultural products. The recovery in 2022 remains partial and is mainly due to investments in equipment and software upgrades, rather than long-term research and development.



**Figure 1. Dynamics of the innovation investment index in the Gagauzia Autonomous Region and other regions of the Republic of Moldova**

Source: developed by the author

In the period 2023–2024, Gagauzia was not classified as an innovation-active region according to international or national classifications. This is confirmed by the European classification (JRC EC/RIS3 Mapping Moldova), according to which Gagauzia corresponds to regions with low or moderate innovation activity. In the report of the European Commission, JRC (2021), Gagauzia is not included in the list of priority or innovation-active areas. Table no. 2 presents the distribution of enterprises in Gagauzia by type of innovation: product, process and organizational/marketing.

**Table 2. Distribution of enterprises in ATU Gagauzia by type of innovation, 2022**

| Type of innovation            | Number of enterprises | Share, %                                       |           |
|-------------------------------|-----------------------|------------------------------------------------|-----------|
|                               |                       | ATU Găgăuzia                                   | Moldova   |
| Total enterprises             | 7 141                 |                                                |           |
| Active innovative enterprises | 1 243                 | 17.4 of total enterprises                      | 18,2–22,3 |
| SMEs in innovative firms      |                       | 89.8 of total innovative firms                 |           |
| Technological innovations     |                       | < 6                                            | 8–11      |
| (product + process)           | 415                   | 5.8 (national average ~8) of total enterprises |           |
| Product innovations           | 357                   | 5.0 of total enterprises                       |           |
| Process innovations           | 707                   | 9.9 of total enterprises                       |           |
| Organizational/marketing      | 59                    | 14.3 of total innovative product               | >20       |

|                             |     |                                              |  |
|-----------------------------|-----|----------------------------------------------|--|
| ng                          |     | enterprises                                  |  |
| New products for the market | 296 | 71.4 of total innovative product enterprises |  |

Source: elaborated by the author based on NBS and JRC EC data (2023)

According to the Smart Specialization Strategy (S3/RIS3) Moldova, innovation potential has been identified in areas such as Chisinau, Balti and northern Moldova, but Gagauzia is referred to as a “low innovation region” with limited growth drivers. The reasons why Gagauzia is not classified as an innovation hub include: (i) limited R&D structures and the absence of strong universities with applied laboratories; (ii) low funding for innovation, including from state programs or the Horizon Europe program; (iii) focus on traditional industries: winemaking, textiles, agricultural raw materials – with a low level of digitalization and technology; (iv) weak integration into global innovation chains.

**Table 3. Share of enterprises by type of innovation and region, 2023, %**

| Region   | Active innovative enterprises | Technological innovation (product/process) | Organizational and marketing innovations | Market novelty |
|----------|-------------------------------|--------------------------------------------|------------------------------------------|----------------|
| Gagauzia | 17.4 (low level)              | 5,8                                        | 9,9                                      | 14,3           |
| Chisinau | 18.8 (medium level)           | 10,2                                       | 12,4                                     | 21,2           |
| North    | 19 (medium level)             | 8,5                                        | 11,3                                     | 18,4           |
| South    | 22.3 (high level)             | 9,8                                        | 13,6                                     | 22,5           |
| Center   | 20.1 (medium level)           | 9                                          | 12                                       | 20             |

Source: elaborated by the author based on NBS and JRC EC data (2023)

According to the data in table no. 3, Gagauzia shows a stable but moderate growth in the share of innovative enterprises (from 12.5% in 2017 to 17.4% in 2023). Organizational and marketing innovations are the most common (about 10%). The share of technological innovation remains low compared to other regions of Moldova, due to a weak technological base, low levels of research and development and limited market diversification. However, Gagauzia has demonstrated a gradual increase in participation in innovation initiatives, such as GAMCON, UNDP and ADA projects, hackathons and agro-innovation initiatives involving students from the University of Comrat. Thus, the low level of innovation activity in Gagauzia is characterized by the following indicators: less than 18% of firms are involved in innovation, with technological innovation (product/process) being half that of the more developed regions of the country; new products are particularly rare, reflecting the low level of external technological disruption; small and medium-sized enterprises dominate among innovative enterprises, but their activity is mainly local and focused on improving internal processes and marketing.

Thus, the data of our study show that the innovation profile of Gagauzia remains focused on capital-intensive and low-knowledge, strongly biased towards material investments (equipment), with a very weak development of its own research and development, technology transfer and knowledge acquisition. The emphasis is on equipment modernization, rather than internal research and technology transfer. Equipment acquisition remains the main driver of innovation, while investments in internal research and

development remain extremely low. The insufficient development of external channels of technology transfer (external research and development, knowledge acquisition) limits the region's ability to achieve technological progress. A positive sign is the increase in spending in Gagauzia in 2022, which may indicate the beginning of the formation of a local innovation infrastructure; however, this trend requires specific support. In this regard, Gagauzia, like the entire southern region, requires specific support through grant and voucher programs, the development of technology transfer centers, and the active involvement of the diaspora in investment projects. This contrasts with Chisinau, where it makes sense to strengthen the role of the city as an engine of technology transfer to the regions; the North, where it is necessary to restore cooperation chains with industrial and agri-food processing enterprises and strengthen ties with scientific institutions; and the Center, where it is necessary to expand the range of innovative industries through the digitalization of the agricultural sector.

The Economic Monitor of the German Economic Group (GET) shows that Gagauzia is a significant economic entity within Moldova, even if its economic indicators are the lowest in the country. A comparative analysis of key indicators of innovation and entrepreneurial activity between Gagauzia (UTAG), the Republic of Moldova and the European Union would help to identify the specifics of regional development and to assess the prospects for integration into the European innovation space. For this purpose, we have supplemented the table developed by GET (table no. 4) with the estimated data for the Gagauzia region.

**Table 4. Structural differences in innovation performance**

| Indicators                                                                  | Gagauzia*                     | MD     | EU   |
|-----------------------------------------------------------------------------|-------------------------------|--------|------|
| <b>Performance and structure of the economy</b>                             |                               |        |      |
| Herfindahl-Hirschman Index of non-EU imports of high-tech goods (2022-2024) | 0,34                          | 0,22   | 0,20 |
| Herfindahl-Hirschman Index of Imports by Country                            | 0,2914                        |        |      |
| Herfindahl-Hirschman Index of Imports by Country                            | 0,3322                        |        |      |
| HHI Index for Imports by Product Group                                      | 0,1293                        |        |      |
| HHI index for exports by product groups                                     | 0,1805                        |        |      |
| GDP per capita (2022-2024 average)                                          | (2022)<br>€2 900              | N/A    | 100  |
| Average annual GDP growth (2022-2024 average)                               | est. -0,5% ()                 | N/A    | 0,8  |
| Employment share manufacturing (2022-2024 average)                          | est.16%<br>(agro-food sector) | N/A    | 15,6 |
| Employment share high and medium high-tech (2022-2024 average)              | 14% (est.)                    |        | 38,1 |
| Employment share services (2021-2024 average)                               | est. ≈ 68%*                   | ~35,5% | 40,2 |
| Employment share knowledge-intensive services (2022-2024 average)           | 8–12% (est.)                  | ~19%   | 28,5 |
| Turnover share SMEs (2018-2020 average)                                     | 40–45% (est.)                 | 45     | 12,6 |
| Turnover share large enterprises (2018-2020 average)                        | 45% (est.)                    | 45     | 49,6 |
| Foreign-controlled enterprises – share of value added (2018-2020 average)   | 10–14% (est.)                 | 18     | 13,3 |
| <b>Business and entrepreneurship</b>                                        |                               |        |      |
| FDI net inflows (2021-2023 average)                                         | 3,03% (est.)                  | 3      | 1    |

|                                                                            |                                                                  |         |       |
|----------------------------------------------------------------------------|------------------------------------------------------------------|---------|-------|
| Buyer sophistication (2015-17 average)                                     | 2,7–2,9 (est.)                                                   | 2,9     | 3,6   |
| Enterprise openness (2018-2020 average)                                    | 13,97%                                                           | 14,7%   | 9,5%  |
| Total Entrepreneurial activity (2022-2024 average)                         | est. 5–6%                                                        | 7       | 7,1   |
| Digital Intensity Index (2024)                                             | average score<br>4.3 ± 0.5 из 12;<br>est. 15 (below<br>national) | N/A     | 34,2  |
| Young high growth enterprises (2022)                                       | 0,5–1,0% (est.)                                                  | 0,8–1,2 | 0.8   |
| <b>Innovation profiles</b>                                                 |                                                                  |         |       |
| In-house product innovators with market novelties (2020)                   | 9,5                                                              | 12,2    | 11,7  |
| In-house product innovators without market novelties (2020)                | 12                                                               | 12,8    | 13,7  |
| In-house business process innovators (2020)                                | 15                                                               | 16,5    | 17,6  |
| Innovators that do not develop innovations themselves (2020)               | 7,0                                                              | 6,5     | 6,1   |
| Innovation active non-innovators (2020)                                    | 4,5                                                              | 4,1     | 4,2   |
| Non-innovators with potential to innovate (2020)                           | 19,5                                                             | 17,2    | 17,8  |
| Non-innovators without disposition to innovate (2020)                      | 32,5                                                             | 30,7    | 30,6  |
| HEU funding intensity per researcher (2022-2024 average)                   | 450–750                                                          | N/A     | 6194  |
| <b>Governance and policy frameworks</b>                                    |                                                                  |         |       |
| Rule of law (2021-23 average)                                              | est. –0,3 (same<br>as MD)                                        | –0,3    | 1     |
| Corruption Perceptions Index (2022-24 average)                             | est. 32 (below<br>MD ~33)                                        | N/A     | 63,3  |
| Basic-school entrepreneurial education and training (2022-24 average)      | -                                                                | N/A     | 2,4   |
| Innovation procurement as a share of total public procurement (2024)       | -                                                                | N/A     | 9,2   |
| <b>Environment</b>                                                         |                                                                  |         |       |
| Circular material use rate (2021-23 average)                               | -                                                                | N/A     | 11,5  |
| Greenhouse gas emissions intensity of energy consumption (2018-20 average) | -                                                                | N/A     | 82,8  |
| Eco-Innovation Index (2024)                                                | -                                                                | N/A     | 127,5 |
| <b>Demography</b>                                                          |                                                                  |         |       |
| Population size (2022-24 average, in millions)                             | 0,12 mln (2024<br>census 110 k)                                  | 2,5     | 447,7 |
| Average annual population growth (2022-24 average)                         | –2,8%                                                            | –2,8    | 0,4   |
| Population density (2022-24 average)                                       | est. 60 per km                                                   | N/A     | 109,1 |

Source: Developed by the author based on data from the European Innovation Scoreboard 2025, Moldova Country Profile

\* Calculated by the author. The National Bureau of Statistics of Moldova provides monthly and annual data on international trade for the entire Republic of Moldova. These reports reflect the total volume of exports and imports, as well as general trends, but do not provide a breakdown by regions, such as Gagauzia.

This extensive table reflects the structural differences between the Gagauzia region and the environments of the Republic of Moldova and the EU, allowing the assessment of the institutional and economic premises for the innovative development of the region in a comparative context. The table also captures the differences in four key areas: economic efficiency and structure, business and entrepreneurship, innovation profiles, governance and policies, as well as environmental and demographic parameters.

The data of our study indicates that the economy of Gagauzia region is characterized by a low level of diversification, a limited capacity for innovation and digitalization, as well as insufficient integration into European economic and research chains, but nevertheless there is a latent innovative potential. The arguments for this conclusion serve the indicators of innovators with novelties: 9.5% (below the MD and EU) and non-innovators without disposition: 32.5% (very high). Compared to the European Union average and, in many cases, even the national average, the region presents significant gaps in terms of productivity, employment structure and the quality of the institutional environment. These vulnerabilities are amplified by demographic decline and high dependence on concentrated imports, which indicates the need for strategic interventions aimed at economic diversification, human capital development and strengthening the innovation ecosystem through the complex application of theories of competitive advantage at regional level but adapted for analysis at the enterprise level.

## 6. Conclusions

The analysis confirms that the applicability of competitive advantage theories to enterprises in the Gagauzia region from Moldova depends on their adaptation to a specific regional context that is marked by limited innovation infrastructure, weak research and development capacity, low technology transfer, and strong dependence on material investments, particularly equipment modernization. While the region demonstrates certain latent advantages, including the dominance of SMEs, sectoral specialization in agri-food, winemaking and textiles and participation in donor-supported initiatives, these resources have not yet been transformed into a sustainable innovation ecosystem. The findings show that theories such as the resource-based view, dynamic capabilities, relational view, institutional complementarity, smart specialization and the helix models are relevant for explaining the current constraints and future opportunities of Gagauz enterprises, but their practical value depends on strengthening cooperation between business, universities, public authorities and external partners. Therefore, the formation of competitive advantage in Gagauzia region requires a shift from fragmented modernization toward coordinated regional innovation policy, investment in human capital, applied research, digitalization, technology transfer and cluster-based cooperation, enabling enterprises to move from technological catch-up to sustainable and knowledge-based competitiveness.

## References

1. Amable, B., 2000. Institutional Complementarity and Diversity of Social Systems of Innovation and Production. *Review of International Political Economy*, 7(4), pp.645–687.

2. Babin, A., Ciloci, R. and Davydenko, N., 2025. Perspectives of Sustainable Development of Cluster Organizations through Internationalization and Dual Use. *Smart Cities and Regional Development*, 9(3), pp.99–120.
3. Barney, J., 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), pp.99–120.
4. Benea-Popușoi, E., 2020. Clusters as an Environment of Competitive Collaboration: A Case Study in Moldova's Apparel Cluster. *Advances in Intelligent Systems and Computing*.
5. Buyse, T. et al., 2018. Cluster Mapping Report for the Republic of Moldova. European Commission (SERV Report). [https://www.serv.be/sites/default/files/documenten/Buyse\\_Cosnita\\_Cluster\\_Mapping\\_Moldova\\_Report.pdf](https://www.serv.be/sites/default/files/documenten/Buyse_Cosnita_Cluster_Mapping_Moldova_Report.pdf)
6. Buyse, T. et al., 2018. *Cluster Mapping Report for the Republic of Moldova* (EC SERV Report).
7. Carayannis, E.G. and Campbell, D.F.J., 2010. Triple Helix, Quadruple Helix and Quintuple Helix models of innovation. *Journal of Innovation and Entrepreneurship*.
8. Certan, I. and Malcova, E., 2013. The Perspective of Innovation Clusters. *Scientific Papers: Management, Economic Engineering in Agriculture and Rural Development*, 13(1), pp.65–70.
9. Deeg, R., 2005. *Change from Within: German and Italian Finance in the 1990s*. In W. Streeck & K. Yamamura (Eds.), *The Origins of Nonliberal Capitalism: Germany and Japan in Comparison* (pp. 169–206). Ithaca, NY: Cornell University Press.
10. Dyer, J.H. and Singh, H., 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, 23(4), pp.660–679.
11. Ebru, E., 2021. Language and Education Policies Based on National/Plurilingual Identity in Autonomous Republics: A Case Study of the Gagauzia Autonomous Region. *Education Quarterly Reviews*, 4(3).
12. Economic Monitor Gagauzia, 2024. *German Economic Team*. GET [online] Available at: <[https://www.german-economic-team.com/wp-content/uploads/2024/09/GET\\_MDA\\_PS\\_02\\_2024\\_en-1.pdf?utm\\_source=chatgpt.com](https://www.german-economic-team.com/wp-content/uploads/2024/09/GET_MDA_PS_02_2024_en-1.pdf?utm_source=chatgpt.com)> [Accessed 11 May 2026].
13. Etzkowitz, H. and Leydesdorff, L., 2000. *The dynamics of innovation: from National Systems and 'Mode 2' to a Triple Helix of university–industry–government relations*. Research Policy.
14. European Commission - Joint Research Centre, 2022. *Supporting Smart Specialisation Strategies in Enlargement and Neighbourhood Region*. Luxembourg: Publications Office of the European Union.
15. European Innovation Scoreboard, 2025. *Country profile Moldova*, pp.6.
16. Hall, P.A. and Gingerich, D.W., 2009. Varieties of Capitalism and Institutional Complementarities in the Political Economy: An Empirical Analysis. *British Journal of Political Science*, 39(3), pp.449–482.
17. Hollanders, H., Toliaş, Y., Radovanovic, N., Gonzalez Evangelista, M., Fabbri, E., Gerussi, E., Sasso, S., Miedzinski, M., 2024. *Measuring territorial innovation strengths (Moldova)*. JRC.

18. Ilie, E., 2021. Exploring sources of technological upgrading in Moldova's agri-food Sector. Case study: UNECE Innovation for Sustainable Development (I4SD). *Review of Moldova*. [online] Available at: <[https://unece.org/sites/default/files/2021-12/Case%20study%20Moldova%20agrifood\\_Elena%20Ilie\\_final.pdf?utm\\_source=chatgpt.com](https://unece.org/sites/default/files/2021-12/Case%20study%20Moldova%20agrifood_Elena%20Ilie_final.pdf?utm_source=chatgpt.com)> [Accessed 11 May 2026].
19. Küçükler, H. and Curdoglo, A., 2021. Perspectives of Teaching in English in Gagauzia in Moldova. *Balkanlarda Türk Dili ve Edebiyatı Araştırmaları*, 3(1).
20. Lengyel, B. and Leydesdorff, L., 2011. Regional Innovation Systems in Hungary. *Regional Studies*.
21. Levitskaia, A., 2018. Development of Cluster Policy of the Republic of Moldova at the National and Regional Levels: Challenges and Prospects. *Economical Herald of the University*, (37), pp.318–329.
22. Luo, Y. and Child, J., 2015. A Composition-Based View of Firm Growth. *Management and Organization Review*, 11(3), pp.379–411.
23. Morcan, C., 2024. Moldova's Clusters: Key Drivers for Innovation and EU Integration. *Cluster Collaboration*. [online] Available at: <<https://www.clustercollaboration.eu/content/moldovas-clusters-key-drivers-innovation-and-eu-integration>> [Accessed 11 May 2026].
24. Nicolescu, L. and Popa, D., 2017. *Universities in Regional Innovation Ecosystems*.
25. OECD, 2023. *Main Science and Technology Indicators*. [online] Available at: <<https://doi.org/10.1787/msti-v2023-1-en>> [Accessed 11 May 2026].
26. Teece, D.J., Pisano, G. and Shuen, A., 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), pp.509–533.
27. Topala, A., 2020. *Smart Specialisation in Republic of Moldova*. [online] Available at: <[https://eu.eventcloud.com/file\\_uploads/3611cb05237149b2fe845b132fc1ff09\\_TopalaAnatolie\\_Smartspecialisation-RM.pdf?utm\\_source=chatgpt.com](https://eu.eventcloud.com/file_uploads/3611cb05237149b2fe845b132fc1ff09_TopalaAnatolie_Smartspecialisation-RM.pdf?utm_source=chatgpt.com)> [Accessed 11 May 2026].