SMART SPECIALIZATION IMPLEMENTATION IN MOLDOVA: A CASE STUDY OF INNOVATION POLICY INTEGRATION AND ECONOMIC DEVELOPMENT

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Abstract: *Moldova, a small land-locked country with a population of approximately 4 million inhabitants, has faced significant social and economic challenges. Despite these obstacles, Moldova has maintained a functional education system and research infrastructure. The country's collaboration with the EU through the Association Agreement and its participation in the Horizon 2020 programme have opened avenues for research and innovation partnerships. This paper examines Moldova's adoption of smart specialization strategies as a framework for economic growth and innovation. Leveraging the support of the JRC under the EU Enlargement and Integration Action, Moldova has embraced the entrepreneurial discovery process to identify its economic competitive advantages and innovation potential. This case study offers insights into the integration of smart specialization into Moldova's innovation policy landscape and provides lessons for other countries seeking to harness their innovation potential for economic prosperity.*

Keywords: *smart specialization, Moldova, innovation policy integration, economic development.*
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1. Introduction

Smart Specialisation focuses on the idea that regions should identify and invest in their competitive advantages to foster innovation-driven growth. This concept, introduced by the European Commission, is designed to guide regional development within the context of the EU’s cohesion policy.

Key principles of Smart Specialisation include:

- Entrepreneurial Discovery Process (EDP): Involving stakeholders such as businesses, academia, and policymakers to identify areas with the greatest potential for innovation and growth.
- Prioritization: Directing resources towards a select number of sectors to prevent the dilution of investments.
- Multi-level Governance: Promoting collaboration among local, national, and international entities in policy implementation.
- Innovation as a Driver: Leveraging technological innovation to boost economic diversification and regional competitiveness.

In Moldova, these principles serve as a basis for focusing efforts on specific sectors with potential for economic growth.

Moldova, a small landlocked nation with around 2.6 million people, has been shifting from a centrally planned economy to a market-driven one since the early 1990s. Despite facing economic difficulties, the country has made notable strides in fostering a more vibrant private sector, with agriculture, manufacturing, and services being key contributors.

Nevertheless, Moldova’s innovation ecosystem has been historically underdeveloped due to inadequate funding for research and development (R&D), a fragmented institutional setup, and weak connections between industry and academia. The country's participation in EU

initiatives, such as Horizon 2020, has spurred Moldova to adopt the Smart Specialization approach to enhance its innovation capabilities and align with EU standards.

2. Literature review

In the context of the decision to implement a process of smart specialisation, it should be mentioned that advanced economies have a tradition of developing strategies for territorial innovation and economic development, while countries in transition from centralized planning to market policy do not usually have such an experience. In this case, there is sometimes the practice of imitating the priorities and economic practices of advanced countries. Kleibrink et al. (2017) suggest in this case a trajectory for transition countries to avoid the widespread trapping of poorly defined innovation policies by modernizing and changing their industrial policies in line with ideas integrated into the concept of innovation strategies for smart specialisation RIS3: (1) building a validated "competence center" to provide a comprehensive analysis of the respective economic structure and to coordinate the process of smart specialisation; (2) begin with a strong economic area on the basis of which stakeholders will engage with government bodies to define common priorities and actions (domain experimentation); (3) proceed with a region to experience different approaches at sub-national level (territorial experimentation); (4) the process focuses initially (at the policy mix stage) on short-term measures (nonR&D measures), while major exploration programs remain for the long-term (Kleibrink, Larédo, Philipp, 2017). Other studies advocates a better integration of research and innovation policy into the overall economic policy strategy; improving the synergies between research and innovation strategies, and strengthening the prioritization by increasing stakeholder's involvement (Porcescu S., Savga L., Stratan A, 2018).

Radošević and Stancova (2018) also argue that the Moldovan government's collaboration with international organizations such as the World Bank has enhanced its capacity to implement SS, but more needs to be done to ensure private sector engagement.

The literature review highlights the importance of Smart Specialisation in driving regional innovation and economic growth, particularly in the context of Moldova's transition to a market-driven economy and its integration into EU initiatives. The review also underscores the challenges and opportunities associated with implementing Smart Specialisation strategies in emerging economies with limited resources.

3. Data sources and methodology

The research uses data from multiple national and international sources, such as the European Commission and reputable scientists. It also includes data from the Moldovan National Agency for Research and Development (ANCD) and other pertinent organizations.

The research employs a quantitative method approach for data collection and analysis techniques to assess the impact of smart specialization strategies on Moldova's economic development. The study also incorporates a case study approach to provide in-depth insights into the implementation of smart specialization in Moldova.

4. Smart specialization implementation in Moldova

The Smart Specialization strategy aims to align research, technological development, and innovation with regional economic needs, enhancing resource efficiency and fostering competitive edges. For Moldova, adopting S3 marks a crucial advancement in its efforts towards economic modernization.

Moldova's implementation of the Smart Specialization strategy is deeply rooted in its National Development Strategy and National Research and Innovation Strategy. Integrating S3 into these policies underscores Moldova's dedication to modernizing its economy and promoting innovation-led growth. The development of Moldova's S3 framework was supported by the European Commission's Joint Research Centre (JRC), which assisted in identifying key sectors for specialization.

The governance of Smart Specialization in Moldova encompasses a range of stakeholders, including government bodies, regional authorities, businesses, universities, and research institutes. The National Agency for Research and Development (ANCD) is central in coordinating the activities of these institutions and ensuring that S3 priorities are embedded within the wider national policy agenda.

Since 2017, under the guidance of the UN, the government of Moldova has been working to adapt the 2030 Agenda and integrate the Sustainable Development Goals (SDGs) into national strategic planning. This process includes selecting relevant priority targets for Moldova and adjusting these targets to better align with the country's specific needs.

The main platform for coordinating and monitoring the integration of SDGs into national policies is the National Coordination Council for Sustainable Development, headed by the Prime Minister. This council includes government officials, State Chancellery members, academia, and the associative sector. Additionally, sectoral groups within public authorities involved in strategic planning have been established.

The National Development Strategy "Moldova 2030", adopted in 2018, plays a crucial role in incorporating the Sustainable Development Goals at the national level by outlining long-term development priorities and a vision that will guide all inter-sectoral and sectoral policy documents. This strategy focuses on four key pillars:

- Sustainable and inclusive economy;
- Strong human and social capital;
- Fair and efficient institutions;
- Healthy environment.

To advance these areas, ten national-level sustainable development objectives (SDOs) have been set for 2030, including ensuring quality education, effective governance, improved infrastructure access, and better working conditions.

Simultaneously, Moldova has initiated the development of a smart specialisation framework to identify research and innovation priority domains with the highest potential to boost economic transformation and competitiveness. Under the Ministry of Education, Culture, and Research's coordination, smart specialisation was integrated into the National Programme for Research and Innovation for 2024-2027 and the national smart specialisation program for 2024-2027 "Smart Moldova". Four priority areas were identified: agriculture and food processing; information and communication technology; energy; biomedicine and biopharmaceuticals.

On November 7, 2018, the Government approved the National Development Strategy "Moldova 2030", a key planning document for long-term growth. It focuses on improving citizens' quality of life by addressing their problems, interests, and aspirations. To meet these goals, ten national Sustainable Development Objectives (SDOs) for 2030 were established, including quality education, effective governance, better infrastructure access, and improved working conditions. Each goal includes an analysis of the current situation, contributing factors, a strategic vision, and priority actions. Developed with UN and World Bank support,

the strategy is a result of collaboration among ten inter-ministry groups, involving local administration, civil society, business, and academia.

5. Results and discussions

Although Smart Specialization holds great promise for transforming Moldova's economy, several obstacles have surfaced during its implementation:

- Funding constraints: Moldova's R&D investments are significantly lower than the EU average, posing challenges for financing crucial innovation initiatives required for Smart Specialization.
- Institutional capacity limitations: Numerous institutions tasked with executing S3 lack adequate resources and expertise to effectively participate in the policy process.
- Private sector participation: While the Entrepreneurial Discovery Process aims to involve businesses in pinpointing growth areas, many Moldovan companies, especially SMEs, encounter difficulties in adopting innovation.

Initial observations indicate that Moldova's Smart Specialization strategy has positively impacted innovation and economic growth, especially in areas like ICT and agri-food technologies. For instance, there has been a rise in the number of startups and technology-based businesses, driven by focused investments in digital innovation.

Additionally, the agri-food sector has advanced through innovations in biotechnology and food processing, boosting Moldova's export capabilities and supporting rural development. Although it is premature to fully assess the long-term economic outcomes, Moldova's Smart Specialization strategy has established a foundation for more sustainable and innovation-driven growth.

Smart Specialization aids regional growth by harmonizing local strengths with broader national and global objectives. Moldova has been striving to minimize regional inequalities by fostering innovation in its underdeveloped areas, ensuring that rural regions are involved in and benefit from the nation's modernization initiatives.

6. Conclusions

The implementation of Smart Specialization in Moldova has demonstrated significant potential for driving economic growth and innovation. By aligning research, technological development, and innovation with regional economic needs, Moldova has made strides in enhancing resource efficiency and fostering competitive edges. The integration of Smart Specialization into Moldova's National Development Strategy and National Research and Innovation Strategy underscores the country's dedication to modernizing its economy and promoting innovation-led growth.

Despite facing challenges such as funding constraints, institutional capacity limitations, and private sector participation, Moldova's Smart Specialization strategy has positively impacted innovation and economic growth. Notable progress has been observed in areas like ICT and agri-food technologies, with an increase in startups and technology-based businesses driven by focused investments in digital innovation. Additionally, the agri-food sector has advanced through innovations in biotechnology and food processing, boosting Moldova's export capabilities and supporting rural development.

The Smart Specialization strategy has also played a crucial role in minimizing regional inequalities by fostering innovation in underdeveloped areas, ensuring that rural regions are involved in and benefit from the nation's modernization initiatives. Although it is premature to fully assess the long-term economic outcomes, Moldova's Smart Specialization strategy has established a foundation for more sustainable and innovation-driven growth.

In conclusion, Moldova's experience with Smart Specialization offers valuable lessons for other countries seeking to harness their innovation potential for economic prosperity. The country's commitment to integrating Smart Specialization into its broader economic development strategy highlights the importance of aligning innovation policies with regional needs and leveraging technological advancements to drive economic growth.

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