Original Article

Smart Specialization As A Tool For Development And Optimization Of Regional Development Policy Formation And Promotion Of Interregional Cooperation

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Abstract

The aim of the article is to study the implementation of the concept of a smart specialization strategy (Strategy for Smart Specialization - S3) in the formation of regional development policy and promotion of interregional cooperation in the countries of the European Union (EU).

The article claims that the main assumption of the concept of smart specialization is the allocation of unique strengths and opportunities specific to a particular territory. The choice of smart specialization is aimed at the optimal use of the region's resources through the best combination of the potential of science, education and economy. In addition, the implementation of smart specialization strategies in regions is not a single event, but a continuous management process. This approach emphasizes the importance of strategic interregional cooperation [21].

In today's conditions, the implementation of cohesion policy in EU countries supports and encourages regions to improve the existing S3 and interregional cooperation.

Research by a number of scientists in the field of the influence of smart specialization on economic changes in European regions has shown that this approach to management in an open economy is still not widespread. Scholars stress that the success of this approach depends on its ability to generate interregional cooperation and suggest sharing between regions common databases, industry/technology definitions, creating permanent forums for pooling and discussing common regional problems and challenges, and initiating a process exchange of information between regions on issues related to interregional cooperation. A deep review of S3 strategies is needed to improve them through joint policy development by different regions, taking into account their potential for cooperation [1].

Despite the positive experience of implementing this effective instrument of regional development policy, there are ongoing debates, which are mainly focused on the problems of practical implementation of S3. In order to improve the capabilities of the concept of smart specialization, scientists propose the implementation of the construction of interregional S3, the improvement of management and financing mechanisms of interregional joint projects, the introduction of new provisions to support interregional cooperation [8].

The article highlights how the approach of smart specialization was implemented in practice in some European regions [11], [12], [13], [14], [15]. The given examples show how interregional integration processes contribute to the successful implementation of the concept of smart specialization through involvement in interregional business networks and innovation systems. For this purpose, S3 entities use thematic partnerships in smart specialization.

It is noted that success factors in fruitful interregional cooperation are a structure with strong leadership and management at the partnership level, as well as the presence of bodies - state bodies or cluster organizations - that manage the process and promote interregional cooperation. The study shows that well-structured governance is an important driving force for cross-regional initiatives where stakeholders develop a forward-looking vision that combines the strengths and potential of partners.

Keywords: strategy for Smart Specialization regional development, interregional integration, interregional clusters, growth strategies, intraregional cooperation

Introduction

The approach of the smart specialization strategy is relevant for achieving such European priorities as smart, sustainable and inclusive growth. Above all, smart specialization matters for the future of Europe, as the development of an economy based on knowledge and innovation remains a fundamental challenge for the EU as a whole. Secondly, smart specialization is relevant for achieving the goals of sustainable development. Finally, smart specialization promotes inclusive growth both within and across regions by strengthening territorial cohesion and managing structural change [22, p. 8].

Since 2015, the European Commission has been working hard on S3 interregional thematic partnerships, supporting them in finding out how regions can come together and develop their joint efforts in the best possible way.

Today, the authorities responsible for regional development and innovation are implementing, together with relevant stakeholders, more than 120 smart specialization strategies for research and innovation in order to develop and combine the strengths of innovation with business opportunities and needs..

To achieve these goals, the principle of smart specialization involves the development of interregional cooperation, which will contribute to regional competitiveness, minimizing duplication and fragmentation of activities financed from the state budget in the EU. In fact, the expansion of cooperation between regions is supported by the so-called external dimension, which, as a rule, should be present in a good strategy of smart specialization. This dimension requires the study of possible complementarities with other EU regions in order to assess one's own regional assets and competitive advantage, taking into account one's own position in relation to the positions of other regions [23, p. 11].

In the first part of the article, we identified the possibilities of the concept of smart specialization in the field of activation of interregional integration processes. It was found that the strengthening of interregional cooperation, as a key element of the globalized economy, is one of the main directions of regional development policy in the EU.

The second part focuses on the proposals of scientists for improving the use of smart specialization approaches in the field of interregional cooperation. Scientists see the further development of the implementation of this practice in the implementation of the construction of interregional S3 in order to more effectively use the own potential of each region. In addition, some innovations are recommended in the following two areas: harmonization of the rules governing different sources of EU funding relevant to S3 and introduction of new provisions/mechanisms to support interregional cooperation.

It is emphasized that the process of implementation of S3 requires active actions of regional authorities, proactive mobilization of local actors of the public and private sectors and the adoption of a multi-stakeholder approach to the implementation of the strategy.

The third and last part of the article focuses on the practical implementation of the concept of smart specialization in building interregional partnerships. For example, a manufacturing technology cluster has been created in Portugal. The Central Macedonia region (Greece) has strengthened regional and inter-regional ties and connections to promote growth and cohesion through the recently established "Mechanism of a single communication office". In Andalusia (Spain) and the region of Tuscany (Italy), partnerships have been built within the framework of the smart specialization platform in the agri-food sector. The Government of Salzburg (Austria) and its Agency for Innovation and Technology Transfer (ITG Salzburg) are actively involved in the project "Smart Specialization Strategies to Build an Innovation Model for Alpine Clusters".

This part outlines several recurring problems in the field of practical construction of interregional cooperation projects, as well as several success factors for the integration of regional economies and fruitful interregional cooperation.

I. Possibilities of the concept of smart specialization in the field of activation of interregional integration processes.

During the implementation of smart specialization approaches in the implementation of the regional development policy, the S3 methodology is being conceptually improved. Recently, the integration component of S3 is gaining more and more importance, the purpose of which is to activate regional opportunities to create innovations and increase the efficiency of resource use. Therefore, aspects of the influence of smart specialization strategies on interregional integration processes are now being actively studied by European scientists.

Thus, McCann, P. and Ortega-Argiles, R., during the study of the first experience of implementing S3 in the EU cohesion policy, concluded that smart specialization allows:

- identify the unique functions and potential of each region;

- move away from the practice of choosing priority industries exclusively on an industrial basis;

- to activate the processes of public-private partnership, which will allow authorities to create comfortable conditions for entrepreneurs and employees with proper employment conditions, thus influencing the economic environment of the region and its competitiveness [4].

Vanhamaki, S.; Rinkinen, S.; Manskinen, K. in their study note that in the “Europe 2020” strategy, the need to increase investment in research and innovation was recognized as an im"portant part of stimulating the European economy. Thus, the S3 concept was an integral part of the EU's cohesion policy during the last budget period 2014-2020, and the S3 framework was widely used in EU Member States. The definition of a national or regional S3 has been established as a requirement for the allocation of EU research and development funding.

The goal of this approach is to direct research and innovation resources to selected priority areas that have the greatest potential for the region's future success. During the analysis and selection of priority areas, regions are encouraged to go beyond the traditional industry approach and use an appropriate diverse type of diversification within the priority area, i.e. diversification into related areas based on new technologies or processes. The idea of implementing S3 is to improve existing regional structures and transform these structures with new relevant research activities. Cohesion policy today supports and encourages regions to improve existing S3 and interregional cooperation [18].

The European Commission directs the smart specialization of regions to solve the following problems:

- increasing the innovative and competitive potential of European regions as the basis of a sustainable growth model;

- strengthening interregional cooperation, which is a key element of the globalized economy;

- increased attention to less developed regions;

- improving cooperation in EU innovation policy and programs [5].

Wojciech Dziemianowicz, debunking the concept of smart specialization, claims that it is a determinant of regional development policy. The fact that this concept serves as a basis for all EU regions to spend on innovation-related goals shows how important and practical it is.

According to the author, the essence of the concept of smart specialization is to build on regional strengths while creating a competitive advantage on a global scale based on advanced innovations. The close relationship between research and development activities, as well as between human capital and the specific economic conditions of each region should lead to the specialization of individual regions. Specialization (differentiation) should help efficient spending of funds (avoidance of internal competition in the EU). The concept of smart specializations is addressed to all regions, both highly developed and peripheral.

Wojciech Dziemianowicz claims that an important place in the concept is not only cooperation between business and science, but also interregional cooperation based on the complementarity of the regions' potentials [2].

Marianna Greta and Jacek Otto emphasize that the adaptation of smart specialization in the EU is the result of the deepening of the integration processes, on the one hand, and the adopted decisions, programs for the development and implementation of regional policy, on the other. This is due to the fact that the deepening of integration is increasingly emphasizing differences in development, but at the same time the current regional policy must in some sense control these differences in order to prevent it from deepening. However, the fact is that the EU is making – through smart specialization – another attempt to level economic and social disparities between regions.

Researchers prove that the position of regions and their openness to innovation depend on three factors:

- access to knowledge;

- the ability of the region to assimilate this knowledge;

- dissemination of knowledge and technologies.

The concept of dividing the EU regions according to the availability of knowledge, absorption and diffusion of innovations "does not exclude from the game" weak and peripheral regions, giving them hope for development opportunities through smart specialization. This approach runs counter to the classical division into the center of development and the periphery, which creates wider opportunities for interregional cooperation in revealing the possibilities of internal development of regions [3].

Charalampos Chrysomallidis and Aggelos Tsakanikas consider the practice of smart specialization as the main element of the European growth strategy for the period 2014-2020, which was used by EU countries in domestic state policy, using the theoretical concept of historical institutionalism. In this context, the authors analyze, firstly, the “layer” of politics that potentially takes place both at the national and subnational levels as a result of planning and preparing reasonable specialization, and secondly, how this affects national and regional political programs, that is, through new policy elements that are attached to existing institutions, procedures and political actions. Thus, the main issue is to change the balance of research, technology and innovation (RTI) management between the central state and the regions through the application of smart specialization tools, which should give a unique chance to reform the existing management regime between them.

The authors assign a special place to the fulfillment of these tasks to interregional cooperation. According to scientists, substantial, consistent, and not just typical work of a network of interconnected regions is needed. If this scenario works, the next phase could involve regions in shaping and implementing RTI policy more dynamically and creatively, decentralizing some of its aspects. Recent administrative reforms regarding the management of regions have increased their autonomy in the implementation of sectoral policies, but the conditions are still not suitable to support policy decentralization initiatives, at least in this particular area of state policy [6].

Agata Warminska states that the basic assumption of the concept of smart specialization is the allocation of unique strengths and opportunities specific to a specific territory. The choice of smart specialization is aimed at the optimal use of the region's resources

through the best combination of the potential of science, education and economy. In addition, the implementation of smart specialization strategies in regions is not a single event, but a continuous management process. This approach emphasizes the importance of strategic interregional cooperation. Such cooperation contributes to increasing the potential and diversity of the region. The application of the smart specialization approach requires taking into account the differences between regions and the area of a separate region in economic and institutional conditions. The basis of the concept of smart specializations is the endogenous context and concentration on specific resources and capabilities of a specific region. Endogenous development potential is defined as a sector or a group of sectors of the economy that are already specialized and have gained a certain competitive advantage at the national level. In addition, they must meet the following conditions: rootedness in the economy of the region, similarity in terms of technology and communications, as well as cooperation within and between sectors.

The author notes that the concept of smart specialization is based on four principles:

• focusing on specializations that complement the resources of a specific region, which makes it possible to obtain comparative advantages (avoid duplication of specializations), the choice of sectors capable of creating a "critical mass";

• alignment of R&D with business needs;

• development of clusters and creation of interregional cooperation platforms;

• management of the innovation system based on public-private partnership [21].

Hanna Godlewska-Majkowska, Agnieszka Komor emphasize that the external focus of regional innovation policies and strategies to strengthen interregional cooperation that can better support innovation in the context of a global network of regions is very important. Its intensification is due to the active support of national governments for interregional and cross-border scientific and research activities, consolidation of mutual learning platforms and communities of practitioners, actions on the exchange of experts who can act as mentors in other regions, business support taking into account real innovative areas and processes. Identifying intellectual specializations allows for more efficient, targeted funding of selected scientific fields that support local entrepreneurship.

The authors argue that the goal of smart specialization is to mobilize innovative and entrepreneurial potential, increase the number of jobs and, as a result, accelerate economic growth through interregional cooperation. Therefore, facilitation and coordination of activities in cross-regional value chains play a key role. Management of such chains requires business leadership, activity of regional authorities and innovative companies. This indicates the important role of cooperation in innovation processes, and therefore the need to create favorable conditions for the activation and intensification of cooperation processes. It should be noted that regional authorities should play a key role in this regard, using appropriate mechanisms and tools of regional and innovation policy to promote the establishment of interregional networks.

Having analyzed a number of literary sources, scientists identified the key features of smart specialization strategies:

- basing processes on endogenous potential and location specificity,

- ability to learn and base development processes on knowledge and innovation,

- concentration and specialization of resources,

- entrepreneurial discovery, while preserving the diversity of the economic structure,

- recognition of the role of intra- and interregional cooperation,

- targeted institutional support from local, regional and state authorities.

Thus, the implementation of the principles of intellectual organization in the regions can contribute to the achievement of a synergistic effect of activities, thanks to:

- the use of modern information and communication technologies in the regions to establish interregional cooperation, as well as to build relationships with partners in order to correctly identify, evaluate and target support for smart regional specializations,

- the use of innovative funding sources in the regions in order to offer effective and targeted support to industries that are part of intellectual specialization,

- promotion by authorities at the regional level of cooperation between enterprises in the sectors of intellectual specialization and knowledge institutions (universities, research units),

- supporting entrepreneurship from sectors of smart specialization through the offer of business institutions (science and technology parks, industrial parks, science and technology incubators, clusters),

- improving the quality of educational services in order to prepare employees to meet the needs of enterprises in the fields of smart specialization,

- the use of modern technological solutions for the provision of public services in the regions (for example, to speed up investment procedures, resolve formalities), as well as to promote the regions with the aim, among other things, of attracting investors from

sectors of smart specialization [19].

II. Improving the use of smart specialization approaches in the field of interregional cooperation.

The European Commission's technical report "Smart Specialization in Action: Policymakers' Perspectives on Strategy Design and Implementation" outlines four main areas of the S3 implementation process:

- selection of priorities;

- analysis of content and potential for innovation;

- monitoring activity;

- coordination of policies and selection of their instruments.

The authors of the report see the most problematic aspects regarding the coordination of policies and the choice of their instruments in the obstacles associated with the existence of different rules governing different sources of funding and the establishment of synergies between policies and funding managed by different organizations located at different levels (EU, national , regional), as well as in difficulties in the management/financing of interregional joint projects.

In the recommendations for improving the implementation of S3, it is noted that it can be a tool for developing and optimizing the formation of regional development policy and promoting interregional cooperation. It is proposed to implement the construction of interregional S3 in order to more effectively use the own potential of each region.

It is also recommended that the European Commission introduce some innovations in the following two areas: the harmonization of rules governing the various EU funding sources relevant to S3 and the introduction of new provisions/mechanisms to support interregional cooperation [8].

Investigating the impact of smart specialization on economic change in Spanish regions, Belen Barroeta, Jaime del Castillo, Jonatan Paton point out that this approach to management in an open economy is still not widespread. Scientists emphasize that the success of implementing this approach depends on its ability to generate interregional cooperation.

The authors offer a set of recommendations, taking into account the Spanish experience:

- Progressive homogenization of prioritization methods and mechanisms at the regional level (i.e. exchange between regions of common databases, sectoral/technological definitions, etc.).

- Creation of a permanent forum for unification and discussion of problems and difficulties common to the regions, as well as initiation of the process of information exchange between regions on issues related to interregional cooperation.

- A deeper review of S3 strategies to improve them through the joint development of policies by different regions, taking into account the potential for cooperation between the regions of both Spain and Europe [1].

Marcel Kordos, Sergej Vojtovic, Herbert Strunz consider the most important issue is that cohesion policy is aimed at promoting cooperation between regions and states. Therefore, objectively, European territorial cooperation is aimed at strengthening cooperation through joint local and regional initiatives, strengthening transnational cooperation through actions related to Community priorities and promoting integrated territorial development and strengthening interregional cooperation, and finally, sharing experience at the appropriate territorial level.

According to the authors, an effective tool for achieving these goals are smart specialization strategies that maximize the impact of regional policy in combination with other policies of the Union. Smart specialization strategies can ensure efficient use of public resources and stimulate private investment. They can help regions focus resources on several key priorities. They can also be a key element in creating multi-level governance for an integrated innovation policy. In addition, a clear understanding of regional advantages vis-à-vis other regions is needed, as well as the potential benefits for interregional and transnational cooperation.

The success of smart specialization strategies will depend on the timing and coordination of policy measures by authorities, as well as on the involvement of stakeholders. Smart specialization should take advantage of regional diversity and should stimulate interregional cooperation and create new opportunities [20].

Similar views are held by Jan Wedemeier and Mirko Kruse in the course of researching the innovative and creative potential of the Baltic region. The authors argue that regional differences necessitate action to ensure interregional coordination of S3 [9].

Michael Fritsch, Muhamed Kudic & Andreas Pyka, conducting discussions on smart specialization, emphasize the role of intra- and interregional cooperation in technological diversification of the region. The main argument for this is that the concept of smart specialization is closely related to the idea of diversification in regions. Following this logic, the authors propose a regional diversification index to measure technological diversification and use this indicator for 226 EU regions. The results of such an econometric analysis indicate that the main explanatory variables (internal and interregional cooperation) qualitatively affect

each other (as well as regional diversification) differently depending on the development of the European region. The study raises awareness of the need for well-designed policies aimed at research and development (R&D) cooperation.

The authors also focus on influence measures aimed at increasing the level of activity of interregional networks. Their analysis shows that the consequences of such actions depend to a large extent on the particularities of the relevant regional context [7].

Dominique Lepore and Francesca Spigarelli analyzed the sources available on the Smart Specialization Platform, which is a European platform providing advice to EU countries and regions on the development and implementation of S3. The analysis was conducted to determine how Industry 4.0 plans can be integrated within S3.

Sources of information on the specified platform include: publications, newsletters, guidelines, S3 analysis notes, scientific policy reports, technical reports and working papers. Information is published under the following sections: S3 Management, Targeted Support, S3 Communities, Cross-Regional Relations, Collaboration, and S3 Leadership.

The authors paid special attention to the analysis of monitoring reports of interregional partnerships.

The researchers found that the three thematic platforms of S3, namely industrial modernization, food and energy, significantly contribute to interregional partnership. These platforms were launched by the European Commission in 2015 to provide an interactive environment for participation, supporting interregional cooperation in the three areas mentioned [16].

Emanuela TODEVA Panagiotis KETIKIDIS conducted an analysis of regional innovation and entrepreneurship systems focusing on individual actors in the triple interaction model between science, business and government and provided recommendations for improving the facilitation and coordination of interregional value chains.

It has been established that proactive state authorities build effective forms of interaction between universities, business enterprises, innovative entities, state institutions and associations - as a prerequisite for choosing strategic priorities, developing partnerships and implementing S3 through regional and interregional cooperation at the European level.

The researchers note that from the very beginning, the Smart Specialization Strategy initiative was intended to increase opportunities at the regional level. The process of its implementation requires active actions of regional authorities, proactive mobilization of local entities of the public and private sectors, and the adoption of a multi-stakeholder approach to the implementation of the strategy. There are certain challenges for regions to interact with various frameworks and instruments aimed at strengthening interregional cooperation.

The authors cite an example of effective interregional cooperation supported by political commitment at the regional level - the Vanguard initiative, according to which a large interregional consortium of more than 30 regions follows a 4-stage cooperation methodology: learning - connecting - demonstrating - commercializing (the Vanguard initiative). The success of the vanguard initiative is due in part to its effective institutionalization of cooperation through special working groups focused on policy influence, financial instruments, communication, monitoring and forecasting. However, the process of starting a business is significantly different in the connected regions, giving rise to different implementation models in the member regions. The need to develop a more standardized framework to guide the implementation phase is recognized.

Among a number of principles that unite the participating regions of the Vanguard initiative, the development and expansion of interregional and intercluster networks is recommended for wider distribution in the rest of Europe.

Emanuela TODEVA Panagiotis KETIKIDIS offer a model for implementing support for interregional cooperation strategies and successful mobilization of interregional cooperation networks. This model refers to a new type of public power influence based on effective interaction between government, business and universities. At the heart of the model is a platform for strategic interaction with many interested parties. Triplex management mobilizes decision-making capacity in the public and private sectors and puts universities and the education sector as a whole at the center of growth strategies – both as providers of skills and innovative outcomes.

Thanks to the instruments of interregional cooperation, this turns into a strategic agenda at the European level, which consists of 4 stages:

- stage 1 – determination of competencies and opportunities for cooperation;

- stage 2 – industrial cooperation and project development;

- stage 3 – business plan and co-financing;

- stage 4 – investment projects (Platform S3).

This approach requires regional authorities to improve their strategic knowledge and skills to effectively facilitate interregional investment projects. The key prerequisites for the success of interregional cooperation are as follows:

- knowledge of value chains in established and emerging industries;

- recognition of complementarity between regions based on a more detailed reflection of regional capabilities;

- selection of partners within and between additional groups of the strategic value chain - to accelerate and scale up the development and commercialization of new products, services and technologies.

All recommended approaches to the management of interregional cooperation processes are based on the political commitment of the authorities and the participation of citizens through a transparent platform that is open to public debate and contributions from civil society. These preconditions, however, are necessary but not sufficient to stimulate economic growth through cross-regional value chains. Ultimately, it is the business leadership of the private sector that can promote strategic goals and implement them in interregional cooperation agreements. Regional innovation systems and scientific and technological environments, as well as advanced ICT and data services, should be used to strengthen interregional interaction and enable regions to connect [17].

III. Practical implementation of the concept of smart specialization in building interregional partnerships.

The European Commission's technical report "Implementation of smart specialization: analysis of practices in Europe" highlights how the smart specialization approach has been put into practice in European regions.

The analysis showed that there is a common question of interest to practitioners and related to the external dimension of their S3, in particular the internationalization of the regional economy, as well as positioning in European value chains according to their area of specialization. Stakeholders identified several recurring challenges, including gaining critical mass and achieving economies of scale to expand business opportunities, increasing regional capacity to develop services with high value-added products in well-established and/or emerging key sectors and activities, and engaging with broader business networks and innovation systems. To this end, S3 entities wish to develop interregional cooperation and are involved in thematic partnerships in smart specialization. They emphasized their efforts to create and manage a complex transnational consortium with an adequate management structure in order to develop common infrastructure and implement joint (investment) projects.

Several success factors for the integration of regional economies and fruitful interregional cooperation are cited. First, a key role is played by a structure with strong leadership and management at the partnership level, as well as the presence of bodies - state bodies or cluster organizations - that manage the process and promote interregional cooperation. The study shows that well-structured governance is an important driving force for cross-regional initiatives where stakeholders develop a forward-looking vision that combines the strengths and potential of partners. Stakeholders place great emphasis on developing a value-added approach to access new markets, as well as skills to better respond to labor market demands. In addition, the roles and responsibilities of the partners should be clearly defined to allow the consortium to develop and enable joint players to advance their positions in a particular area of specialization within European value chains.

In addition, the networking potential for bringing together stakeholders from different industries is a crucial factor. Interregional cooperation relies on the ability of partnership members, sometimes from different fields of activity, to share knowledge and agree on common needs and goals. Clusters and technology transfer bodies often play an important role in this regard, as they can mobilize experts from different disciplines to pool their knowledge and expertise around common development themes embedded in S3. Building trust stands out as an intangible asset that enables stakeholders to develop their relationship and reaffirm their commitment on a long-term basis.

Moreover, organizational and managerial skills are important building blocks for mobilizing resources and executing joint projects.. Politicians have developed the regulatory and financial potential to coordinate various sources of funding and manage a complex interregional association with the aim of developing common infrastructure and implementing joint (investment) projects. In this regard, stakeholders used the methodological support and guidance provided by the Smart Specialization Platform (S3 Platform). Participation in thematic platforms on modernization of energy, agro-industrial complex and industry and related partnerships helped stakeholders to develop interregional cooperation and gain an international dimension to their strategy. Through these partnerships, participants completed scoping notes, accurately mapped their areas of expertise, and began benchmarking to develop a roadmap and business plan for the future development of their S3 partnership. In addition, the S3 platform activities facilitated mutual learning and helped public authorities to improve the structural coordination and policy coherence of their strategy [10].

For example, Portugal has created a manufacturing technology cluster that plays a key role in strengthening cooperation between key players in different industries and promoting joint projects and activities covering the entire innovation cycle. In line with the principles of smart specialization, the cluster enabled participants to identify key technologies and required skills, as well as create a corresponding roadmap and action plan.

Demonstrators and pilot lines were important elements used by the cluster to assist SMEs in integrating the results of research projects and new technologies in partnership with research organizations, ensuring an adequate response to customer needs. This cooperative approach benefited all cluster participants. Thanks to the leading role of the cluster, its members were able to create a critical mass, identify reliable joint research and production projects and better understand the needs of the industry. In addition, cluster members invested in new technologies through a combination of funds (ESIF, national, regional and H2020) and gained access to new technologies through applied research initiatives; they were also able to benefit from existing technologies that

could be transferred from one sector to another, facilitating cross-improvement and further adoption of existing technologies. Several key success factors can be identified:

• Mobilization of cluster members within the framework of one strategy and the possibility to agree on priority areas.

• Cooperation between national and regional public authorities to develop a reliable funding mechanism and a reliable support structure, including a set of tools managed by the National Agency for Innovation (ANI).

• Development of interregional cooperation within the EU (namely, the Vanguard Initiative mentioned above) and participation in research projects and initiatives at the EU level.

Smart Specialization Thematic Partnerships also helped the cluster meet its needs through greater access to business and GDR partners and funding sources; it also benefited from targeted support to gain international experience and visibility [11].

In the Central Macedonia region (Greece), regional and inter-regional ties and connections were strengthened to promote growth and cohesion. Through the recently established Single Point of Contact Mechanism, the region wishes to improve engagement with stakeholders and further identify their needs.

The strategy is based on regional participation and the joint creation of a number of S3 sub-platforms, which are focused on the agri-food industry. The main goal is to cooperate with other regions in the perspective of launching partnerships for joint investment in the development of new products and services that will compete in global value chains.

The region has actively participated in three existing platforms and is working hard to create a new one. The three platforms are: high-tech agriculture, food ingredients, and traceability and big data, and the one the region is developing is focused on personalized nutrition. The proposal concerns the creation of a European partnership to explore niches that have the potential to create new innovative products and services that can become drivers of global value chains. These niches can emerge from the cross-fertilization of traditional agri-food sectors and technology and science such as food technology, ICT, etc.. For example, one of the first joint pilot projects of the High-Tech Farming Platform was launched with participation. American Farming School in Thessaloniki. This focuses on the establishment and operation of a pilot farm for table grapes, where the technologies proposed by the technology providers within the consortium will be field-tested and grape growers will look for technological solutions to the problems they face. Similar demonstration farms focusing on different types of crops such as rice will also be set up in the near future.

The region wants to act as a bridge between external and local actors, mainly to support small and medium-sized businesses in developing critical mass and entering global markets. The above, as well as a number of other initiatives (such as the CERN collaboration), are a way to help the local ecosystem to create new connections with international stakeholders, as well as to help regional actors by entering new markets and improving their social, cultural and economic activities, through diversification [12].

Led by the Region of Andalusia (Spain), the Tracking and Big Data Partnership, operating under the Smart Specialization Platform in the Agri-Food Sector, aims to encourage the creation of an ecosystem to support innovation and digitization of the agri-food sector in Europe. Regional authorities from 18 regions of 9 countries, 4 regional clusters in both the ICT and agri-food sectors, knowledge organizations and consumer associations participate in the partnership. It focuses on the key operational areas of value chains: Lifecycle; "Smart monitoring and competitiveness"; "Experience of consumers and inclusion of operators in decision-making processes"; and "Cross-cutting topics that include open data, interoperability, data governance, and information security."

In order to achieve their goals, the lead and co-lead regions have defined and implemented a well-structured governance and management structure that regulates the decision-making processes and functioning of the partnership, as well as the roles and responsibilities of the partners. Each of the selected themes (work areas) becomes a "sub-partnership" under the leadership of the designated co-leading regions, who will work closely with the interested regions to develop a work plan for each work area.

The selected management model has already provided a number of advantages in the development of partnership dynamics, such as:

• Better regional focus on selected tracking and big data sub-areas according to their interests and strong regional capabilities

• More regions actively participate in leadership or co-leadership roles, taking responsibility and initiatives to achieve results

• Multiplier effect: each of the four “sub-partnerships” works to define its own memorandum defining goals, frameworks and challenges, as well as defining joint pilot projects (goals, needs, funding and resources)

• Regional innovation ecosystems develop around each of the identified "sub-partnerships"

• Important horizontal partnership issues are identified and effectively resolved at the level of leading and co-leading regions of the global partnership. These include: overall governance and coordination, strategic engagement at EU level, capacity building, training, mentoring, communication and dissemination [13].

The Government of Salzburg (Austria) and its Agency for Innovation and Technology Transfer (ITG Salzburg) are actively

involved in the project "Smart Specialization Strategies for Building an Innovation Model for Alpine Clusters" (S3-4ALpCLusters) in order to strengthen the international development of the region. measurement and cooperation activities.

The innovative approach of the project is based on the interaction between the concepts of clusters and S3 to promote innovative processes and ignite entrepreneurship within clusters. Over the past two years, this Interreg project, consisting of 11 regions, has engaged its stakeholders – cluster organizations, politicians, academia and business – in a fruitful collaboration to develop new innovative tools to improve the smart industrial transition in Alpine regions.

The main output of the project, the S3 Innovation-Model, implements a systematic process based on the involvement of clusters to identify, develop and implement transformational activities. For each phase of the process, tools are provided to explore the potential and opportunities for transformation and develop actions to create critical mass in new innovative areas. Stress tests and Synergy-Diamonds (a tool that facilitates the identification of transformative activities) are used as innovative ways to map existing capabilities and identify opportunities for structural transformation both within and between regions.

The Entrepreneurship Discovery Workshop draws on this database to identify truly transformative activities. In addition, action development workshops focus on specific initiatives – such as R&D projects, networking or critical skills development – to build critical mass for a defined transformative activity. The implementation of these actions is supported by a collection of best practices of cluster services covering different areas such as education, technology, growth, research or collaboration.

The partnership also proposed an inter-regional cooperation scheme (Alpine Cluster Innovation Express) which is co-financed by existing regional programs. The intention is to coordinate existing funding schemes and launch joint calls for the implementation of interregional actions. Finally, the S3 Innovation-Model also includes a process evaluation and monitoring methodology. The entire process was tested in pilot clusters, and at the end of the project a complete set of training tools was created for cluster and regional managers [14].

In the context of the Thematic Platform of smart specialization in the agri-food sector, the region of Tuscany (Italy) initiated a partnership on high-tech agriculture, which unites 26 EU regions and one EU country. The partnership also involves more than 80 universities or research centers, 163 companies and 160 end-user representatives in different countries. The main goal of the partnership is the development of joint measures to accelerate the introduction of high and new technologies that can improve the efficiency of agriculture and farm management.

The Tuscany region promoted the partnership because it believes that the transition to precision agriculture is extremely important for its agricultural system. It seeks to strengthen its position in global value chains and improve administrative capacity, create synergies with other territories and better focus on programs and projects. In addition, cross-regional planning and road mapping expand opportunities for further cooperation between regions and investment flows.

Participating in the thematic partnership enabled organizational changes at the regional authority level with improved communication on smart specialization. It also made it possible to change the behavior of regional specialists due to more effective cooperation between different operational programs in the lead region. In the operational phases, this led to better integration and complementarity, as well as a more focused discussion in the S3 Regional Coordination Group. The management of Tuscany S3 is based on two structures, an internal coordination working group and an external monitoring group formed by the main regional stakeholders in innovation. Both entities consider and discuss co-investment opportunities provided by interregional cooperation, then take into account synergies within regional programs and promote integrated initiatives. Likewise, regional officials working in the Department of Agriculture had the opportunity to explore specific opportunities offered by the Roadmaps of the Smart Specialization Strategy and related programs and thus contribute to a more structured way of transregional cooperation in smart specialization at the European level.

The partnership has seen a number of relevant positive outcomes:

• The partnership allowed for a better understanding of the various scientific, business and innovation aspects related to high-tech farming.

• Mapping and identifying complementarities between the regions participating in the partnerships contributed to a better understanding of the technologies and actors working in this area (end users, advisors, technology providers, researchers, etc.).

• During the scoping and mapping stages, regions were able to gather information on the potential and needs of regional subjects (in all technology sectors).

• The mapping of competencies at the regional level contributed to a better involvement of stakeholders from different business sectors. In addition to business actors, a number of clusters are directly involved in the development of business cases.

• Some partner regions considered options for financing and supporting innovative projects of an interregional dimension (for example, Tuscany promoted a focus on precision agriculture) [15].

Conclusion

The implementation of the concept of a smart specialization strategy in the formation of regional development policy contributes

to the activation of the use of internal potential by regions to determine innovative directions of economic growth through the cooperation of local business, science, authorities and the public. The effectiveness of this process depends on productive communications between leading stakeholders, which involves the exchange of knowledge, technologies and experience, the development of a common vision of the development of existing or new industries, and the concentration of resources on agreed priorities.

With the conceptual development of the S3 methodology, its integration component is becoming increasingly important. Therefore, one of the principles on which the concept of smart specialization is based is the development of clusters and the creation of platforms for interregional cooperation.

In order to more effectively use the own potentials of each region, it is proposed to implement the construction of interregional S3, and at the EU level it is advisable to harmonize the rules governing various sources of EU funding related to S3, and to introduce new provisions and mechanisms to support interregional cooperation.

Exchange of common databases, industry and technological definitions, etc. between regions is necessary. In addition, creating a permanent forum to unite and discuss problems and difficulties common to the regions, as well as initiating the process of information exchange between regions on issues related to interregional cooperation can also activate the processes of interregional integration.

Today, a new type of influence of state power is being formed, based on effective interaction between the government, business and universities. At the heart of this management model is a platform for strategic interaction with many interested parties. Triplex management mobilizes decision-making capacity in the public and private sectors and puts universities and the education sector as a whole at the center of growth strategies – both as providers of skills and innovative outcomes.

This approach requires regional authorities to improve their strategic knowledge and skills to effectively facilitate interregional investment projects.

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