# THE SMART SPECIALISATION FOCUS TO THE INDUSTRIAL REGIONAL SCALE

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***Abstract:*** *The focus of this paper is to provide a model for indexing the innovation activity of the companies at national (macro level) and regional level (micro level in two regions), depending on their sectoral affiliation (under NACE) and establishing inconsistencies analysis) to the already identified priority thematic areas at the end of the implementation period of the Integrated Intelligent Specialization Strategy (ISIS). The presented model will serve to correct the existing or validate new priority thematic areas for the post-2021 period and will present criteria for new (for the next programming period) compliance of the fields both with the specifics of the circular economy and with the expected new in territorial aspect planning regions in the Republic of Bulgaria.*

*The research objectives, met are on a desk research of the existing models for assessing the innovation activity of the companies and in particular the activity towards the principles of the circular economy will be made, and on a field research of some 150 business units from the Southwest and South-Eastern regions in Bulgaria, surveyed on the basis of their behavior and behavioral and management decisions of their owners / managers.*

## Introdiuction

Over the past five years, a serious discussion has developed in the scientific community and business about the nature and content of the Integrated Intelligence Specialization Strategy (ISIS). Introduced by the European Commission as the initial condition for the implementation of Axis 1 of the Science and Education for Smart Growth Operational Program, it focuses on the efforts of scientists in the field of innovation, sectoral and regional development. The paper is based on the research behind a substantial part of the content in this paper under the IRISI („Indexing the Regional Innovative Levels in the Sectors of the Economy - scenario for the identified in the ISSS four priority thematic areas for smart specialization and their positioning towards the circular economy") project financed under the Bulgarian National Scientific Fund.

The main research thesis is that a new model of indexing of the innovation activity of business units and their regional concentration should be set, which should not only correspond to the available capacities and assets but also to the specific advantages of a circular economy. In the paper one of the the research hypotheses is challenged. Namely it is on the assumption that technological prerequisites stand to some sectors, the principles of the circular economy, such as long-term asset use, multiple use of materials; repairability and upgrading of products through the 'Internet of Things' to work faster and with a lower level of investment, and priority should be given.

**Current state of the research on the problem area**

In Bulgaria, the innovation policy is carried out by the Council of Ministers through the Minister of Economy, Energy and Tourism, according to the Council of Ministers' Innovation Strategy adopted by the Council of Ministers and the new specific for the period 2014-2020.

By decision of the Council of Ministers № 857 of 03.11.2015, the draft Innovative Strategy for Intelligent Specialization of the Republic of Bulgaria 2014-2020 and its Annex 1 was finally adopted as a basis for implementation of thematic preconditions 1, 1.1"Research and Innovation: The existence of a national or regional smart specialization strategy in line with the National Reform Program aimed at mobilizing private funds for research and innovation and which is in line with the characteristics of well-functioning national or regional systems in research and innovation "in Annex XI to Regulation (EU) No 1303/2013 of the European Parliament and of the Council.

On the indicator R & D expenditure as a percentage of GDP, Bulgaria remains at the bottom of the European ranking, while the downward trend over the last ten-year period gives the country a long-term economic backwardness and unsustainable growth. Against this background, the target set for R & D spending to 1.8% for 2018 in the National Research Development Strategy and currently in ISIS has not yet been met.

There is no single policy center to coordinate national innovation, technology and science policies and to be directly involved in the development of the country's innovation potential. The National Innovation System is still a chaotic set of public and private organizations, lacking synergies and dialogue. The institutional and organizational structure of the innovation system is considerably lagging behind the market realities and reforms that need to be made Bulgaria has almost two times less innovative companies than the EU average. Their share is 20% of all enterprises in industry and services and on this criterion the country is at one of the last places in the EU, where the share of innovative enterprises is 39%.

It is disturbing to analyze the trends in the main components characterizing the innovation activity on Eurostat data, namely: R & D carried out by the companies in Bulgaria did not increase after the adoption (in 2016) of the ISIS; Introducing new products to the market is on a constant level; upgrading equipment-purchasing machines, equipment, software by 73% in 2004-2006 (73% in the EU) before our membership in the EU is down 31% 10 years after membership and after the adoption of ISIS.

At the same time, there were changes in the branch structure and a significant part of the investments were oriented to outsourcing capacities, but without development units and without preconditions that the innovation activist should be carried out in Bulgaria. Whole regions - like the South Central Region, are dominated by outsourced production.

During the process of developing the ISIS in the European Union, there have been processes in which leading economists have proven that the linear model of economic growth no doubt no longer corresponds to the needs of modern society. A future can not be built on the take, produce and discard model.

Thus, at the initiative of the European Commission and the European Investment Bank, a real precondition and financial instruments for the „circular economy“ were created. After 2015 (unfortunately even after the ISIS development phase), the principles have been established that the value of products and materials should be kept as long as possible and the circular economy is the option of sustainable development.

The generation of waste and the use of resources in this model are minimized. The idea is to keep resources in the economy when the product reaches the end of its lifecycle and is

used repeatedly to create added value. For consumers, the effects are related to more durable and, to a greater extent, innovative products, financial savings and improved quality of life.

The cycle closure in the circular economy takes into account all phases of the life cycle of a product - from production and consumption to waste management and the secondary raw material market. This could lead to net savings for businesses in the EU amounting to € 600 billion or 8% of their annual turnover. A reduction in total annual greenhouse gas emissions by two to four percent is expected.

In the reuse, recycling and repair sectors, for example, mobile phone processing costs may be reduced by half if their dismantling was easier. It was found that if 95% of the old mobile phones are collected, this could lead to cost savings of over EUR 1 billion in production costs.

The themes for the circular economy are a fact and funds are already invested in Bulgaria. However, it is a problem that ISIS in its present form and the outlined main thematic areas should be reworked and further set these principles.

**Corresponding societal challenge outlined in the National Research Strategy**

In the present study, the focus will be not only on innovation and the circular economy as separate fields of science, but the implementation and variants to modify the Innovative Strategy for Intelligent Specialization of the Republic of Bulgaria 2014-2020 and the process of intelligent specialization. In the previous year, a series of thematic meetings had already been organized and held – for each of the ISIS thematic areas identified as priority and available for smart specialization capacities - Mechatronics and Clean Technologies, Informatics and ICT, Industry for Healthy Life and Biotechnology „and“ New Technologies in Creative and Recreational Industries". which submitted a document according to the requirements of the contracting authority. With the analysis and the developed on the basis of it the technological road maps for the thematic areas defined in the Innovative Strategy for Intelligent Specialization of the Republic of Bulgaria 2014-2020

In the discussions until the implementation of ISIS took active participation and representatives of this scientific team (Prof. Baltov and Prof. Kostadinov). They have always emphasized its relationship with the European Institute of Technology, COST, COSME, the Science and Education for Smart Growth Operational Program 2014-2020, The Operational Program „Innovation and Competitiveness“, the new EU SME Competitiveness Facility, Eureka and Eurostat, and the national instruments for funding science and innovation – the National Innovation Fund and the Research Fund.

This research will look for scientific evidence and suggest proposals to further focus the areas of specialization on their regional dimension. The results of the future research will aim to connect with the process of entrepreneurial discovery and bring about a change in the developed regional focus of ISIS.

On the other hand, it will be explored how the circular economy will create opportunities for businesses that will attract private funding. Raising public awareness of the challenges we face will help stimulate the choice of responsibly produced products. It will be in touch with the European Investment Fund (EIFI) instruments to complement existing support for circular economy projects through the European Investment Bank (EIB) advisory and financial instruments under the InnovFin program.

Scientific indexes on innovation potential and the possibility of launching a platform, together with the EIB and national banks, will be sought to support the financing of the circular economy.

The team plans to analyzing existing research developments in the field of research and modeling of innovation capacity of SMEs in Bulgaria and in Europe, assessing the current state of innovation capacity of SMEs by exploring accessible data on the economic situation of Bulgarian companies and creating a database of 5 000 SMEs. At the same time, two pilot studies will be carried out at the first stage: on innovation processes, products and services in SMEs, investments, cooperation with other business units, etc. and on innovation processes, products and services in SMEs, organizational and marketing innovations, investments made and planned, common and new business practices, their cooperation with other business units (SMEs, industry organizations, consultants, technology transfer offices, etc.) for innovative products and processes, impact on the environment, efficiency, etc. The pilot studies will conclude with a field study of 150 business units from the Southwestern and South-Eastern regions of the Republic of Bulgaria on the basis of their behavior, management decisions and innovation activity. The stage will end with the development of a methodology for assessing the innovation activity of the companies and in particular the activity of SMEs towards the principles of the circular economy.

The second stage will start with a further study of the already formed database (of the Eurostat collections) of 5,000 SMEs - this time for the character and level of their innovation activity and the formation of clusters against the described indices. Mathematical models will be developed and explored to classify SMEs in relation to pre-selected criteria and data-dependence testing. A system of criteria and methodology will be developed for the selection of pilot SMEs and business structures in which the developed methodology will be applied. Result will be a system of indicators and indicators for assessing the approved methodology for assessing the innovation potential of SMEs and will systematise and analyze the results of the assessment.

**Critical assumptions and orientation of the models**

Companies use partnerships for various reasons, generally for mutual benefit. That's why partnerships are becoming a cornerstone of many business models. When forming a partnership, evaluating the impact on the clients is important. SMEs create alliances to optimize their business models, reduce risk, or acquire resources. It can be useful to distinguish between the motivations for creating partnerships. Optimization and economy of scale. The most wide-spread form of partnership or buyer-supplier relationship is designed to optimize the allocation of resources and activities. It is illogical for a company to own all resources or perform every activity by itself. These may include access to certain hardware or software, a large social media following, or a strong network of industry professionals in SME's area. Optimization and economy of scale partnerships are usually formed to reduce costs, often involve outsourcing or sharing infrastructure with purpose to business potential will increase as a result. Strategic partnerships grow the opportunity for SMEs to share their good practices with one another in a way that benefits all parties involved.

Reduction of risk and uncertainty. Partnerships can help reduce risk in a competitive environment characterized by uncertainty. It is not unusual for competitors to form a strategic alliance in one area while competing in another. Blu-ray, for example, is an optical disc format jointly developed by a group of the world's leading consumer electronics, personal computer, and media manufacturers. The group cooperated to bring Blu-ray technology to market, yet individual members compete in selling their own Blu-ray

products. In addition, strategic partnership between SMEs could bring them access to new markets and new customer groups.

Acquisition of particular resources and activities. It is difficult to SMEs to possess all the needed resources or to perform all the activities described by their business models. Rather, they extend their capabilities by relying on other companies to play the role of suppliers or to perform certain services, as well as to acquire knowledge, licenses, or access to customers.

Access to new products, services or markets. The diversification of products and services is among the primary purposes of the created partnerships. Access to new or different customers, ideas, materials, and expertise will give your business the opportunity to improve current products and create new ones. Similarly, expanding to new markets, geographical or virtual, could boost profit, so finding partners in such fields could be critical in reaching new customers.

The SME can distinguish between four different types of partnerships:

- Strategic alliances between non-competitors
- Competition: strategic partnerships between competitors
- Joint ventures to develop new businesses
- Buyer-supplier relationships to assure reliable supplies

It appears the most important activities a SME must do to make its business model work. Each business model includes a number of key activities. This term refers to the most critical actions a SME should take to operate successfully. Similarly to Key Resources, they are required to create and offer a Value Proposition, reach markets, maintain Customer Relationships, and earn revenues. Key Activities vary depending on the selected business model type. For example, they may include software development, supply chain management, problem solving, etc. So the SME should answer the following important questions:

Based on their value proposition, what kinds of activities are critical to the business?

What kinds of activities are the most important to their distribution channels?

What kinds of activities are important if SME wants to maintain their customer relationships?

What kinds of activities are fundamental to their revenue streams?

Key activities were broadly categorized as production, problem solving, and platform/ networking. With the production, the activities relate to designing, making, and delivering a product in substantial quantities and/or of superior quality. Production activity is wide-spread in the business models of manufacturing firms. For the problem solving they relate to finding new solutions to individual customer problems. The operations of consultancies, hospitals, and other service organizations are typically dominated by problem solving activities. Their business models call for activities such as knowledge management and continuous training.

**Conclusion**

Definitely key are the crossing points of the Quadruple-Helix model and the outlines of the sectoral specialization of the regional economies with their innovative potential; the priority guidelines for the development of scientific research and innovations will be outlined. A special focus will be on the digitalisation acting as a push factor for the processes.

Thus the key issue is on the bridge towards the regional smart specialisation and the digital Europe idea on boosting investments in: supercomputing, artificial intelligence,

cybersecurity, advanced digital skills, and on ensuring a wide use of digital technologies across the economy and society. One practical pathway is in establishing and performance of the European Digital Innovation Hubs (supposed under the Digital Europe Programme). The EDIHs function is to be one-stop shops by providing access to technical expertise and experimentation as well as the possibility to "test before invest". The EDIHs are to help companies improve business/production processes, products or services using digital technologies. They are to provide innovation services to the financing advice, training and skills for a successful digital transformation, and a certain environmental support to energy, consumption and low carbon emissions.

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