P. G. Martinovych

THE INFLUENCE OF THE SMART ECONOMY OF THE REGIONS ON THE DEVELOPMENT OF UKRAINIAN COMPETITIVENESS

The article is devoted to revealing the economic essence of the smart economy of the region and identifying areas of influence of such specialization on increasing the competitiveness and innovation activities of the region. It is determined that the concept of digital economy development involves the relationship between science, education and economics, and in the context of regional development we are talking about the triad "business science-community". According to this, the goal of the smart economy is the optimal use of the potential of individual regions and countries through the maximum adaptation of possible directions of the science and education development in these regions or countries to their specific socio-economic conditions. It is established, that the main advantage of systemic development at the regional level is the increase of its competitiveness and innovation activities, as the presence of innovations in the modern globalized world is the main factor of economic growth.

Keywords: smart economy, smart specialization, regional development, innovations, investments, strategy, competitiveness.

Introduction. The current dynamic development of Internet technologies and the growing level of integration of Ukraine’s economy with the European Union (EU) economy requires the implementation in the foreign experience of all levels of the approaches, principles, and tools on which the activities of European structures are based. One such important tool is smart specialization. The smart economy is an innovative EU tool for building regional capacity through three key approaches, including local conditions, the knowledge economy, and management. In practice, this approach involves identifying the competitive advantages and assets of the region, the use of its innovation, and scientific and investment potential. The development of the smart economy of the regions of Ukraine can be achieved only if there is effective synergy between local authorities, business, science, and civil society.

Analysis of the last researches and publications. Some theoretical and applied aspects of the development of start-up economics are revealed in the works of domestic and European researchers, in particular J. Bjuska, J. Pika [1-2], P. David, D. Forey, B. Hall [3], T.V. Kosenkova [4], M. Kardas [5], Y. A. Zhalilo, V. I. Zhuk, O. Y. Snigova, A. O. Filipenko, O. V. Finagina [6], O. V. Shevchenko [7], G. Tobor [8] et al. At the same time, systematic studies of the impact of the region’s smart economy on increasing its competitiveness and investment and innovation activity have not yet been conducted.

The purpose of this article is to reveal the economic essence of the smart economy of the region and identify areas of influence on the competitiveness of the regions of Ukraine.

Presentation of the main research material. Skalatsky V. M. [9] notes that the economic literature distinguishes the theory of information society as a part of the concept of post-industrialism, as well as the concept of information economy itself, as the highest level of development of society.

In the context of globalization, the digital economy plays an important role in the countries development, the most important factor is information and knowledge, as well as ways to access them. The digital economy is not a separate industry, but a virtual environment that complements our reality. Increasingly, the digital economy is intertwined with the traditional economy, making clear demarcations increasingly difficult. The main products of the digital economy are the same goods and services of the traditional economy provided by computer equipment and digital systems such as the global Internet. This has its advantages, the main of which is to increase the availability of ordinary users to certain markets (goods or services), not just large companies, reduce transaction costs, increase efficiency and competitiveness [10].

The concept of development of digital economy and society of Ukraine for 2018–2020 was introduced by the Government of Ukraine based on measures to implement appropriate incentives for digitalization

Strategic planning of the socio-economic development of regions is an important tool for implementing state regional policy. Despite sufficient foreign and domestic experience in regional strategy, several implemented strategic plans still deviate from the actual results. The reasons for this are both insufficiently substantiated horizon of planning and disregard for force majeure (typical of regional strategies during the financial and economic crisis of 2008–2009) and underfunding of certain measures that reduce the effectiveness of regional policy and strengthen populism and decorativeness of planned measures. The lack of coordination of sectoral strategies, socio-economic processes at the supranational, national, regional and local levels is a significant factor in the lack of desired effects from some implemented projects, which is excessive dispersion of resources, lack of concentration on priority areas and duplication of funding, unable to launch transformational positive changes in socio-economic development.

Structural changes in the economies of EU member states are the result of the transformation of the global economic system under the influence of changes in technological patterns. Today, high incomes and consumption standards achieved in developed countries are based on the predominant use of technologies of the fifth and sixth technological modes, which are characterized by a high level of informatization, automation, and computerization. The change in technological systems leads to the emergence of a set of basic knowledge-intensive industries and technologies based on revolutionary technological innovations, joint scientific and technical potential, etc.

The transition of the economy to a new technological way is due to technological transformations and leads to progressive changes not only in the structure of the economy, but also in the organization and management of the economic activity, the development of social institutions, human behavior, and more. The structure of the economy by technological methods quite objectively characterizes the degree of progressiveness of the existing technological base of the economy. Structural transformation of the economy of countries under the conditions of change of technological ways promotes:

- increasing the competitiveness of the economy not only of an individual country but also encourages the spread of new technologies from one country to the world level;
- long-term economic growth;
- growth of funding for scientific and technical developments;
- institutional transformations, including in the field of management and organization of economic activity;
- raising the requirements for the professional qualification level of employees and modernization of forms of a labor organization;
- intellectualization of production, the transition to a continuous innovation process in most industries, and continuing education in most professions [12].

In the context of investigation and analysis of the concept of smart-specialization and approaches to its characteristics (Table 1), it is worth to note the comprehensive approach of the research team led by V. Heitz, which considers smart specialization as a conceptual model of not only innovation policy but socio-economic policy the region as a whole, which is explained by its focus not only on stimulating innovation but on intensifying long-term structural transformations in the economy and focusing on the future to achieve the main goal – to occupy an important niche in global markets [6].

Digital development involves a set of tasks that will positively affect the economy, business, society and life of the country as a whole.

The main goals of digital development are:

- accelerating economic growth and attracting investment;
- transformation of economic sectors into competitive and efficient;
- technological and digital modernization of industry and creation of high-tech industries;
- accessibility for citizens of the benefits and opportunities of the digital world;
- realization of human resources, development of digital industries and digital entrepreneurship.
Table 1 – Scientific approaches to the definition of the smart specialization

<table>
<thead>
<tr>
<th>Author</th>
<th>Definition</th>
<th>Source</th>
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<tbody>
<tr>
<td>Regulation EU no. 1303/2013</td>
<td>The smart specialization strategy means a national or regional innovation strategy that prioritizes competitive advantage by developing and adapting its research and innovation capabilities to business needs to consistently respond to new opportunities and market changes while avoiding duplication and fragmentation of efforts; the smart specialization strategy may take the form of or be part of a national or regional research and innovation policy (item 3, art. 2). Smart specialization strategies should be developed by involving national or regional authorities and stakeholders, such as universities and other higher education institutions, industry, and social partners, in the business search process (item 4.3, item 2 in Annex I). The smart specialization strategy means a national or regional innovation strategy that prioritizes competitive advantage by developing and adapting its research and innovation capabilities to business needs to consistently respond to new opportunities and market changes while avoiding duplication and fragmentation of effort; the smart-specialization strategy may take the form of or be part of a national or regional research and innovation policy (item 3, art. 2). Smart specialization strategies should be developed by involving national or regional authorities and stakeholders, such as universities and other higher education institutions, industry, and social partners, in the business search process (item 4.3, item 2 in Annex I).</td>
<td>Regulation (EU) no. 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund</td>
</tr>
<tr>
<td>The team of authors led by V. Heitz</td>
<td>Smart specialization is a new concept of regional development that combines industrial and innovation policies and is designed to promote the efficient and effective use of public investment by focusing on the strengths of the region, which are the specialization of the region.</td>
<td>Innovative Ukraine 2020: national report (2015). In: V. M. Heitz et al. (Eds); NAS of Ukraine. Kyiv, 336 p.</td>
</tr>
</tbody>
</table>
Table 1 (Continued)

| O. Yatsyuk | Smart specialization is an innovative EU tool for building regional capacity through two key approaches, including local and knowledge-based economies. In practice, this approach involves identifying the competitive advantages and assets of the region, the use of its innovative and scientific potential. | Yatsyuk, O. S. (2018), "Smart specialization of the region’s development as an important direction of increasing its competitiveness and innovative activity", Scientific Bulletin IFNTUNG, no. 2 (18), pp. 54-60. |
| M. Fedyaev | Smart specialization is an industrial and innovative system for regional economies that aims to demonstrate how public policy, market conditions, and research, development, and investment policies can influence the region’s economic, scientific, and technological specialization, and, consequently, on its productivity, competitiveness and economic growth. | Fedyaev, M. (2018), "Smart" specialization as a tool for the transformation of the national economy (theoretical aspect), Black Sea Economic Studies, iss. 26-1, pp. 87-92. |

Source: generated by the author

Sectors of the economy that use digital technologies are growing faster, cheaper and better. Areas of life, such as education, medicine, and transport, which are being modernized through digital technologies, are becoming much more efficient and creating new value and quality. The accelerated digital development scenario envisages:

- elimination of legislative, institutional, fiscal and other obstacles that hinder the development of the digital economy;
- introduction of incentives and motivations to encourage business and industry in general to digitize;
- creation of demand and formation of needs among citizens for digitalization, first of all through introduction by the state of large-scale projects of digital transformations, in particular on the basis of modern models of public-private partnership;
- creation and development of digital infrastructures as a basis for using the advantages of the digital world in everyday life and a platform for achieving economic efficiency in general;
- development and deepening of digital competencies of citizens to ensure their readiness to use digital opportunities, as well as to overcome the associated risks;
- development of digital entrepreneurship, creation of appropriate (including analog) infrastructures to support and develop innovation, implementation of funding mechanisms, incentives and support [11].

The development of the smart economy of the regions of Ukraine can be accelerated with the help of scientific knowledge about the management system. Many competitive advantages can be achieved using a strategic approach to planning (Fig. 1).

![SMART ECONOMY](image)

**Fig. 1 – Directions of the development of the smart economy**

Source: developed by the author
The main rating goals of the Concept of Ukraine implementation are the achievements in 2020:
30th place in the Networked Readiness Index (WEF) (in 2016 – 64th place);
40th place in the Global Innovation Index (INSEAD, WIPO) (in 2016 – 56th place);
50th place in the ICT Development Index (ITU) (in 2016 – 79th place);
60th place in the Global Competitiveness Index (WEF) (in 2016 – 85th place) [11].
Opportunities for smart specialization are quite wide (Fig. 2).

As of May 2020, 18 regional development strategies have been approved in Ukraine, which defines the areas of their specialization. The current strategy is until 2025 in Kyiv, however, at the end of 2019, the areas of its specialization will be determined, which will be included in the city’s development strategy until 2035.

The author made a detailed analysis of the existence of regional development strategies, although there are areas whose content is difficult to establish the existence of smart specialization and how it was determined (Table 2).

Table 2 – Regional development strategies for the period up to 2027

<table>
<thead>
<tr>
<th>Region (as of May 2020)</th>
<th>Availability of strategy</th>
<th>Correspondence of the smart specialization to &quot;traditional specialization&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinnytsia</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Volyn</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Dnipropetrovsk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donetsk</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>Zhytomyr</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Transcarpathian</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Zaporizhzhia</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Ivano-Frankivsk</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Kyiv</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Kirovohrad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luhansk</td>
<td>+</td>
<td>*</td>
</tr>
<tr>
<td>Lviv</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
Smart specialization is an approach that involves a reasoned definition of regional development actors in the regional strategy of certain strategic goals and objectives for the development of economic activities that have innovative potential, taking into account the competitive advantages of the region and contributing to the transformation of economic sectors into more efficient [6]. Ukraine has also made some progress along the way. As of September 1, 2020, five regions of our country are registered on the European Platform S3 – Zakarpattia, Ivano-Frankivsk, Kharkiv, Chernivtsi, and Chernihiv regions. At the same time, only for Kharkiv and Cherkasy region, information on their priority research areas is provided (Table 3).

Table 3 – Priority areas of the researching of Cherkasy and Kharkiv regions, which are located on the Platform S3

<table>
<thead>
<tr>
<th>Cherkasy region</th>
<th>Kharkiv region</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direction</strong></td>
<td><strong>Name</strong></td>
</tr>
<tr>
<td>Ecological safety and preservation environment</td>
<td>Improvement of water bodies, atmospheric air and improvement of waste management, development of ecological network, natural reserve fund, preservation of biological and landscape diversity and creating conditions to improve the environment</td>
</tr>
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<td></td>
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<td></td>
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<tr>
<td>Increasing energy efficiency</td>
<td>Use of energy-efficient and resource-saving technologies</td>
</tr>
<tr>
<td>Rural development territories</td>
<td>Diversification of the production structure agriculture, improvement of product processing, development of rural areas and suburban areas</td>
</tr>
</tbody>
</table>

Compiled by source: [https://s3platform.jrc.ec.europa.eu/regions/UA1/tags/UA1](https://s3platform.jrc.ec.europa.eu/regions/UA1/tags/UA1)

For example, the "traditional specialization" of Lviv region is industry (23%), trade (15%) and agriculture (9.6%). The Development Strategy of Lviv region for the period 2021–2027 defines the strategic goal "Competitive economy based on smart specialization", and the greatest innovative potential for development, according to the developers, is seen in such activities defined on the principles of smart specialization as:

- processing industry (machinery and instrument making), textile;
- bioeconomics (woodworking, furniture production, printing, food industry, bioenergy);
- creative industries (IT, activities in the field of creativity and art, production of video products and advertising materials, provision of information services);
- MORS (medical tourism, pharmacy, biotechnology, health care) [12, p. 41].
These types of economic activity are characterized by sufficient economic and innovative potential to increase the production of high value-added products and can stimulate the development of related economic activities. The IT sector (which is part of the creative industries) has shown rapid growth in recent years (both in terms of the number of professionals and value-added), and the viability of the economy is confirmed by the growth of all its components, including employees, except agriculture.

Innovatively oriented economic activities that have the potential for development for the Kharkiv region are:
- production of basic pharmaceutical products and pharmaceuticals;
- production of machines and equipment;
- production of power equipment;
- production of motor vehicles, trailers and semi-trailers, and other vehicles. It is interesting that within these species the specialization of the region was formed with the distribution by levels of government:
  a) central – power engineering; production of armored vehicles; aviation industry; creation and production of new materials;
  b) regional – biopharmaceutical; information technologies; creative industry (except information technology); agro-processing.

The third strategic goal "Building a competitive and smart specialized spatial economy with high added value" of the regional development strategy is clearly consistent with smart specialization [12, p.41]. Another economically developed region, which has shown a steady pace of development in the recent period - Odessa region, despite a strong processing industry, has chosen the production of agricultural products as its smart specialization. It is assumed that this area can serve as a powerful raw material base, and thus a prerequisite for the development of the food industry, which in the long run will contribute to the creation of higher value-added products, job creation, export growth, and development of the region as a whole.

A clear representative of the region with a slow pace of development is the Kherson region (share in the country’s GDP at 1.6% in 2017), and the structure of value-added which is dominated by agriculture. Given the "traditional specialization", the regional development strategy for 2021–2027 identified areas of specialization of the region: processing of agricultural products and the development of the creative industry. According to the developers of the strategy, there are nine industries in such NACE as60: processing and canning of fruits and vegetables; production of oil and animal fats; dairying; production of other food products; beverage production; production of building metal structures and products; production of machinery and equipment for agriculture and forestry; construction of ships and boats; production of furniture, demonstrating a stable both economic and innovative potential made it possible to determine the operational goal of "Processing of agricultural products on the basis of smart specialization". The regions of Ukraine that have approved the USSR by 2027, but in which their smart specialization is not entirely obvious include: Chernivtsi (agriculture, processing industry, tourism), Vinnytsia (health and medical tourism), and Donetsk (no specialization defined) as such areas.

Thus, a comparative analysis of European and domestic practices of regional development strategy provides grounds for the formation of conclusions and generalizations that are important in the Ukrainian context, namely:
- all analyzed regions / EU countries have developed national/regional research or innovation strategies for smart specialization, as it is, on the one hand, guaranteed access to European investment funds and state support (through funding of various regional development programs) areas of specialization, on the other - it is an opportunity to become leaders / or players in certain fields of knowledge or markets, and therefore to gain advantages in value-added production chains;
- European practice of choosing regional specialization priorities has confirmed a key feature of smart specialization – the ability to reasonably link existing knowledge/innovation with market potential because knowledge does not always provide an economic effect that will inevitably lead to increased value-added in the region. Although the opposite is obvious – goods/products/services with a low share of innovation are uncompetitive. Therefore (and this is clear from the study), the smart specialization of the region is chosen on the border of several industries/technologies or knowledge (agri-food sector-biotechnology; engineering, etc.), which complement each other;
- some countries/regions already have 3–4 innovative smart specialization strategies (for example, the Czech Republic), the results of which (as well as areas of specialization) are a logical continuation of each other. However, it is clear that in the initial stages (after joining the EU) everyone focused on the traditional
specialization of the region, and over time ("mastering" significant amounts of donor funds, especially the Polish regions) "got on their feet" and then chose the following scenarios:

a) partially left the old areas of specialization and gradually added 1-2 new ones (related or strategically important for the future);

b) created attractive conditions for investors and, taking into account which industries were developing dynamically, chose those areas of specialization;

c) analyzed in which sectors science-innovation-know-how is growing (expenditures on innovation are growing) - they chose as areas of stimulation;

d) it is obvious that countries that develop IT, engineering, etc. necessarily "pull up" related industries/sectors, creating production chains with high added value and delve into subgroups;

- it is important that when determining the specialization of the region, most countries focus either on the opportunities / available technologies of the region or on innovative products/services/goods for a clearly defined market niche (eg South Moravian Region, Northwest Romania);

- it is unlikely to be possible for Ukraine to borrow the experience of regional development strategy, as we are all different (both economies and opportunities (financial, resource, innovation...), but some aspects of regional development planning based on smart specialization are even very appropriate). we now observe - starting from the methodology and ending with the justification of areas of specialization). It should be noted that most of the domestic strategies of regional development until 2027 are written in such a way that smart areas resonate with the traditional economic specialization of the region. And this is not surprising, because according to European practice, their first smart strategies were developed according to the same scenario.

Conclusions. There are countries/regions that already have 3-4 innovative smart-specialization strategies (for example, the Czech Republic), the results of which (as well as areas of specialization) are a logical continuation of each other. The decentralized policy of regional development, increasing the level of competitiveness, territorial socio-economic integration, spatial development, cooperation of "business-science-community" are the first steps for the development of an effective smart economy of Ukraine. The country cannot be successful in the development of the digital economy in the absence of the necessary regulatory framework, economic development strategy based on digital technologies. But no less important is the formation of professional skills, basic ICT literacy, preparation for a professional career, promoting lifelong learning.

Summarizing the above, it should be agreed with the authors [2] that the concept of smart specialization involves the relationship between science, education, and economics, although in the context of regional development we can rather talk about the relationship between business, science, and society. According to these relations, the purpose of smart specialization is the optimal use of the potential of individual regions and countries through the maximum adaptation of possible areas of science and education in these regions or countries to their specific socio-economic conditions. That is, directing government intervention in such initiatives, activities, and projects that allow specialization in this region or country, or the development of basic technologies or products and services using these technologies. The implementation of the above goal of start-specialization determines the possibility of achieving its main goal — to increase competitiveness and innovation at the regional level, as the presence of innovation in today’s globalized world is a major factor in economic growth.

Given the significant results of the start specialization, as well as taking into account the need to deepen our cooperation with EU countries in the framework of the European Neighborhood Policy, Ukraine needs to implement the analyzed concept in the field of regional policy. One of the most important areas of implementation of the concept of start specialization, which is still not properly covered in the scientific works of Ukrainian scientists, is the involvement of universities, other educational institutions, and research centers in determining the comparative advantages of regions and forming strategies for their development. Obviously, this requires the use of the latest formats of cooperation between public authorities and local governments on the one hand and educational and research centers on the other hand based on the involvement of the latter in the development of innovative products and its implementation primarily at the regional level economy.

Список використаних джерел

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ВПЛИВ СМАРТ-ЕКОНОМІКИ РЕГІОНІВ НА РОЗВИТОК УКРАЇНСЬКОЇ КОНКУРЕНТОСПРОМОЖНОСТІ

Дослідження присвячено розкриттю економічної сутності смарт-економіки розвитку регіону та виявленню напрямів впливу такої спеціалізації на підвищення конкурентоспроможності та інноваційної активності регіону. Визначено, що концепція розвитку цифрової економіки передбачає взаємозв’язок між наукою, освітою і економікою, причому у контексті регіонального розвитку йде рідміру «бізнес-наука-громада». Відповідно до цих відносин мета смарт-економіки – це оптимальне використовування потенціалу окремих регіонів і країн через максимальне пристосування можливих напрямів розвитку науки і освіти у цих регіонах або країнах до їх конкретних соціально-економічних умов. Встановлено, що основою перевагою системного розвитку на рівні регіону є підвищення його конкурентоспроможності та інноваційної активності, оскільки наявність інновацій в сучасному глобалізованому світі є основним фактором економічного зростання.

У статті здійснено огляд витоків підходу смарт-спеціалізації у стратегічному плануванні на регіональному та місцевому рівнях, що визначено у «Методиці розроблення, проведення моніторингу та оцінки результативності реалізації регіональних стратегій розвитку та планів заходів з їх реалізації» та Постанові Кабінету Міністрів України від 11 листопада 2015 р. № 932 «Про затвердження Порядку розроблення регіональних стратегій розвитку і планів заходів з їх реалізації, а також проведення моніторингу та оцінки результативності реалізації зазначених регіональних стратегій і планів заходів». Автором сформульовано наукову проблему, що потребує вирішення найближчим часом, а також подано загальну характеристику регіонів України як основи вибору смарт-спеціалізації. Виявлено, що науково-методичне забезпечення процесів управління смарт-спеціалізації залишається недостатнім, бракує як спеціалізованих прикладних наукових досліджень, так і адресної допомоги конкретним регіонам і територіальним громадам.

Ключові слова: смарт-економіка, смарт-спеціалізація, регіональний розвиток, інновації, інвестиції, стратегія, конкурентоспроможність.

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