*УДК 351:004.896:338.242.2*
*DOI: 10.31732/2663-2209-2022-70-76-82*

# ENTREPRENEURSHIP INTEGRATION IN ECONOMY 5.0: SUSTAINABILITY AND RESILIENCE FOR AGROINDUSTRY

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# ІНТЕГРАЦІЯ ПІДПРИЄМНИЦТВА В ЕКОНОМІКУ 5.0: СТАЛІСТЬ ТА СТІЙКІСТЬ АГРОПРОМИСЛОВОСТІ

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***Abstract****. The paper deals with the theoretical aspects and practical prerequisites for entrepreneurial integration in the agroindustry in terms of the Economy 5.0. The aim of the paper is to find new ways for entrepreneurship integration in Economy 5.0 conditions in purpose of sustainability and resilience for agroindustry. The methodological approach is based on the combination of approaches for sectoral division of the economy, the development of technological structures, digital economy and circular economy based on the concept of sustainable development which could be combine in cluster approach to integration. A new type of economy requires accelerated development of information technologies and the formation of special centres of information technologies that allow you to obtain a new combination of human and technological factors of production necessary for the creation of economic goods. The main directions and opportunities to combine the digital and circular economy are determined to ensure sustainable development of the agroindustrial sector. The peculiarities of agroindustry for the formation of integration associations are identified. A road map of formation of cluster associations in agroindustriality has been developed for effective entrepreneurial integration in Economy 5.0. A platform of digital infrastructure of entrepreneurial integration in Economy 5.0 has been developed. Conclusions have been made about the possibilities of entrepreneurial integration in agribusiness in a modern innovation economy as a prerequisite for structural shifts in the spread of advanced digital production technologies that can become tools for improving the stability and competitiveness of national business. Entrepreneurial integration combines into a single integral structure of the enterprise of different sectors to form an effective resilient economic entity. In digital transformation, the cluster infrastructure can function effectively in the virtual space of the digital environment. We maintain the position that digital infrastructure in the aspect of the software should include the following components.*

***Keywords:*** *sustainability, resilience, agroindustry, entrepreneurship integration, Economy 5.0.*

**JEL Classification: B31, B41, L22, L26, O13**

**Formulas: 0; fig.:2; tabl.0; bibl.: 17**

***Анотація.*** *У статті розглядаються теоретичні аспекти та практичні передумови інтеграції підприємництва в агропромисловості в умовах економіки 5.0. Метою статті є пошук нових шляхів інтеграції підприємництва в умовах Економіки 5.0 з метою сталості та стійкості агропромисловості. Методологічний підхід базується на поєднанні підходів до галузевого поділу економіки, розвитку технологічних структур, цифрової економіки та циркулярної економіки на основі концепції сталого розвитку, які можна об'єднати в кластерний підхід до інтеграції. Економіка нового типу вимагає прискореного розвитку інформаційних технологій і формування спеціальних центрів інформаційних технологій, що дозволяють отримати нове поєднання людських і технологічних факторів виробництва, необхідних для створення економічних благ. Визначено основні напрямки та можливості поєднання цифрової та циркулярної економіки для забезпечення сталого розвитку агропромислового сектору. Виявлено особливості агропромислового комплексу для формування інтеграційних об'єднань. Для ефективної підприємницької інтеграції в Економіці 5.0 розроблено дорожню карту формування кластерних об'єднань в агропромисловості. Розроблено платформу цифрової інфраструктури підприємницької інтеграції в Економіці 5.0. Зроблено висновки щодо можливостей підприємницької інтеграції в агробізнесі в умовах сучасної інноваційної економіки як передумови структурних зрушень у поширенні передових цифрових технологій виробництва, які можуть стати інструментами підвищення стабільності та конкурентоспроможності національного бізнесу. Підприємницька інтеграція об'єднує в єдину цілісну структуру підприємства різних галузей для формування ефективного стійкого економічного суб'єкта. У цифровій трансформації інфраструктура кластера може ефективно функціонувати у віртуальному просторі цифрового середовища. Ми дотримуємося позиції, що цифрова інфраструктура в аспекті програмного забезпечення повинна включати наступні компоненти.*

***Ключові слова:*** *стійкість, стабільність, агропромисловість, інтеграція підприємництва, Економіка 5.0.*

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**Introduction**. Today societies, economies, business entities and individuals stand against such challenges as pandemic (COVID-19), wars (Russian invasion in Ukraine) and their consequences and implications, for example, economic crisis, energy crisis etc., which requires responsible sustainable consumption from modern society, and a responsible attitude to resources from business.

Industry4.0 has been related to the influence of modern digital technologies and changes in business models, Industry5.0 is focused on the connection with the green rate and improving the resilience of economy and business to new shocks, at least their reasons. The basis of a new vision is the requirement of resolution, that is, stress resistance, the industry should become a driver of the new transformations inherent in the new life (Industry 5.0, 2022).

In 2020, the World Bank published its document under the name "Resolution industry: competitiveness in the face of catastrophes" (Word Bank, 2020). It seems that stress resistance is becoming a world trend. She is close to us as ever. Not only because of the incredible shocks that have fallen on the fate of our country, but also given the proximity of the European market, which will pay attention to this trend, but the progress of the Industry5.0, which is our common future.

Effective formation of stress-resistant national economy is based on a theoretical study of scientific approaches to its sectoral division and the essence of economic activity, which creates additional value, and, accordingly, participates in the formation of GDP of the country.

**Literature review.** Several theories of sectoral division of the economy have been investigated. One of them is the theory A. Fisher and K. Clark (1939), developing a famous Fisher-Clark model for the national economy. According to this model, three sectors are distinguished in social production: primary, secondary and tertiary. The primary sector is formed by industries whose activities are related to the production of primary resources, namely agriculture and mining. The secondary sector is formed at the expense of industries and construction. The tertiary sector of social production is represented by the sphere of services.

A. Fisher (1939) believed that with the growth of income of society, the basic demand moves from primary to secondary, and then to the tertiary sector of the economy.

K. Clark introduced the division of the economy not into primary, secondary, tertiary, but into sectors of agriculture, industry and services. At the same time, according to K. Clark, the product results of the tertiary sector are not carried out, so it cannot be the subject of exchange, in particular international.

The concept of productive and unproductive work was considered by A. Smith (1976), separating material goods and services. He considered the latter as a good without a natural substance, and therefore there are no reasons for introducing it into social wealth.

In W. Rostow's theory (1960), the three - sector model of the economy has been further developed due to the fact that the author identified five stages of economic growth, which are due to such factors as the level of development of technology, the sectoral structure of the economy, the share of accumulation in national income, the structure of consumption. In subsequent studies of individual economists from the "tertiary" sector, "removed" education and spheres that ensure the use of free time and called the "fourth" sector. The separation of this sector, in their opinion, is substantiated by the functions performed by this sector of the national economy (Kostynets, 2015).

E. Bergman and E. Feser (2020) consider five concepts of industrial clusters: external economies; innovative environment; agreement (cooperative) competition; inter - firm rivalry and dependence trajectory. Alternative concepts as a whole coincide with the point of view of M. Porter (1998) on the interaction between enterprises, industries, state and mixed institutions that affect innovation, competitiveness and economic growth.

Discussions on the application of a cluster approach to entrepreneurial integration in the agro-industrial sector of the Ukrainian

economy have been ongoing long ago. In particular, E. Kobets (2007) believes that the objective process of deepening specialization, increased concentration and intensification, cooperation and combination of agricultural industries determines their combination with industrial enterprises and other spheres of economy by improving the level of development of technology, machine technology, mass production production. The association of agricultural and industry enterprises into a single integration formation becomes not only possible, but also a significant lever to improve production efficiency, accelerate socio-economic transformations in the agro-sphere.

Agro-industrial integration will develop in the direction of creation of agro-firms in the form of agro-industrial associations, agroholdings etc. which may include agricultural, processing and trade enterprises of different forms of ownership and forms of management, while maintaining the status of a legal entity. The main thing, according to O. Shamanska (2012), in the system of these relations - the mechanism of distribution of profits from joint activity in proportion to the invested means in a joint event.

**Aims**. The aim of the paper is to find new ways for entrepreneurship integration in Economy 5.0 conditions in purpose of sustainability and resilience for agroindustry.

**Methodology**. The methodological approach is based on the combination of approaches for sectoral division of the economy, the development of technological structures, digital economy and circular economy based on the concept of sustainable development which could be combine in cluster approach to integration. The process of forming a post-industrial society is accompanied by a revolutionary increase in business activity and the share of services employed in the service sector, which, given the gradual growth of national GDP and the population of most countries of the world, also leads to the rapid development of the digital economy, which, on the one hand, is part of the service sector. And on the other, taking into account the features of its development and specificity of services, it can be considered as another fourth sector of the economy. The development of a digital economy within the already formed post -industrial society is developing in the face of other trends. A new type of economy requires accelerated development of information technologies and the formation of special centres of information technologies that allow you to obtain a new combination of human and technological factors of production necessary for the creation of economic goods.

The development of a digital economy in the country depends on how in the conditions of global trends of the gradual transition to post-industrial society, its transformational processes develop. Thus, in countries where post-industrial society is already formed, the transformation of the socio-economic system occurs in the conditions of development of financial markets and the lack of prospects of "explosive development". Other countries that are only in the construction of post-industrial society may have different prospects for the transformation of the national model of socio-economic system, depending on the directions, strength and speed of change of institutional environment and the availability of synergistic effects, including through the introduction of elements of digital economy.

The digital economy permeates all sectors by all categories: state and private; real, non -productive and financial; mining, manufacturing, agricultural and service sector.

At the present stage of economic development, the lack of integration of production, especially in the agricultural sector, makes it impossible to function the normal functioning of both agricultural and other sectors, and in general - the national economy. Currently, farms are experiencing difficulties, on the one hand - in the use of land (due to the lack of means of production), and on the other - in the decline of production of the main types of agricultural products and the occurrence of problems with providing the population with food. The best way out of this situation is agro-industrial integration, which is a combination of agricultural and technologically related industrial production, in order to obtain final products from

agricultural raw materials and to achieve greater economic benefits.

The agro-industrial complex should be considered as a set of sectors of the national economy for the production, processing, preservation and bringing of agricultural products to consumers.

The analysis showed that agro-industrial complex includes four areas: branches that produce means of production for industries - agricultural machinery, electrical equipment, building materials, fertilizers, toxic chemicals, compound feeds, etc.; agricultural production, that is, the cultivation of crops, breeding of cattle, poultry farming, animal farming; industries for processing of agricultural raw materials - dairy enterprises, canning shops and factories, bakery, etc.; infrastructure that maintains, transport and bring agricultural products to consumers. Agricultural infrastructure includes road transport, elevators, warehouses, communications and logistics companies, residential and community facilities, credit institutions, scientific and consulting firms, insurance companies, export associations and more (Shamanska, 2012).

Cluster management of the development of the national economy involves the definition of the subjective composition of the cluster, that is, units of the local administration, partnership network of economic entities, other organizations, institutions, departments that can become basic for the implementation of cluster initiatives in the domestic and foreign markets. In the framework of the construction of the organizational structure of the cluster, it is advisable to evaluate the degree of actual and necessary network interaction of subjects.

In cluster management, the prerequisite for its effectiveness is the organization and conduct of marketing research in order to determine the competitiveness of clusters (comparing the effectiveness and efficiency of their activity with indicators of similar associations; analysis of compliance with their results with the main indicators (indicators) of economic development of the cluster activity.

**Results**. When constructing a cluster under the principals of Economy 5.0 with the purpose of sustainability and resistance, it is advisable to follow such a road map of entrepreneurship integration (Fig. 1). The objects that are aimed at the implementation of cluster policy are the processes of creating and maintaining the functioning of clusters of different types.

Modern researchers emphasize that cluster participants can be at different stages of the technological cycle and even be competitors. But they are all combined with a common purpose and require some knowledge, technologies and the availability of employees with specific skills and practical skills (Fedotova, 2014).

The activities of many cluster formations have demonstrated the higher level of their results and competitive advantages over the activities of economic entities that are not part of certain structural associations, that is, clusters play a leading role in achieving competitiveness (Pushkar, 2011). At the same time, one of the main tasks in the system of increasing the competitiveness of the national economy is to identify the potential of intra - industry clustering or clustering at the region.

Clusters should be understood as special types of associations of interdependent enterprises, scientific institutions, public organizations, etc. (Dolzhanskii, 2006). Their development in the territory of Ukraine is limited to certain sectors of the national economy and regions of the country. The main role in ensuring sustainable competitiveness for most clusters should play a factor of quality of intra -strategy strategy.

In turn, the key aspect of strategic development of clusters is the focus on consumers of specific regional markets in the conditions of general globalization of world economic development.

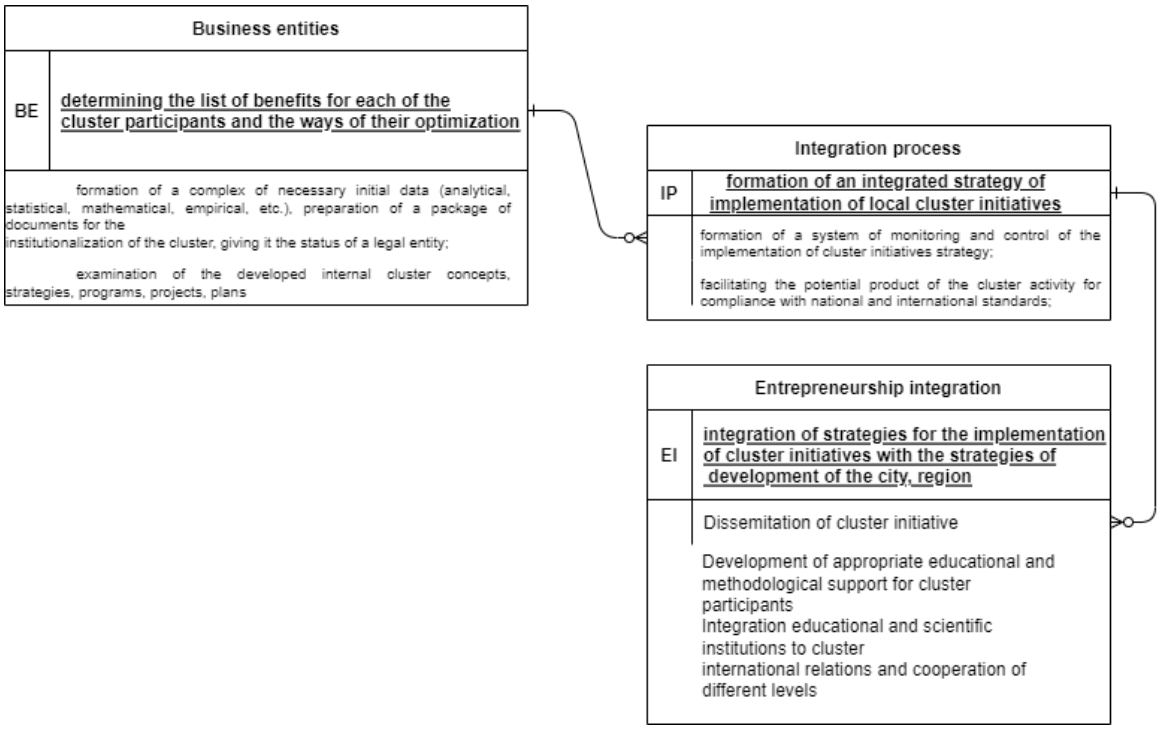


**Figure 1. The road map of entrepreneurship integration under the principals of Economy 5.0 with the purpose of sustainability and resistance**

*Source: create by author*

When building a cluster is required:

- determination of the list of benefits for each of the cluster participants and ways of their optimization;
- formation of a complex of necessary initial data (analytical, statistical, mathematical, empirical, etc.), preparation of a package of documents for the institutionalization of the cluster, giving it the status of a legal entity;
- expertise of developed the cluster concepts, strategies, programs, projects, plans and formation of an integrated strategy of implementation of local cluster initiatives;
- formation of a system of monitoring and control of the implementation of cluster initiatives strategy; facilitating the potential product of the cluster activity for compliance with national and international standards;
- integration of strategies for the implementation of cluster initiatives with the strategies of development of the city, region;
- publication of cluster initiatives at public hearings, assessment of compliance with the expectations of experts and the territorial community;
-assistance in establishing international relations and cooperation of different levels;
-organization of information and communication support, in particular, organization of PR campaigns, social advertising, formation of a positive image of cluster activity, informing business structures about the possibilities and benefits of cluster associations and cooperation within the cluster;
-development of appropriate educational and methodological support for the organization and conduct of trainings, seminars, conferences, other information and communication measures for potential cluster participants;
- other technical, financial, advisory assistance, that is, those functional areas that belong to the cluster infrastructure.

In digital transformation, the cluster infrastructure can function effectively in the virtual space of the digital environment. We maintain the position that digital infrastructure in the aspect of the software should include the following components (Fig. 2).

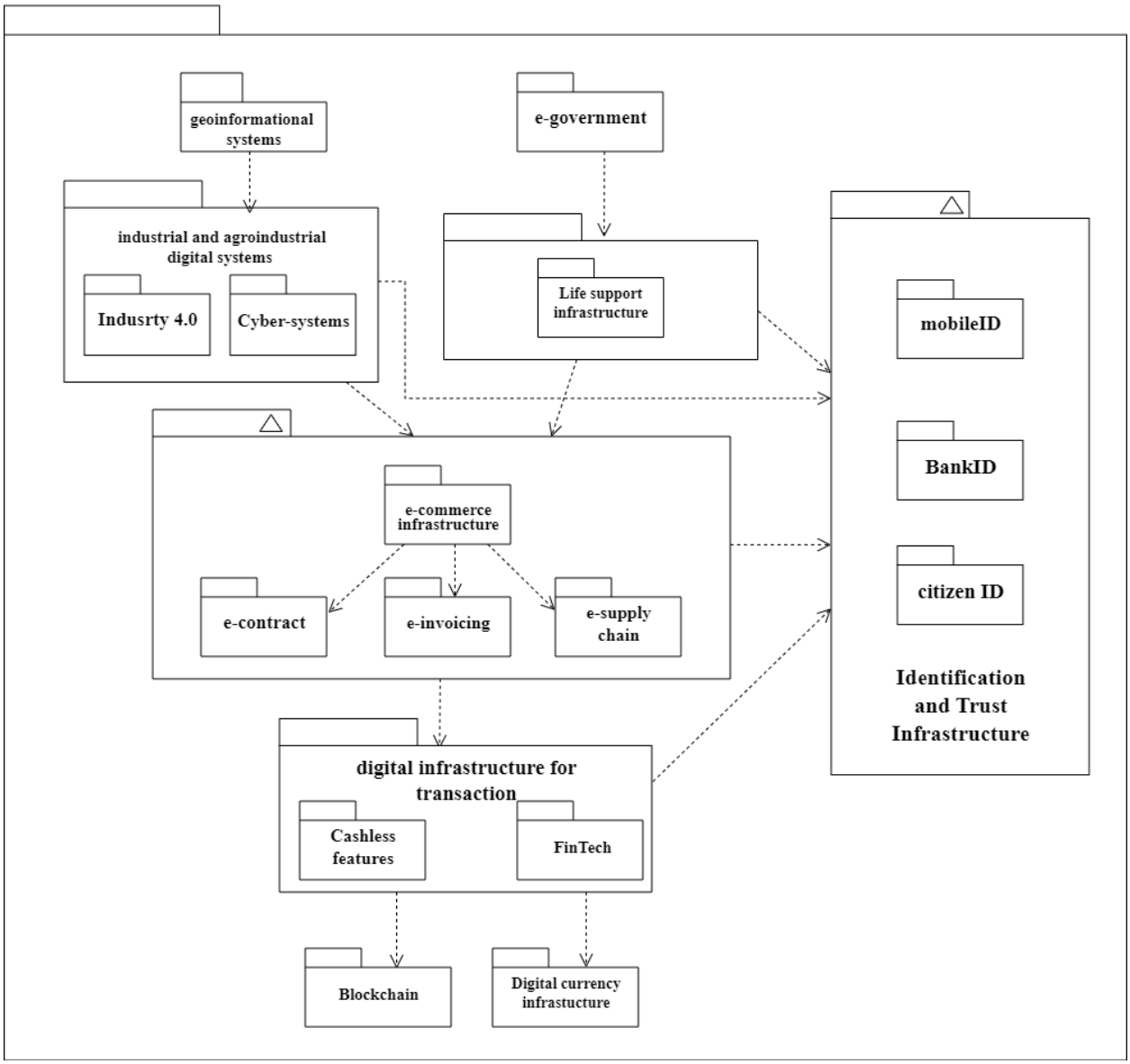


**Figure 2. Digital infrastructure of entrepreneurship integration in Economy5.0**

*Source: create by author based on (Fischuk, 2017)*

Cluster development in the agro-industry is one of the characteristic features of a modern innovative economy and a prerequisite for structural shifts in the spread of advanced digital production technologies that can become tools for improving the stability and competitiveness of national business.

Due to the purposeful policy of promoting clusters in the agro-industrial sector of the economy, at least a few urgent problems can be solved: 1) to build chains of supply of goods and services on the basis of domestic medium-technological industries, with their subsequent integration into the global value chains; 2) implement research and innovative strategies of "reasonable specialization" in the regions; 3) solve the problems of ecology and efficient use of resources through the introduction of environmental innovations, eco-industrial clusters and parks.

**Discussion**. Summarizing that cluster policy implementation measures should also be aimed at identifying, forming, supporting and consolidating clusters of small and medium sized enterprises and aiming at meeting the actual needs of market participants interested in improving their competitiveness through the implementation of joint projects within the cluster.

Entrepreneurial integration combines into a single integral structure of the enterprise of different sectors to form an effective resilient economic entity. Entrepreneurial integration in agribusiness brings together

enterprises of primary, secondary, tertiary sectors of different spheres and sectors of the economy, forming an actually integrated agribusiness structure, forming a complete cycle of turnover, ensuring sustainability and resilience. Integration is a significant tool for improving the efficiency of business in the agricultural sector.

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