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DEVELOPMENT OF AN INTEGRATED ENTREPRENEURSHIP MODEL BASED ON THE PRINCIPLES OF CIRCULAR AND SHARING ECONOMY: THEORETICAL SUBSTITUTION AND PRACTICAL ANALYSIS

The object of research is the process of formation and development of modern entrepreneurship in the context of the transition from a linear model to a circular and sharing economy, which are currently focused on the principles of sustainable development.

The paper analyzes the current state and prospects for the development of entrepreneurship, which operates on the principles of closed production cycles, extending the life cycle of products and reusing raw materials and materials. An integrated model of entrepreneurship based on the principles of a circular and sharing economy is proposed. The theoretical and practical essence of these economic models is considered, the principles of their construction are further developed, and significant differences from the traditional provisions of a linear economy are formed. It is substantiated that the gradual transition from a linear economic model of management to circular and sharing models of the economy is dictated by the presence of environmental challenges, as well as the limitation of natural resources. Trends in the field of sharing business, which are based on the joint use of resources by the asset owner and other consumers, are studied. The global experience of implementing these approaches has been analyzed and summarized, and the prospects for their development have been considered. It has been determined that over the past 10 years, the use of the circular economy concept in the world has increased 15 times (from 0.8% to 12% of enterprises), and the concept of the sharing economy has increased 10 times (from 0.2% to 2%). The research results confirm the integration of theoretical and practical provisions of the circular and sharing economy into global business models. This contributes to increasing the efficiency of resource use, increases the level of competitiveness of enterprises, and creates stable social and environmental benefits. Practical recommendations for Ukrainian entrepreneurs are proposed, the use of which will help adapt modern business to global trends in resource conservation within the framework of European integration and post-war economic recovery.

Keywords: entrepreneurship, circular and sharing business, sustainable development, integrated business model, information potential, renewable energy.

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1. Introduction

The world economy is currently undergoing significant changes, largely caused by globalization, the rapid development of technologies and the aggravation of environmental problems [1]. The traditional linear model of the economy, built according to the scheme “production – consumption – disposal”, is becoming inefficient, as it depletes natural resources, creates large amounts of waste and significantly increases the level of climate risks [2, 3]. In response to these problems, new modern economic systems are being formed – the circular economy, the essence of which is reduced to closed cycles of the use of raw materials, including the reuse of input components for the production of goods in order

to minimize losses [4, 5]. In parallel with the circular economy, the sharing economy is also developing, the methodological essence of which is reduced to the joint use of resources, which makes them more accessible and ultimately reduces the overall costs of enterprise activities [6, 7].

The relevance of the proposed topic of the article is very high, since the modern economy requires new models of entrepreneurial activity, the practical use of which is able to ensure an appropriate balance between business scaling, social stability and environmental safety. The linear economic model very often demonstrates its resource limitations, while the circular economy offers a completely new innovative approach: circular cycles of production and consumption, and then the reuse of input materials, which necessarily leads to minimizing losses.

In turn, the sharing economy places the greatest emphasis on the efficiency and accessibility of goods and services, which is based on the joint use of resources and services by owners and other consumers [8, 9].

The above provisions allow to assert that modern entrepreneurship in new extremely important economic areas is gaining special importance. The introduction of circular and sharing business models into the practice of production and commercial activities of enterprises fully complies with the strategic economic policy of many countries and significantly contributes to the implementation of international programs for sustainable development. Such provisions explain the relevance and importance of studying forms and methods of entrepreneurship in the sphere of circular and sharing economy, which is very timely. The practical implementation of the principles of circular and sharing economy allows to closely combine the economic benefits of business with the needs of environmental responsibility. And such an approach opens up new opportunities for entrepreneurship to ensure sustainable development both at the national and global levels [10, 11].

Among Ukrainian researchers of sustainable economic development, attention should be paid to the article [2], in which the author proposes to define the circular economy as the basic principles of sustainable development. At the same time, she emphasizes the role of the EU as the main initiators of the creation and practical implementation of mechanisms of cooperation with Ukrainian business. The researcher quite confidently proves to readers the importance of the systematic factor in organizing such cooperation and justifies the urgent need for interaction between various stakeholders. However, this article pays excessive attention to macroeconomic level problems, the proposed research lacks a specific consideration of business models for creating added value, which is especially important for small and medium-sized businesses. All this to some extent complicates the practical application of the main conclusions of this research. The publication [3] analyzes the strategic guidelines of entrepreneurship in the conditions of a circular economy, offers quite interesting methods of industrial adaptation of industrial enterprises to cyclical production using production, marketing and management innovations. The advantage of this approach is the presence of a connection between market needs and product quality. But for such conclusions, this research presents an insufficient empirical basis, and the issues of assessing the effectiveness of these connections were completely ignored by the authors. The study [8] widely reveals a microeconomic analysis of the possibilities of developing and using sharing economy models in the Ukrainian business sphere. The authors rightly draw readers' attention to digital platforms that shape the production potential of sharing in order to optimize the use of existing assets and stimulate entrepreneurial activity. Let's draw attention to the fact that the integration of sharing models with circular business processes remains insufficiently explored, and the cooperation of these two areas can provide the most important results for entrepreneurial activity.

In international studies, an important place is occupied by studies [12], which draw attention to the basic principles of the circular economy. The author includes the formation of projects for new products without waste, as well as the reuse of the product in order to maximize the recovery of natural resources. The practical value of such proposals is most often manifested through industry or territorial roadmaps. The positive aspects of such studies are the combination of economic policy, innovative technologies and business models. The shortcomings include insufficient attention by researchers to the specific features of countries with economies in transition, in which, in particular, limited financial resources can significantly affect the final results.

In the study [12], an attempt is made to more clearly distinguish the concepts of the circular economy and the concept of sustainable development, taking into account possible certain compromises between

environmental and business goals in specific business projects. The scientific value of such a proposal lies in a sufficiently correct theoretical framework, but at the same time, practical confirmation at the level of business model results remains limited.

The authors of the work [13] draw attention to the lack of agreed definitions and principles of the circular economy, which, in their opinion, complicates the comparison of the results of different studies, especially over a retrospective period.

In the field of the sharing economy, it is worth mentioning the work [14], in which the author distinguishes two very important approaches for sharing: "shared ownership" and "access without ownership". These approaches, in the author's opinion, are fundamental in scaling sharing services. In the study [15], the authors' attention is focused on the practical use of platform bases of trust and the formation of a positive reputation, which to the greatest extent ensure the effectiveness of the sharing economy. The presented scientific approaches explain cultural and behavioral aspects well, but remain mainly theoretical – the authors, unfortunately, do not offer good tools for measuring their impact on resource efficiency. A more practical picture is demonstrated in the study [16], which proves that business actively participates in sharing models for three reasons: economic benefits, social norms and environmental beliefs. At the same time, the indicated conclusions are more relevant to consumers, while for entrepreneurial strategies separate more precise models are needed. An important contribution to the development of modern entrepreneurship is made in the work [17], where the authors classify circular business models according to various criteria – recovery, long-term use, resource efficiency and sharing platforms. On this basis, they show the connection of business models with the processes of value creation and appropriation. A Polish researcher in his work [18] proposes an interesting scheme for designing such models, which combines the supply of goods, supply chains of raw materials and products, as well as reverse logistics. However, the question of scaling this scheme for small and medium-sized enterprises remains open.

An interesting review [19] emphasizes that circular business models must reconcile three quite different dimensions: environmental, economic and social. At the same time, the authors warn readers about the risk of "circular greenwashing" – when industrial enterprises exaggerate or simply falsely claim their environmental friendliness in order to improve their business reputation or increase product sales.

Since the last century, or rather since the 1980s, some publications [20] have been actively promoting the business idea of the "performance economy" – when industrial enterprises sell not the product itself, but its functional capabilities. The author of this study convincingly shows how entrepreneurs can do business, that is, make money on the durability and maintainability of products. But for the practical implementation of this business idea, effectively functioning market institutions are absolutely necessary: insurance, service centers, quality standards, etc. In countries with economies in transition, to which our country belongs, such mechanisms often work not very effectively or are absent altogether.

The analysis and comparison of existing studies and publications shows an interesting picture. Ukrainian researchers [21, 22] convincingly prove that the transition to a circular economy is of important, even strategic importance. They also emphasize the importance of using the potential of sharing for the rational use of resources. But practical tools (life cycle models, pricing methods, services, forward and reverse logistics mechanisms, platform design) are offered very rarely. Foreign researchers [22, 23], on the contrary, develop business models, behavioral mechanisms and investigate efficiency factors and models in more detail. However, they often do not take into account the specifics of countries with transition economies, where trust problems, lack of financing and weak law enforcement significantly increase entrepreneurial risks.

As a result, a situation is created when one researcher can offer an interesting idea or concept, but without providing practical tools for its solution. Another can present statistical data substantiated by him, but at the same time does not fully take into account the institutional features of the country. The third explains behavioral aspects that remain purely theoretical and are almost not used in the financial model of business.

It is this dispersion of approaches in existing scientific works and research that creates space for the proposed topic of the article: a holistic (complex) model of entrepreneurship is very much needed, which combines circular and sharing practices. At the same time, it has specific performance indicators, takes into account institutional constraints and offers acceptable strategies for small and medium-sized industrial enterprises. The analysis of selected sources shows that the topic of entrepreneurship in the conditions of circular and sharing economies arose at the intersection of institutional, technological and behavioral research.

However, it still remains fragmented to a certain extent. Some authors and researchers focus their attention on conceptual approaches [3, 8, 22], others on empirical models [2, 23, 24], and still others on infrastructural aspects [25, 26]. Rarely are these areas combined into a single system of entrepreneurial strategies. It should also be noted that Ukrainian research focuses on macro-level tasks of transition to a circular and sharing economy for the purpose of rational use of resources [5, 27, 28]. In contrast, foreign research more often offers formalized business models, performance indicators, and behavioral decision-making mechanisms [13, 14, 29].

The analysis shows that modern economic publications provide a reliable theoretical basis and individual practical tools. However, they do not yet create a holistic business model that would be suitable for countries with economies in transition. In this regard, agreed definitions of basic terms, understandable performance indicators, and trust mechanisms that are already working in business at this time are especially important. To fill the identified gaps, it is worth emphasizing a combination of business modeling, behavioral economics, and institutional solutions. This will allow developing applied tools for Ukrainian entrepreneurship, taking into account real commercial risks and existing business opportunities.

The object of this research is the process of formation and development of modern entrepreneurship in the context of the transition from a linear model to a circular and sharing economy, which are currently focused on the principles of sustainable development.

The subject of this research is economic relations, mechanisms, models and tools that ensure the development of entrepreneurship in the context of a circular and sharing economy, which are maximally aimed at the efficient use of natural and other resources and the achievement of sustainable development goals.

The aim of research is the theoretical justification and practical content of the proposed integrated model of entrepreneurship, based on the synergy of the principles of the circular and sharing economy. The expected practical effect is to create an effective applied roadmap for enterprises, which to a certain extent will allow optimizing existing resource cycles, minimizing waste and increasing business capitalization by introducing mechanisms for shared consumption.

To achieve the stated aim of research, the following objectives were to be solved:

1) to define the essence of the circular and sharing economy, to define their main principles and to show how they differ from the traditional linear model;

2) to investigate the current state and prospects for the development of circular entrepreneurship, as well as to consider its main business models;

3) to investigate the trends in the development of sharing business and to analyze its approaches to entrepreneurial activity;

4) to outline the prospects for the development of entrepreneurship in Ukraine and the world based on the principles of the circular and sharing economy.

Thus, the defined aim and objectives of the work form a comprehensive approach to the study of entrepreneurship in the conditions of new economies. This allows to combine theoretical analysis with practical recommendations and contribute to the sustainable development of the national economy through the efficient use of resources.

2. Materials and Methods

The main hypothesis of research is that entrepreneurship, built on the principles of circular and sharing economy, can:

- increase the efficiency of use of all types of resources;
- reduce the negative impact on the environment;
- create the prerequisites for sustainable development in accordance with the UN goals;
- form new business models and mechanisms for sharing assets;
- significantly increase the social responsibility of business.

Thus, the proposed research proceeds from the urgent need to implement entrepreneurial ideas that combine innovation, environmental friendliness and social orientation, and can become the basis of sustainable development in modern conditions.

The implementation of circular economy business models greatly helps to reduce the external commercial risks of the enterprise (for example, dependence on fluctuations in raw material prices or the size of possible environmental fines). Potential losses in such a system, not surprisingly, can be transformed into new sources of income. In the sharing economy, the main driver of growth is not tangible assets, but intangible ones, in particular, access management algorithms, databases, brand trust. This allows to scale your own business with less cost.

To achieve the aim of the proposed research and make the conclusions more substantiated, a set of methods was used that cover both theoretical and applied aspects. Theoretical methods helped to systematize the foundations of sustainable development, abstraction and modeling methods allowed to build diagrams of the relationship between resource provision and the economic sustainability of business models. The empirical part of research is based on a comparative analysis of traditional and cyclical production cycles, as well as on economic analysis, which allowed to identify key factors in the transformation of new economies into entrepreneurial activity.

Secondary data from official statistics from Eurostat (regarding indicators of the circular economy and waste management) and OECD (employment statistics in sharing sectors and resource productivity) were used as the information base for the research. Important informational assistance was provided by analytical reports of the Ellen MacArthur Foundation, which is the main ideologist and popularizer of the circular economy, as well as the results of the authors' own sample surveys of business structures (primary data) conducted in recent years.

The combination of the presented methodology with the analysis of modern business trends gives grounds to assert: effective resource management within the framework of circular and sharing models is an effective tool for ensuring the strategic development of enterprises in a changing market environment.

3. Results and Discussion

3.1. The conceptual essence of the circular and sharing economy and their differences from the traditional linear model

Today's entrepreneurship is increasingly focused on innovative business models that combine economic benefit with environmental and social responsibility. For a long time, the basis of business development was the classic linear model of the economy, which worked according to a simple logic: "extraction – production – consumption – waste" (Fig. 1).

The concept of the sharing economy (economy of shared consumption) offers a different approach to the rational use of resources: instead of personal ownership of goods, the emphasis is on the potential consumer's access to their functions or capabilities. If the linear model involves selling as many goods as possible into private ownership, the sharing model is based on the shared use of underloaded own goods by other consumers through information platforms (Fig. 1). The main difference between the sharing model and the linear one is manifested in increasing the efficiency of using each product and in creating the value of intangible assets. These include, first of all, trust, network interaction and algorithms for distributing segments of use [30, 31]. Thus, it can be seen from the above that the circular economy works with the structure of material flows, and the sharing economy works with the efficiency of using already ready assets [32, 33].

A comparison of these conceptual provisions shows that the transition to circular and sharing strategies is a systemic response to the problems arising from linear consumption. The main difference between the analyzed economies lies in the form of economic relations: from a direct chain to a circular cycle and a fairly extensive network of access to usage opportunities. Such a scheme requires business not only technological innovations, but also a significant transformation of approaches to management. Under the above conditions, sustainable development of the enterprise becomes the result of effective resource management and reduction of commercial risks due to the creation of value in the long term (Table 1).

A comparative characteristic of the analyzed models (Table 1) allows to determine the strategic directions of entrepreneurship development and to some extent assess the potential of each of these models in ensuring sustainable economic growth.

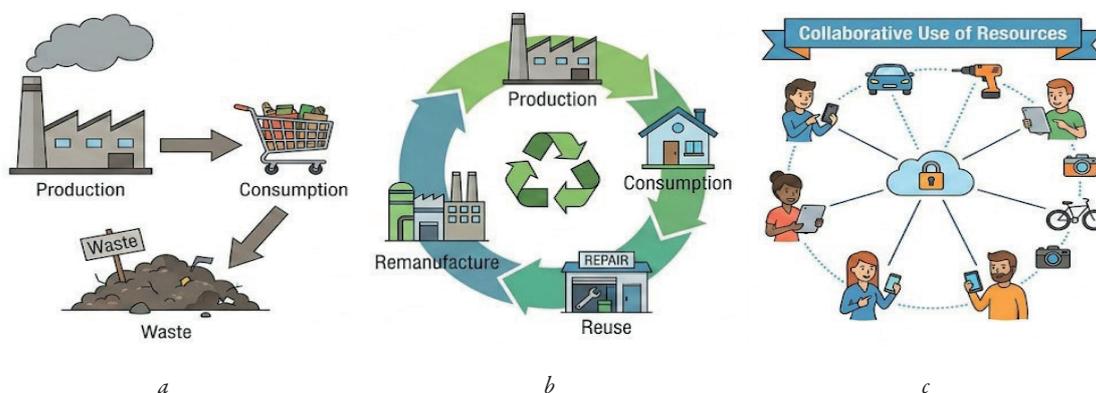


Fig. 1. Comparison of the concepts of linear, circular and sharing economies: *a* – linear economy; *b* – circular economy; *c* – sharing economy (the figure was created based on the authors' idea using artificial intelligence. Model and AI identification: Microsoft Copilot)

Table 1

Comparative characteristics of business models

Key factors	Linear economy	Circular economy	Sharing economy
Idea	Extract – produce – consume – throw away	Closed or circular cycles	Shared (multiple) use of assets
Purpose	Maximum sales of new goods	Resource conservation, waste reduction	Maximum utility of goods
Principles	Resources – production – consumption – waste	Produce – consume – reuse	Access is more important than owning it
Management	Disposable; rapid obsolescence	Significant increase in life cycle (repair, restoration)	Shared access to free capacities
Source of new value	Sales volume and economies of scale	Service, recycling, secondary processing	Network effect, savings on transactions
Source of profit	Market sales of new units of goods	Recycling, sale of restored goods	Intermediation and time-of-use fees
Ownership	Full transfer of ownership to the consumer (private ownership)	The manufacturer in most cases remains the owner	Temporary use without ownership rights
Innovative component	Technologies to reduce the cost of mass production	Service, repair, restoration and processing technologies	Digital platforms, trust and distribution techniques
Risks	Dependence on raw material prices and environmental fines	Risks of errors in forward and reverse flow logistics	Reputational risks, cybersecurity, legal regulation
Environmental component	High level of waste and reduction of nature's capabilities	Minimum impact due to regeneration of circular systems	Reduced need for excess production
Economic effect	Significant dependence on raw material prices, risk of product shortage	Reduction in resource costs, new markets for secondary products	Less ownership costs + additional income for owners
Social effect	Prestige of disposable consumption, low responsibility	Formation of socially responsible consumption	Development of trust in sharing communities and mutual assistance
Environmental effect	Depletion of nature, growth of landfills	Significant reduction in extraction and minimal waste	Active use of already existing things, less production
Life cycle	Short (planned obsolescence and physical obsolescence)	Durable (repair, modernization)	Intensive (maximum load)
Challenges	Environmental crisis, natural depletion of resources	Need for complex processing methods and investments	Security, tax regulation and user rights
Examples of business models	Fast fashion, disposable plastic, car sales	Production from waste, modular smartphones, recycling	Airbnb, Uber, tool bases, coworking

The comparison of different business models (Table 1) shows that the transition to circular and sharing business strategies is a logical response to the existing and significant problems of linear consumption. If the linear model builds economic connections according to the principle of a straight line, then new approaches form circular cycles with repeated consumption and networks of access to unused capacities [34, 35]. This means that business needs not only technological renewal, but also a deep transformation of the current business models themselves. In such a system, sustainable development becomes the result of effective management of input resources and a significant reduction in investment risks due to the creation of value for the long term. The research results allow to assert that the transition to a circular and sharing economy requires the abandonment of the traditional logic of “ownership and volume” in favor of the concept of “efficiency and access.” Under such conditions, the circular economy mainly focuses on changing material flows (technical aspect), and the sharing economy – on transforming the direct consumption system (organizational aspect). The most promising for modern industrial enterprises is a comprehensive (hybrid) strategy, which has all the possibilities for combining circular production cycles with platform solutions for sharing available resources and assets.

3.2. Research on the current state and prospects for the development of business models based on the circular economy

In our time, the circular economy is gradually becoming one of the most important instruments of the economic policy of industrial enterprises, as it provides a real opportunity to combine the economic achievements of the enterprise with the preservation of our environment. The logic of this economy is completely different from the usual linear model, where resources are quickly consumed, and waste accumulates on a very large scale. The circular economy offers a different approach: to form business processes in such a way that materials and raw materials do not disappear after the first use as waste, but return to the production cycle with the least losses. The main idea of the circular economy, as indicated in Table 1, is to create a system where manufactured goods “live” longer, and waste is converted into a resource for new production. This means that already at the stage of product development, the possibility of its repair, restoration, reuse or recycling is taken into account in a certain way.

Business models based on circular economy principles have certain characteristics in creating and extending value for their consumers. They may include, among others,

renting instead of selling, sharing products, returning materials to the producer, or using innovative technologies to reduce costs and increase the efficiency of production and commercial activities (Fig. 2).

Creating forms and business models based on a circular economy is a multi-stage process that urgently requires coordinated actions of various market participants. It is based not only on the implementation of innovative solutions by top management, but also on the transformation of corporate culture and strategic development plans of the enterprise. At the initial stages, it is necessary to analyze the life cycle of products, track the movement of material and raw material flows, and also identify points where it is possible to reduce (save) the costs of various resources.

The key factor for success is cooperation with stakeholders: business partners, suppliers of various resources and semi-finished products, consumers of products and government institutions. It is thanks to such interaction that circular chains of creating new and additional value are formed, which allows an industrial enterprise to minimize its losses and increase the efficiency of production and commercial activities.

In order for the considered principles of the circular economy not to remain only theoretical, “on paper”, it is important to turn to modern practice. Real examples from Ukraine and the world show how industrial enterprises adapt the approaches considered above to the conditions of their own business. Table 2 provides a comparative overview of successful businesses that demonstrate different models of implementing circular solutions – from large corporations to simpler Ukrainian enterprises.

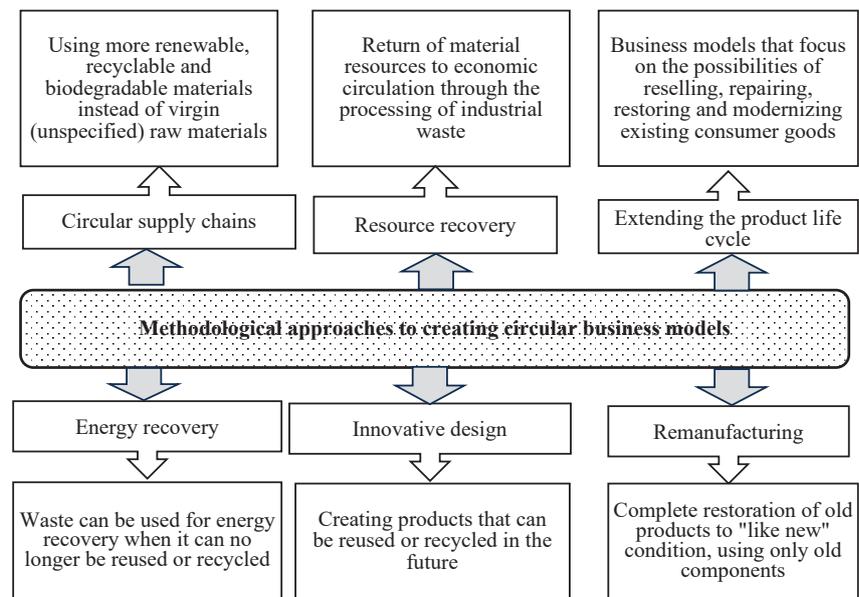


Fig. 2. Main approaches to building circular business models and their economic essence

Table 2

Practical examples of enterprises based on the principles of the circular economy

Business form	Ukrainian company	Foreign enterprise	Economic essence
Circular supply chains	Re-leaf Paper (Kyiv/Zhytomyr)	Lenzing AG (Austria)	Using renewable or secondary raw materials (fallen leaves, certified wood) instead of primary resources
Resource recovery	The Loop (Odesa)	Terracycle (USA)	Collection and processing of waste (consumer waste, packaging) to create new goods or materials
Lifecycle Extension	Pototskiy (Kharkiv)	Patagonia (USA)	Repair, reuse or resale of goods; prolongation of service life by restoring functional value
Energy recovery	Bioenergy Association of Ukraine (UABIO)	Fortum (Finland)	Processing of waste that cannot be reused into heat or electricity
Innovative design	S.Lab (Kyiv)	Fairphone (Netherlands)	Creating products that have a modular design and are easy to disassemble
Remanufacturing	Inter Cars Ukraine (network of centers)	Caterpillar (Cat Reman, USA)	Industrial restoration of fairly complex product components (engines, turbines) to a virtually new state

From the data presented in Table 2, the following conclusions can be drawn. Ukrainian enterprises mainly demonstrate local adaptation of global practices, quite often paying more attention to innovation and environmental friendliness (Re-leaf Paper, S.Lab). Despite the difficult macroeconomic conditions, Ukrainian enterprises (for example, S.Lab or Re-leaf Paper) demonstrate their ability to create to a certain extent unique product that meet the needs and goals of sustainable development. This position opens the way for them to international investments and integration into the markets of the European Union. The business enterprises presented in Table 2 show a shift in attention from simple ownership of resources to managing their value and efficiency throughout the entire life cycle of the product. It is remanufacturing and extending the “life” of products that become strategic tools for preserving added value in the economic system. The implementation of such business models allows enterprises to reduce environmental pollution, reduce commercial risks associated with fluctuations in prices for raw materials, which is especially important for the economic stability of production and commercial activities. Foreign enterprises are mostly large in size, which expand their business internationally (Patagonia, Caterpillar, Lenzing). The most promising areas for our country are the areas of innovative design and remanufacturing, as they combine environmental safety with the economic efficiency of production and commercial activities. It is possible to note that the recovery of resources and especially energy requires significant financial investments in the creation of technologies, but nevertheless have business potential for development in connection with the global waste problem. The vast majority of modern business models (especially this applies to remanufacturing and innovative design) require significant scientific and technological developments. This confirms that the circular economy is actually a high-tech sector that stimulates the emergence of new solutions and innovations.

At the same time, the transition to the practical use of circular business models is not without drawbacks. Among the main ones are the high level of start-up investments, the complexity of implementing organizational changes at a given enterprise, the urgent need to transform existing business processes (Table 3). But in the long term, such business models provide it with a significant increase in competitiveness, cost optimization and, most importantly, the formation of a positive image of a socially responsible enterprise.

Economic analysis (Table 3) suggests that circular chains and resource recovery have the greatest impact on environmental safety, but the development of such business models is hampered by the lack of high-quality secondary raw materials. The extension of the product life cycle forms the presence of a stable (in terms of consumption)

group of its supporters. In addition, there is a threat of a decrease in the volume of sales of new products (marketing cannibalism), and service costs increase significantly. Energy recovery (additional production) can be useful for local needs, but the fact that resources are not returned to the production cycle somewhat limits the strategic value of this type of business. Innovative design should be considered the basis for all other business models, but its effective implementation requires significant investments in R&D.

Circular business models are increasingly becoming one of the key areas for increasing the efficiency of entrepreneurship. Their value lies in the combination of economic benefit with environmental safety and social responsibility, which contributes to the opening of new opportunities for innovative activity and the achievement of the UN global goals of sustainable development. For their successful implementation in practice, a systematic approach is needed that combines modern technological innovations, financial instruments, social integration and, most importantly, support from the state.

3.3. Research on the development trends of sharing economy business models

The sharing economy, or the economy of shared use, offers businesses new conceptual provisions: the main value for the consumer is not in the ownership of an asset, but in the possibility of temporary access to its use. This approach allows to significantly increase the efficiency of the use of necessary resources and becomes an important factor of sustainable development.

The basis of sharing business models is the concept of “excess or unused capacity”. It is based on the provisions that any existing asset – a car, housing, tools, etc. – is not constantly used by their owners, therefore it brings certain economic losses to the owner. Thanks to sharing, these losses are transformed into additional value and, of course, into additional income.

It is proposed that when organizing business processes, special attention should be paid to three main factors in the development of sharing models:

- *technological factors* – involve the development of P2P platforms, mobile applications and other information solutions that ensure transparency and trust in the interaction between the owner and the consumer;
- *economic* – reflect the efforts of consumers to reduce their basic costs, and owners to obtain additional income from their own assets;
- *social* – shape the change in values in the minds of modern generations, for whom mobility and experience are now more important than physical ownership.

Table 3

Economic analysis of types of business based on the principles of the circular economy

Business type	Key benefits	Disadvantages	Difficulties
Circular business chains	Practical independence from primary raw material prices; reduced carbon emissions	Complex quality control and certification of secondary raw materials	Deficit of high-quality secondary resources; price dumping of new materials
Recovery of source resources	Profit from waste; reduced costs for environmental fees and fines	Need for quite complex, usually automated, sorting	Inability to recycle certain materials
Life cycle extension	Maintaining consumer loyalty; lower energy costs compared to new production	Decrease in sales of new products (cannibalization); need for highly qualified personnel	High cost of logistics and repair of single product returns
Energy recovery	Obtaining local heat or electricity through the use (recycling) of waste	Risks of harmful emissions during waste disposal; need for expensive waste filtration systems	Low energy balance (the resource is destroyed, not returned to the cycle)
Innovative design	Unique competitive advantages due to modularity; basis for other business models	High cost of R&D; need for personnel with interdisciplinary education	Outdated standards (DSTU), they do not take into account new types of eco-materials
Remanufacturing	Saving up to 70–80% of added value; product price 30–50% lower with good quality (like “like new”)	Complex system for collecting units that have already been in use (logistics difficulties)	Patent and legal restrictions of manufacturers of original goods

Fig. 3 shows the most common business processes in the sharing economy at the moment, which form the basis, the basis of the modern “access economy”. Its main principle is not ownership, but the ability to use.

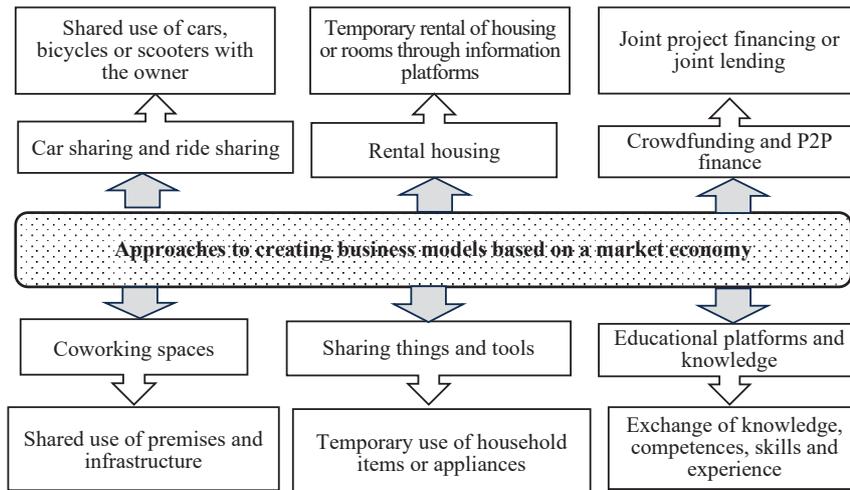


Fig. 3. The most common methodological approaches to the formation of sharing business models and their economic content

Fig. 3 shows the current directions of development of the sharing economy – from car sharing to educational platforms. They cover very important areas of everyday life: transport, housing, financial services, the production sector, technology and knowledge. The main role in these processes is given to information (digital) platforms (sites, applications), which provide consumers with quick and full access to the resources they need. At the same time, an important place is given to the processes of building trust and building trust between participants.

The main advantage of sharing is the efficiency of services and their accessibility. Consumers receive the necessary resources without having

to invest money in their purchase and further maintenance. Further development of the sharing business is associated with the development of new areas, which should primarily include medicine, education, and energy. The combination of sharing with the circular economy and digital technologies is very promising.

Ukrainian and global businesses are currently increasingly using sharing business models, taking into account their significant economic advantages. Table 4 provides examples of successful enterprises that effectively use sharing business models both at the global level and in the conditions of the rather specific Ukrainian market.

Ukrainian sharing enterprises, listed in Table 4, mostly reproduce local adaptations of well-known global models. Foreign enterprises, on the contrary, represent large international business projects that currently operate on a global scale. In all cases, the basic idea remains the same: instead of owning an asset, access to it, instead of independent use, shared use.

The considered business models create new markets for various types of services, where the most important asset is not ownership, but

the ability to use resources. This provides entrepreneurs in the sharing economy with both economic and social advantages, but at the same time highlights a number of disadvantages of the sharing business (Table 5).

Thus, the data presented in Table 5 show entrepreneurs that there is a certain balance between the advantages and disadvantages in the sharing economy. This allows to more accurately and more objectively assess the prospects for its development. On the one hand, these are new markets, innovative and information technologies, on the other hand, there is an urgent need to solve rather complex legal, technological and organizational problems.

Table 4

Practice of using sharing business models

Business type	Ukrainian company	Foreign enterprise	Economic essence
Carsharing and ridesharing	Getmancar – car rental service	Uber/Zipcar – global platforms	Transport optimization: access to a car or ride without ownership
Housing rental	QHome, rental of housing (rooms, apartments) via OLX	Airbnb – world leader in accommodation booking	Temporary housing, information sites connect owners and guest consumers
Crowdfunding and P2P finance	Big Idea – financing of social and cultural projects	Kickstarter/Indiegogo – global platforms	Direct community funding without financial intermediaries
Coworking	Creative Quarter in Kyiv	WeWork – international network	Startup sharing of offices and infrastructure
Sharing things and tools	Local initiatives – “Zero Waste”, sharing things through social networks	Tool Libraries in the USA and Canada	Access to household items and tools without ownership
Educational platforms and knowledge	Prometheus – Ukrainian online training system	Coursera/Udemy – global world learning platforms	Sharing knowledge and skills through online courses and learning communities

Table 5

Advantages and challenges of entrepreneurship in the sharing economy

Aspect	Advantages	Disadvantages
Economic	Reducing the cost of purchasing and maintaining an asset; additional income from the consumption of unused capacity; flexibility of models and rapid business growth	Low stability of income due to dependence on demand; high competition between existing businesses; difficulties in the tax sphere
Social	Development of cooperation and trust; expanding access to services; attracting new consumers to economic and market activity	Rather high risks of fraud and unfair behavior; possible conflicts with traditional businesses; difficulties for consumers in mastering information technologies
Technological	Use of information technologies and mobile applications; transparency of the provision and use of business proposals	Dependence on existing technological infrastructure in the regions; high costs for cybersecurity; risks of loss of personal data
Legal	Availability of opportunities to create new forms of business; real practical support for innovative entrepreneurship	Lack of a sufficiently clear legal framework; difficulties in the field of licensing and insurance; certain conflicts with labor legislation in the country

3.4. Prospects for the development of entrepreneurship on the basis of the circular and sharing economy in Ukraine and the world

The analysis of modern business models in the practice of management of industrial enterprises indicates a certain departure from the use of the linear model of the economy and a significant spread of methodological and practical provisions of the circular and sharing economy in entrepreneurial activity. The research results showed that at present, official state statistics (as well as various international reports) do not publish statistical data on the number of enterprises operating on a circular and sharing basis. Therefore, it is impossible to provide more or less accurate numerical series of the number of enterprises of linear, circular and sharing economies in their total number for Ukraine or for some other countries. For example, in the EU or the USA, such information may be more in the form of trends and forecasts, but detailed statistical data are absent [34, 35].

However, based on a detailed analysis of scientific reviews, research results of various authors and expert assessments of leading specialists, there is a certain possibility to build conditional statistical series for a certain period of time [36, 37]. The data obtained in this way reflect the general trends in the development of circular and sharing businesses with a sufficient level of accuracy. The data obtained by the authors indicate a gradual increase in the role of circular and sharing practices both in the economy of Ukraine and in the economy of other countries. Such data dynamics show not only quantitative changes in the structure of enterprises, but also the qualitative development of business models under the influence of ideas and goals of sustainable development. These include, first of all, environmental safety, economic stability and social justice.

Since there is no official data on the problem under study in the system of the State Social Security Service of Ukraine (Ukraine), Eurostat (EU) and Census Bureau (USA) of separate classifiers for circular and sharing-type enterprises, the authors applied the method of indirect assessment of the necessary indicators.

The authors determined as the basis for the formation of conditional statistical series: secondary Eurostat data on the indicators “Circular material use rate” and the number of patents related to recycling [38]; reports of the Ellen MacArthur Foundation and Circle Economy (Circularity Gap Reports) [39] on the share of secondary raw materials in production cycles; statistics of platform employment published in analytical reviews of sharing services (Statista, PwC) [40, 41]. The share of circular and sharing enterprises in their total number was determined as an integral indicator that takes into account the dynamics of the penetra-

tion of “green” technologies and the growth rate of the market for shared services. For the period 2024–2025, the author’s method of extrapolation of the trend using a second-degree polynomial function was applied, taking into account forecasts for the development of digital platforms. The results obtained are presented in Table 6.

Table 6 presents somewhat conditional data that clearly show the gradual increase in the share of circular and sharing business models in the total number of enterprises in Ukraine, the EU and the USA during 2015–2025, that is, over the past 10 years. Analysis of the formed dynamic series confirms a stable trend towards the destruction of the linear dominant. In Ukraine, the rapid growth of the share of circular enterprises from 0.8% to 12.0% (forecast for 2025) is explained not only by the adaptation of European environmental standards, but also by the economic feasibility of reusing resources in conditions of raw material shortage. Comparison with the EU and the USA (Table 6) indicates different drivers of transformation. While in the EU the transition is stimulated by regulatory acts (Circular Economy Action Plan) [38, 39], in the USA it is predominantly market-based, supported by investments in “green” startups [40, 41]. The statistical discrepancy between regions in the share of sharing models correlates with the level of development of digital infrastructure and trust in platform solutions. In Ukraine, the linear model of the economy is gradually losing its position as the undisputed leader. Its share in the total number of enterprises is significantly decreasing: from 99% in 2015 to 86% in 2025. This indicates that domestic enterprises are gradually moving away from the traditional linear business model “production – consumption – waste”. But the circular economy is growing, the share of enterprises based on it has increased significantly, in recent years it has increased almost 15 times: from 0.8% in 2015 to 12% in 2025. This increase confirms the active spread of progressive practices of sustainable development: reuse, effective recycling and environmentally friendly business models. The sharing economy is also developing actively, although it is inferior to the circular economy. Over the past decade, the number of sharing enterprises has increased tenfold: from 0.2% in 2015 to 2% in 2025. This is due to the active spread of digital platforms and applications, shared services (owner + consumer) and the introduction of new progressive forms of social interaction. As shown in Table 6, in the EU countries the growth rate of the number of enterprises based on the principles of the circular economy is even greater than in Ukraine. This can be explained by the use of the Green Deal system policy and a significant number of environmental programs. The USA is moving more slowly than the EU in this area, but there is also an active growth in the number of circular businesses there (Table 6).

Table 6

Dynamics of the share of enterprises in the linear, circular and sharing economy

Business models	Year of observation										
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Ukraine											
Linear, %	99.0	98.7	98.2	97.5	96.8	96.0	95.0	93.5	91.5	89.0	86.0
Circular, %	0.8	1.0	1.3	1.8	2.4	3.0	4.0	5.5	7.5	9.5	12.0
Sharing, %	0.2	0.3	0.5	0.7	1.0	1.0	1.0	1.0	1.0	1.5	2.0
EU countries											
Linear, %	95.0	94.5	94.0	93.0	92.0	91.0	90.0	89.0	88.0	87.0	85.0
Circular, %	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0
Sharing, %	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0
USA											
Linear, %	97.0	96.5	96.0	95.5	95.0	94.5	94.0	93.0	92.0	91.0	90.0
Circular, %	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0
Sharing, %	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Note: compiled by the authors using [38–41], as well as their own research results

This especially applies to the sphere of corporate responsibility and “green” innovations. Sharing business in the EU is widespread due to the wide consumer support of such information platforms as Airbnb, BlaBlaCar and mobility services. It should be noted that in the USA, sharing business is more inherent in transport and housing (Uber, Lyft, Airbnb).

Analysis of the formed dynamics (Table 6) confirms the development of new types of entrepreneurship, in which the circular and sharing economy are the basic factors of sustainable development. The active expansion of these types of entrepreneurship has not only an economic, but also an ecological and social dimension, which determines the prospects for development and certain progressive changes in the business environment in the coming decades.

According to the results of existing studies [39–41], by 2030 the share of circular business in the EU has the potential to reach 20–25%. The number of sharing economy enterprises in the EU has the potential to increase to 5–7%, while in the USA – to 4–5%. This development is explained by the development of digital platforms and changing consumer priorities.

3.5. Discussion of the research results on the development of entrepreneurship in the circular and sharing economy

The results obtained on the basis of the conducted research clearly confirm that modern entrepreneurship is becoming the main factor in the development of the circular and sharing economy. The role and significance of modern entrepreneurship goes far beyond the traditional economic efficiency that currently exists. Every year, entrepreneurial initiatives and innovations are increasingly aimed at achieving very important environmental and social goals, significantly reducing waste and reusing resources efficiently. All this creates a certain foundation (base) for the formation of new business models that very effectively combine the profitability of the enterprise with its responsibility to society and the environment.

The most successful are those enterprises that successfully use the ideas and principles of the “closed loop” in their production processes, while also actively investing their own money in processing technologies. This approach provides enterprises not only with economic benefits, but also with the long-term sustainability of their business.

The analysis of the development of entrepreneurial activity very clearly shows fundamental changes in the paradigm of creating added value. If the linear economy model was focused on maximum profit by increasing sales volumes, then in contrast to it, circular and sharing business models radically change their priorities. They pay main attention to optimizing resource use processes throughout the entire product life cycle.

When using the sharing economy, entrepreneurship is based on information platforms and applications, which provide it with appropriate access to shared resources (assets). The important fact here is that this reduces the barriers to entry into business and the market for small entrepreneurs, and also creates new progressive forms of cooperation between business owners and consumers. There are also certain difficulties and shortcomings, primarily the issue of trust between participants and the need to significantly improve the legal regulation of relations in the field of sharing.

The research results confirm the presence of a certain synergy between the two business models being analyzed. The circular economy ensures environmental sustainability and safety, and the sharing economy ensures resource efficiency and maximum utilization of available capacities. The combination of these two progressive approaches creates significant market competitive advantages for entrepreneurs. These include reducing costs, increasing consumer loyalty and satisfaction, and creating a positive image for enterprises. An important component of the combination of economies is that entrepreneurship in the circular and sharing sectors supports the development of social capital: it creates new communities, develops a network of trust and interaction between owners and consumers of products.

At the same time, a number of quite significant commercial risks have been identified. Among the most important of them is the uneven

access of individual entrepreneurs to innovative circular and sharing technologies, as well as the insufficient level of legal regulation. A certain possible conflict between environmental expediency and economic efficiency in the current perspective requires special attention. In many cases, the winner in such a conflict is the economic factor. The transition of enterprises to remanufacturing and repeated (cyclical) use of available resources necessarily requires a significant restructuring of marketing policy and operational management. This will avoid marketing cannibalism and coordinate the implementation of the tasks of environmental safety, economic stability and social responsibility. In the conditions of the modern, sufficiently unstable market, this is perceived by business as a zone of sufficiently high commercial risk. Another rather critical aspect of the sharing economy is important. This is its dependence on the level of institutional trust and the availability of digital infrastructure in the area of its use. In the EU countries, the legislative and legal framework is sufficiently active and, most importantly, effectively supports the development of the so-called “green” entrepreneurship, while Ukrainian entrepreneurs in this direction have certain barriers. In Ukraine, there are no standards (DSTU) for secondary raw materials, there are many complaints about the imperfection of the legal regulation of P2P interactions. All this to a certain extent limits the speed and efficiency of the implementation and development of new business models, clearly outlines the directions for future reforms in Ukrainian business. The list of important discussion issues should also include the definition of certain boundaries (limits, spheres of influence) between circular and sharing business approaches. The conducted research confirmed that these two business concepts not only do not contradict each other, but quite the opposite – they create a compatible effect of synergistic content. For example, the “Product as a Service” business model combines circular features (durability, repairability, remanufacturing) with a sharing mechanism for access to the use of this product. This type of format allows enterprises to simultaneously reduce raw material costs and stabilize financial flows by using appropriate transitions from one-time sales to more frequent, or even regular service payments.

Innovative design plays a special role in the studied business processes. Without the introduction of innovative eco-design provisions into the product design at the stage of its development, subsequent processes (for example, remanufacturing, recycling) become economically unprofitable due to the high labor intensity of product disassembly and its defect detection.

The results obtained largely confirm that the combination of the methodological principles of the circular and sharing economy creates a very reliable basis for using entrepreneurial activity towards achieving sustainable development goals. It has been proven that in order to achieve the projected indicators (the share of circular business in the EU is over 20–25% by 2030), it is necessary to improve the regulatory framework for the taxation of secondary raw materials and the stimulation of sharing platforms. The prospects for further research lie in the development of industry-specific methods for assessing business efficiency in circular and sharing technologies. It can be argued that the transition of business activity to circular and sharing business models as effective tools for achieving the goals and provisions of sustainable development is an extremely important condition for ensuring the resource independence of business. Further research in this regard should be aimed, first of all, at developing methodological approaches to quantifying the effectiveness of such changes in various sectors of the economy. This will allow for more accurate measurement of their impact on the economic, environmental and social sustainability of business.

4. Conclusions

1. The research revealed the theoretical and methodological essence of the circular and sharing economy, identified and substantiated their most important provisions: the circular nature of material flows, reuse of resources instead of direct waste, joint consumption of the product

instead of individual ownership. It was substantiated that the effective integration of circular and sharing models in entrepreneurship creates a synergistic effect, where the transition from individual ownership to joint use of assets allows maximizing the utility of each unit of resource. It was established that the key factor in this transformation is the transition from linear value chains to closed cycles of production and commercial activity. All these provisions generally contribute to achieving environmental, economic and social balance of business results.

2. A detailed analysis of the current state and prospects for the effective development of circular entrepreneurship was conducted. Based on the author's calculations, a steady trend of decreasing the number of enterprises operating on the basis of a linear economic model has been identified: in Ukraine, a decrease in the share of linear enterprises is predicted from 99.0% (2015) to 86.0% (2025). It has been proven that the growth rates of business models based on the circular economy segment in Ukraine are ahead (from 0.8% to 12.0%), which indicates a high adaptability of domestic business to environmental standards even under conditions of limited funding during the war.

3. Research into the trends of the current state and prospects for the effective development of the sharing business made it possible to identify and substantiate the main trends in its scaling at this time. These include, first of all, digitalization, platformization, active growth in the role and importance of network interaction. It has been established that the scaling of the sharing business (growth of the share in Ukraine by 10 times over the last decade) is based on digital platformization. This provides an economic effect in the form of a 15–20% reduction in transaction costs and an increase in the capacity utilization rate of enterprises.

4. Prospects for the development of progressive areas of entrepreneurship in Ukraine and the world (using the example of the EU and the USA) based on the circular and sharing economy have been formed. For Ukraine, the implementation of these models is an important factor in integration into global business, increasing the innovative potential of entrepreneurial activity. The economic effect of the author's proposals is manifested in the growth of resource productivity and business capitalization through the implementation of the "product as a service" (PaaS) model, which also allows diversifying sources of income. The organizational effect of this development is due to the transition of Ukrainian enterprises from hierarchical to network structures of interaction, which increases the speed of response to consumer requests. The strategic effect involves ensuring the competitive stability of enterprises through compliance with the sustainable development goals (SDGs) and the requirements of the European Green Deal, which is critical for Ukrainian companies to enter the EU markets.

Conflicts of interest

The authors declare that they have no conflicts of interest in connection with the current research, including financial, personal, authorial or any other that could influence the research and results presented in this article.

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Data availability

All data are available in the main text of the manuscript.

Use of artificial intelligence

The authors confirm that no artificial intelligence technologies were used in the creation of the current work, except for the creation of Figure 1 based on the author's idea provided.

Model and AI identification: Microsoft Copilot

Section of the article where AI was used: in the section where the illustration of the economic model is provided (Fig. 1).

Specific tasks performed with AI tools: An educational figure (infographic) was generated using Copilot, which reflects the conceptual model of the linear, circular and sharing economy used in the research. The authors provided a textual description of the desired image, and Copilot created the corresponding visualization.

Verification of AI-generated results: the authors checked the correctness of the figure by comparing the resulting image with the theoretical provisions of the model; clarification of terminology and captions according to academic standards; editing and localization (language adaptation in English). Impact on research conclusions: the use of Copilot was of an auxiliary nature. The generated figure did not affect the content or conclusions of the research, but only increased the clarity and comprehensibility of the presentation of the material for readers.

Authors' contributions

Petro Pererva: Conceptualization, Supervision, Project administration, Data curation, Writing – review and editing; **Tetiana Kobielieva:** Methodology, Resources, Supervision, Writing – original draft; **Robertas Keršys:** Resources, Visualization, Writing – original draft; **Karyna Moroz:** Methodology, Resources, Writing – original draft; **Viktor Kniaz:** Formal analysis, Investigation, Resources, Writing – original draft; **Szabolcs Nagy:** Conceptualization, Methodology, Resources, Writing – review and editing; **Oleksandra Kosenko:** Methodology, Resources, Writing – review and editing; **Nadiia Tkachova:** Investigation, Resources, Writing – review and editing; **Andriy Kosenko:** Investigation, Resources, Data curation, Writing – review and editing; **Maksym Tkachov:** Formal analysis, Investigation, Resources.

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