

SUSTAINABLE DEVELOPMENT: MODERN THEORIES AND BEST PRACTICES



Teadmus OÜ

Sustainable Development: Modern Theories and Best Practices

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FINANCIAL AND ECONOMIC ISSUES OF SUSTAINABLE DEVELOPMENT

THE INTERDISCIPLINARY ROLE OF ENERGY COOPERATIVES IN ENSURING SUSTAINABLE DEVELOPMENT IN UKRAINE

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In the context of the energy crisis, hostilities, and the European integration course, Ukraine is forced to rethink the model of energy development and sustainability. Energy cooperatives are one of the promising tools that combine financial, environmental, and regional aspects of sustainable development. This approach is especially relevant for decentralizing the energy system and reducing vulnerability to external risks, such as a full-scale invasion.

Energy cooperatives create the opportunity to attract local capital to the development of various energy technologies, primarily renewable energy sources (RES). In Ukraine, the most widespread RES technology is solar photovoltaics. This became possible due to the reduction in the cost of solar panels globally, the relative simplicity of installation and operation processes, as well as relatively low capital costs. As of 2025, there is only one energy cooperative in Ukraine ("Solar Town") that uses solar energy and sells the generated electricity to the grid against a green tariff. However, there are other voluntary associations of citizens that aim to jointly meet their own energy needs, but are not cooperatives within the meaning of Ukrainian legislation.

Unlike traditional investors, cooperative members pursue not only profitability, but also energy security, cost reduction, and environmental benefits. However, even taking into account the existing state support mechanisms (feed-in tariff and/or net metering), in Ukrainian conditions, the financial attractiveness of the cooperative model remains limited. Thus, it is necessary to refine incentives, in particular, the introduction of capital grants, tax incentives, or special regional programs. According to the legislation, there is a feed-in tariff for energy cooperatives that use solar, wind, biomass and biogas energy, small hydropower plants, geothermal energy, as well as combined wind and solar systems. Similarly, the government could stimulate the creation of energy cooperatives using a wider range of technologies than just solar. It is also worth considering the potential of crowdfunding as an alternative source of financing. This allows communities to accumulate funds for RES projects without attracting a large investor. Such tools are actively used in EU countries and have the potential to be adapted in Ukraine.

From a technical perspective, cooperatives allow for the optimization of energy use, since the majority of the energy produced is consumed at the place of its production, thereby reducing the load on the electricity grid and reducing losses. Local energy production contributes to the reduction of CO₂ emissions, improving air quality, and reducing dependence on fossil fuels. However, the implementation of such projects

requires a high level of technical literacy, access to quality equipment, as well as legal support for connecting to the grid.

The regional dimension of sustainable development is vital for Ukraine, as it faces an imbalance between energy-generating regions and consumer regions. Energy cooperatives are able to partially tackle this problem by creating local energy solutions adapted to the needs of specific communities. In the context of war, an important advantage of such models is the ability to operate autonomously in the event of a limited or unstable energy supply. Thus, cooperatives become not only an instrument of sustainable development, but also an element of civil defense and security.

The success of projects largely depends on the level of social capital in communities. Distrust of the cooperative form of management, low level of awareness, and lack of project management skills hinder the scaling of initiatives. Therefore, educational campaigns, demonstration projects, and the creation of cooperative support centers at the community level should become priorities of state policy.

The formation of a sustainable energy policy requires a combination of three key vectors: energy security, economic efficiency, and environmental responsibility. Energy cooperatives as a tool of decentralization can play a catalytic role in all three directions. However, for this, it is necessary to eliminate the barriers that hinder their development. Among the priority steps:

- Improving the legal framework. The concept of "energy community" should be introduced into the legislative field, which will allow integrating Ukrainian legislation in accordance with EU Directives (in particular, RED II and the Electricity Market Directive). In addition, the list of technologies allowed for cooperatives should be expanded to include cogeneration and microhydropower.

- Municipal support. As part of the decentralization reform, local communities should receive powers and tools to support cooperatives - both financial (grants, co-financing) and advisory (energy hubs, information campaigns).

- Raising awareness and social cohesion. In Ukraine, very few Ukrainians are aware of energy communities at a sufficient level. This indicates the need for systematic educational activities aimed at building trust in collective forms of energy management. Expanding the practice of demonstration projects can be an effective tool for attracting new participants.

- Integration with other pillars of sustainable development. Energy cooperatives can become part of broader initiatives in the field of sustainable agriculture, energy-efficient construction, and also contribute to improving air quality and public health, especially in regions with high levels of pollution.

In the long term, the development of energy cooperatives can ensure not only the energy self-sufficiency of communities, but also the recovery of the economy after the war, the mobilization of local capital, the creation of jobs, the reduction of vulnerability to climate change, and the broader integration of Ukraine into the EU single energy market.

The publication was prepared in the framework of the research project "Formation of economic mechanisms to increase energy efficiency and provide sustainable development of renewable energy in Ukraine's households" (No. 0122U001233), funded by the National Research Foundation of Ukraine.

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TRENDS IN THE DEVELOPMENT OF ENTREPRENEURIAL ACTIVITY IN UKRAINE

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One of the markers of changes in the economy is the number of working business entities, which determines the general characteristics of the country's business environment, the number of jobs, economic potential, and development prospects.

In Ukraine, the number of operating business entities has changed significantly in recent years. Thus, according to the State Statistics Service of Ukraine, the largest losses in the composition of the country's operating enterprises were recorded in 2022 (Fig. 1).

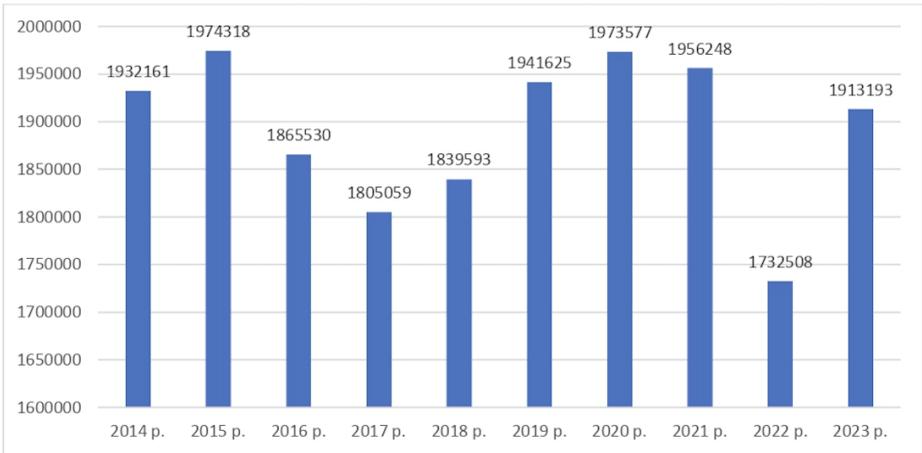


Fig. 1. Number of operating business entities in Ukraine in 2014-2023, units (compiled by the authors based on materials [1])

In 2023, there was a gradual restoration of part of the activities of enterprises. We should also note the gradual structural destruction in the economy, its transition to a military system, which involves the reorientation of economic activity to the production of military products, changes in economic policy to support military orders, etc.

Additional analysis of the structure of the actions of business entities allows us to use not only their distribution by type and size, but also the directions of influence on the economy of the country/region.

1. State Statistics Service of Ukraine. Official website. Date of visit: 17.05.2025. URL: <https://ukrstat.gov.ua/index.html>

TRENDS IN THE DEVELOPMENT OF SCIENTIFIC ACTIVITY OF UKRAINIAN ENTERPRISES

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Research, design, technological, search and design work have always been markers of the progressiveness and competitiveness of enterprises. Intellectual activity aimed at obtaining new knowledge, which requires significant costs, allows producers not only to create or improve products, devices, methods, technologies, etc., but also to solve urgent social problems.

According to the State Statistics Service of Ukraine, over the past decade, expenses for the scientific activity of Ukrainian enterprises have steadily increased (Fig. 1). And in the future (as the forecast develops), they will grow. The coefficient of approximation of the exponential trend line ($R^2=0.9365$) shows the truth of this forecast.

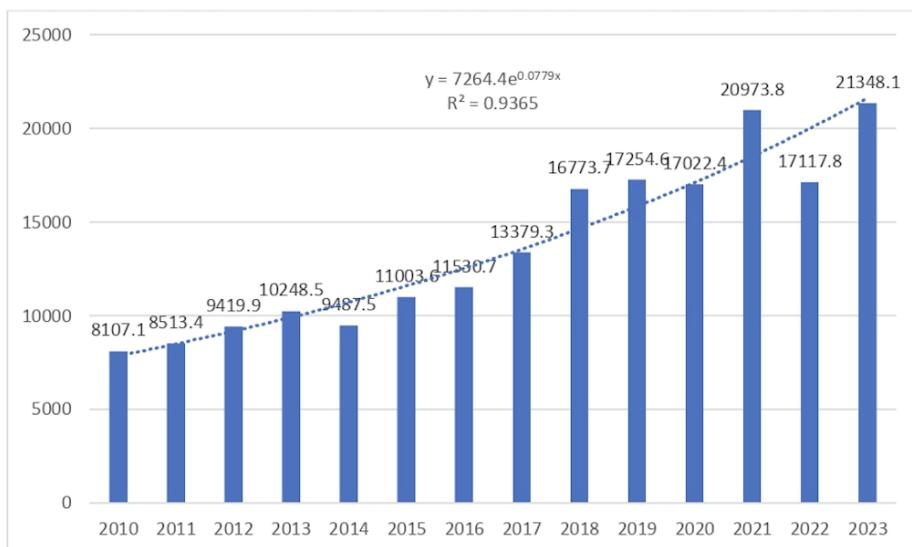


Fig. 1. Expenditures on scientific research and development, million UAH (compiled by the authors based on materials [1])

Thus, according to the results of the study, we note that, despite the complexity, domestic enterprises understand the importance of scientific activity and contribute their

own expenses to its development.

1. State Statistics Service of Ukraine. Official website. Date of visit: 17.05.2025. URL: <https://ukrstat.gov.ua/index.html>

TRENDS IN THE SPREAD OF ELECTRONIC COMMERCE AMONG UKRAINIAN ENTERPRISES

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The share of such enterprises in the total number of business entities in Ukraine is growing, but remains extremely small (Fig. 2).

The spread of globalization, informatization and digitalization processes in the world economy leads to fundamental changes in the organization of business activities of national commodity producers. This applies not only to the reorganization of their production and sales activities, but also to the transformation of information and communication processes and the formation of interaction with stakeholders, the introduction of new progressive technologies.

One of the opportunities for expanding activities, increasing sales volumes, access to new markets, increasing competitiveness and strengthening sustainable positions is electronic commerce.

The use of information and telecommunication systems for remote communication with consumers and other counterparties, for the purpose of identifying the features of different markets/target audiences, for the analysis and exchange of information also allows you to significantly save time, space, resources (human resources, financial and others) and, accordingly, increase the efficiency of activities.

Currently, trendworts attribute e-commerce to one of the most dynamic sectors of the world economy. Therefore, let's analyze the level of involvement of domestic enterprises in electronic processes.

According to the State Statistics Service of Ukraine [1], the number of enterprises that implemented e-commerce in 2018-2023 has practically not changed (Fig. 1), which is understandable, given the objective reasons associated with the military conflict with the Russian Federation.

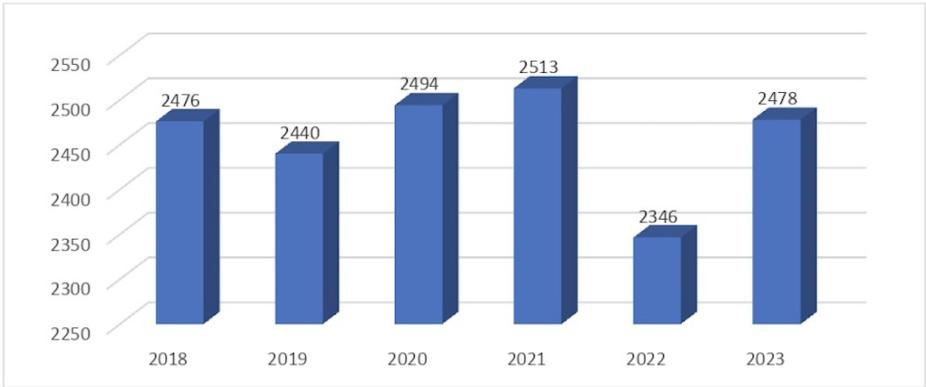


Fig. 1. Number of enterprises that carried out e-commerce, units (compiled by the authors based on materials [1])

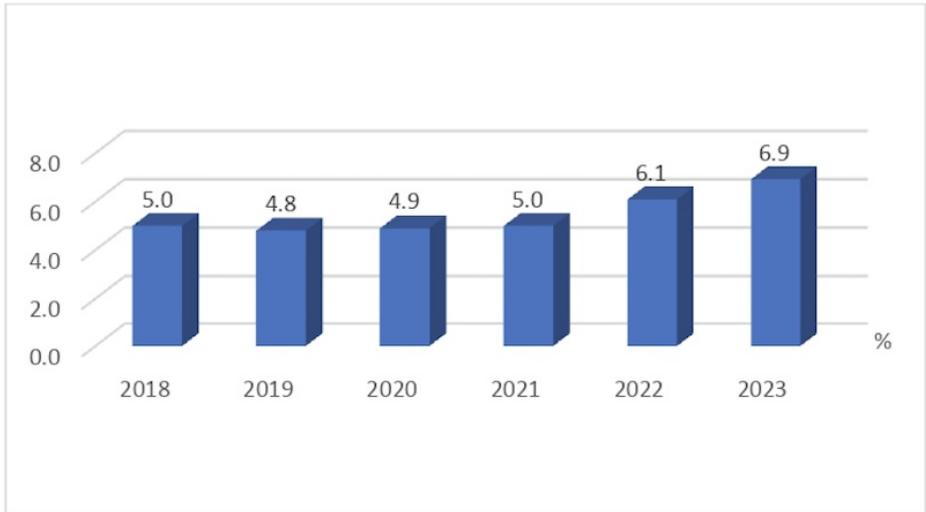


Fig. 2. % of the total number of enterprises in the country that carried out electronic trade (compiled by the authors based on materials [1])

It should be noted that the volumes of products sold by enterprises through electronic trade are steadily growing (Fig. 3).

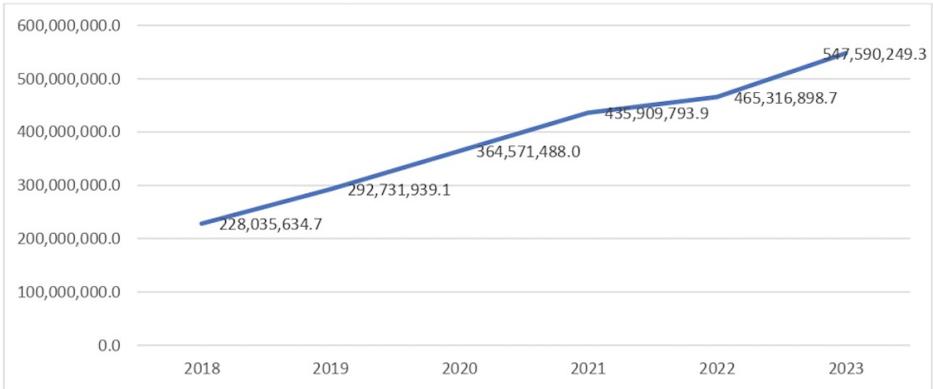


Fig. 3. Volume of products sold by enterprises received from electronic trade, thousand UAH (compiled by the authors based on materials [1])

Thus, according to the results of the study, we note that electronic commerce is being introduced into the business practice of domestic enterprises quite freely, which requires additional attention to it as a promising area of activity from commodity producers.

1. State Statistics Service of Ukraine. Official website. Date of visit: 17.05.2025. URL: <https://ukrstat.gov.ua/index.html>

MANAGERIAL AND LEGAL ISSUES OF SUSTAINABLE DEVELOPMENT

"GENETIC SCISSORS" AND ECONOMIC DEVELOPMENT

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We live in a very dynamic and complex time. The information-network economy has completely transformed both the development of society as a whole and economic life at all levels. The information agenda is highly saturated, and world-changing events that shape the course of civilization sometimes go unnoticed by the global community.

Such an event took place in January 2022. Given the immense flow of information, it went largely unnoticed by the global community, although it was recognized by the scientific community. At the same time, this event, in terms of its significance, stands alongside the greatest milestones of world civilization that have transformed historical development and the lives of every individual. It ranks among groundbreaking innovations such as the internal combustion engine, the invention of writing, the discovery of penicillin, the invention of television, human spaceflight, the creation of the computer, and more.

According to many scientists, this event will transform global economic development, reshape the global, regional, and national economies, and change the lives of every individual.

On 7 January 2022, scientists successfully transplanted a genetically modified pig heart into a human. This event represents a revolutionary scientific and technological breakthrough that will have a significant impact not only on the development of medical and biological research but also on the evolution of socio-economic systems as a whole. [1]

At the National University of Food Technologies, a series of intellectual-competitive games was held, dedicated to the impact of this significant event on the development of the global, regional, and national economy, various industries, and individuals. Different scenario plans (forecasts) were presented regarding the influence of the "genetic scissors" innovation on the macro-, meso-, and microeconomic levels, as well as on personal development. All these scenario plans were thoroughly analyzed and discussed.

As a result of the series of intellectual-competitive games, a protective document for an intellectual property object was obtained.

As of today, it is impossible to fully predict the consequences of the "genetic scissors" innovation on socio-economic and medical-biological processes. This uncertainty is due to two key factors. First, we cannot accurately forecast how this invention will interact with other groundbreaking discoveries in the medical-biological field. Second, we cannot predict how it will interact with major modern innovations in other areas, such as artificial intelligence, superconductivity at atmospheric temperatures, and more.

However, at this stage, with a high degree of probability, some preliminary assessments of this remarkable invention's impact on socio-economic processes can already be made.

Today, despite the existence of fully developed and effective donor systems in developed countries, in some cases, the necessary donor blood may still be unavailable. In emergencies, friends, relatives, and volunteers often step in as blood donors. But what happens when the need extends beyond blood to vital human organs necessary for survival? This highlights the urgency of addressing the donor issue, as lives and people's ability to work depend on its effective resolution.

Analyzing the most comprehensive available statistics from Ukraine in 2018, we can see that the leading causes of death were circulatory system diseases: atherosclerotic heart disease (201.2 thousand deaths, 35.03%), other forms of chronic ischemic heart disease (50.9 thousand, 8.87%), other cerebrovascular diseases (43.2 thousand, 7.54%), other heart diseases (18.3 thousand, 3.19%), brain infarction (18.1 thousand, 3.16%), and atherosclerosis (17.4 thousand, 3.03%). In total, cardiovascular diseases caused 387 thousand deaths, with 270.6 thousand related to heart dysfunction, accounting for more than 36.13% of all deaths in Ukraine in 2018. [2]

This highlights the severity of cardiovascular diseases and their negative impact on public health, as well as on the demographic and labor potential of the country.

As a result, organ transplantation for the treatment of cardiovascular diseases becomes an extremely important issue. In this regard, the "genetic scissors" innovation could have a revolutionary and positive impact. Furthermore, ongoing research may lead to new, significant scientific breakthroughs.

Undoubtedly, this discovery represents a strategic, groundbreaking global innovation that will reshape civilization, transform individual lives, and influence economic and social environments at all levels. While the final outcomes of its implementation remain unpredictable, some key conclusions about the strategic importance of the "genetic scissors" innovation can already be drawn.

The increase in life expectancy, a goal humanity has pursued for centuries, is likely to rise significantly with the global implementation of this innovation. However, this remarkable achievement comes with a significant drawback that must be considered.

The primary concern is that longer life expectancy may exacerbate issues related to population aging. As people live longer, the proportion of elderly individuals will grow, potentially placing a heavier burden on healthcare and social services.

Additionally, population aging could lead to rising unemployment and a shortage of job opportunities for younger workers. This could negatively impact the economy, as individuals beginning their careers with little experience may struggle to find employment. At the same time, however, this innovation may enable older individuals to maintain their physical and intellectual capacities, allowing them to work productively for longer periods.

Every financial system is designed to support economic growth and labor market expansion. A decline in the number of young people may reduce global demand, leading to deflation and recession, while a labor shortage without sufficient automation could make it difficult to support a growing number of retirees. This could result in significant social and economic challenges. Furthermore, as the working age continues to rise, countries will need to find solutions to sustain retirees while maintaining economic growth.

For example, as Japan's population ages, pension benefits are gradually decreasing [3]. This means that the Japanese government needs to reform the pension system to avoid financial collapse while also maintaining public support. This is an extremely complex challenge both economically and socially.

The Japanese government is already encouraging retirees to work longer and to retire with higher payouts. However, the cost of misguided reforms for countries with a large number of retirees can be substantial, as the stability of the financial system increasingly relies on the effectiveness of pension reform and the maintenance of social equilibrium. This equilibrium is fundamental to social stability and peace, serving as a guarantee for conflict-free socio-economic development.

It should be noted that the "genetic scissors" innovation will have a direct impact on the food industry. First and foremost, it represents a powerful step towards the development of the selection of varieties and hybrids of agricultural crops, breeds of animals, and strains of microorganisms. This innovation will contribute to the evolution of plants and animal species in a direction beneficial to humanity. In other words, it allows for the production of pre-defined varieties of plants and animals with specific characteristics that meet particular requirements. This will significantly enhance the productivity of food industry enterprises.

However, there are also potential negative consequences for humans and the environment, including allergic diseases, metabolic disorders, the emergence of antibiotic resistance in human microflora, remote carcinogenic, teratogenic, and mutagenic effects due to the direct action of genetically modified proteins, the spread of diseases across interspecies barriers, the loss of biodiversity in agricultural crops, increased use of chemicals for processing, and disruption of ecological balance [4]. The achievements, benefits, and advantages for civilization significantly outweigh these risks.

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DIGITAL RESILIENCE OF UKRAINIAN SMES: LEVERAGING DIGITAL MARKETING FOR SURVIVAL AND GROWTH IN WARTIME

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Small and medium-sized enterprises (SMEs) represent a crucial segment of the market economy. They contribute to the country's economic stability, support government budgets, generate employment, supply goods and services to the market, and foster a competitive environment. SMEs exhibit adaptability in the face of rapid changes in social dynamics, adjusting to market fluctuations and incorporating the latest technological advancements. The development of SMEs facilitates the growth of the middle class, strengthens civil society, reduces social inequality and tension, accelerates the democratization of market relations, and ensures social stability.

Ukrainian SMEs play an essential role in the economy, particularly during times of crisis. Their contribution to GDP, employment, and innovation is significant, making them strategically important for both current economic development and future post-war recovery. SMEs account for approximately 64% of added value, 74% of employment in business, and 37% of tax revenues. In 2023, SMEs represented 99.9% of Ukrainian enterprises and 55% of the country's GDP (UNDP, 2024a).

The ongoing military aggression against Ukraine has triggered unprecedented economic shocks. Under martial law, SMEs have experienced the greatest losses and challenges. Statistics indicate that the losses of SMEs at the beginning of the war in 2022 amounted to over 83 billion US dollars, with 77% of enterprises being significantly affected by the war (Payoneer, 2023).

According to the World Bank's Rapid Damage and Needs Assessment (2024), SMEs in Ukraine are among the most severely impacted sectors. They face numerous obstacles, including the physical destruction of assets, disruptions in supply chains, market contraction, labor shortages, and a decline in consumer purchasing power (World Bank, 2024). Approximately 10 million Ukrainians have relocated within the country or abroad. Over the first year of the war, the situation has undergone significant changes. Many enterprises have resumed operations, and a considerable portion of the workforce has returned. However, many SMEs have been forced to either close or scale down their operations significantly, focusing primarily on survival and adapting their business strategies to navigate the new realities. While businesses were primarily in survival mode during 2022, in 2023 and beyond, companies are adapting to the new conditions and planning for the future.

In such a volatile and dynamic business environment, digital transformation,

including the adoption of digital marketing tools, has become a crucial mechanism for resilience and recovery for SMEs. By transitioning from traditional to digital marketing channels, Ukrainian SMEs can:

- Enter new domestic and international markets, even in the face of limited financial resources and disruptions to supply chains (Oklander et al., 2024);
- Maintain contact with existing customers through social media, email marketing, and targeted advertising (Shymanska & Bondarchuk, 2022);
- Promote new or adapted products and services quickly and cost-effectively through online channels (Vinogradova & Nedopako, 2021);
- Access real-time data and analyze consumer behavior to rapidly adjust business strategies (Munna et al., 2023).

Numerous studies have emphasized the positive impact of digital marketing tools, such as search engine optimization (SEO), pay-per-click advertising (PPC), content marketing, and social media engagement, on the competitiveness and sustainability of SMEs (Cioppi et al., 2023; Rydzewska & Szwajca, 2024). In the context of the Ukrainian business environment, digital marketing has become an essential survival strategy for many enterprises (Oklander et al., 2024). Despite wartime restrictions, Ukrainian businesses have successfully transitioned to online sales, maintained brand presence, and reached new customer segments.

SMEs utilize a wide range of digital tools, including social media, content marketing, SEO, PPC, email marketing, influencer marketing, and CRM systems. A comprehensive review of digital marketing tools and real-time analytics for campaign monitoring has shown that social media and SEO are instrumental in helping SMEs scale, PPC facilitates targeted outreach, and analytics provide real-time feedback. The primary challenges faced by SMEs include budget limitations and a lack of expertise (Munna et al., 2023).

Rydzewska and Szwajca (2024) find that while Polish industrial SMEs recognize the economic benefits of digital marketing, they also demonstrate a positive correlation between the use of digital marketing tools and economic outcomes. However, the adoption of digital marketing remains limited due to financial constraints and knowledge gaps.

O'Neill (2023) conducted an exploratory study on the adoption of digital marketing by SMEs in the West of Ireland during the COVID-19 pandemic. The study found that SMEs initially lacked digital skills and trust in online tools. The pandemic forced a rapid shift toward digital channels, particularly social media and e-commerce. Despite initial barriers such as limited knowledge and staffing constraints, SMEs showed a strong preference for digital marketing and reported increased engagement, broader market reach, and a willingness to build internal capabilities. Tailored support, training, and region-specific strategies are essential to sustain digital momentum in rural SME sectors.

An expert review of digital and social media marketing trends, including PPC and social engagement, highlights the growing role of artificial intelligence, personalized advertising, metrics-based strategies, and resource constraints for SMEs (Dwivedi et al., 2021). Limited access to advanced technologies remains one of the primary barriers preventing SMEs from fully adopting digital marketing.

Digital marketing tools such as PPC, SEO, social media, and analytics have significant potential to enhance SME performance, including visibility, engagement, and revenue. However, practical barriers, such as financial constraints, shortages in digital

skills, and rapid technological advancements, often hinder full adoption. This highlights the need for in-depth research focused on addressing specific challenges and developing strategic recommendations for digital marketing in SMEs.

Cioppi et al. (2023) conducted a systematic and thematic analysis of the intersection between digital transformation and marketing. The study explored how digital technologies such as social media, CRM, and analytics influence marketing processes and outcomes for customers and businesses. There is a significant research gap in the neglect of the employee perspective in digital technology and marketing research. Thus, there is a need for both theoretical and managerial insights, as well as practical recommendations for organizations undergoing digital transformation.

SMEs are successfully utilizing platforms such as Facebook and Instagram to support their brands and customer bases. However, key challenges remain, including the creation of high-quality content, managing advertising budgets under financial constraints, and effective audience targeting, which requires highly skilled marketing professionals (Ugolkova, 2021).

Digital marketing has a significant impact on enhancing the competitiveness of Ukrainian SMEs by enabling targeted communication, cost-effective promotion, and better customer retention (Palii et al., 2024). Social media, SEO, and contextual advertising are among the most commonly used tools, yet their effectiveness is often constrained by a lack of expertise and strategic planning. To improve digital competency, there is a critical need for educational initiatives and state-supported programs aimed at enhancing digital skills.

Oklander et al. (2024) conducted an in-depth qualitative study on the use of digital marketing tools by Ukrainian SMEs during the full-scale Russian invasion. Social media, SEO, PPC, and email marketing were leveraged to rebuild operations, retain customers, and enter new markets across four chronological phases of SME survival and growth. The active use of digital marketing, particularly social media, was identified as a key success factor for SMEs' resilience, enabling them not only to survive but, in some cases, to surpass pre-war performance levels.

Vynogradova and Nedopako (2021) provide a comprehensive historical analysis of the evolution of digital marketing in Ukraine, tracing major phases from the emergence of social platforms, search engines, and mobile devices to modern tools such as SEO, content marketing, influencer marketing, contextual advertising, and social media marketing. Digital marketing has significantly expanded the informational capabilities of SMEs, reduced promotional costs, enhanced brand visibility, and facilitated real-time engagement with target audiences, thus improving marketing efficiency even under unstable economic conditions. The effectiveness of marketing activities is directly linked to the integrated use of digital marketing tools, which deliver a synergistic effect in client acquisition and market exploration, especially when applied in a coordinated manner.

Krymska (2025) finds that among Ukrainian small businesses, social media platforms play a significant role in customer engagement, brand recognition, and sales growth. Automated content tools, alongside human-driven blogging and posting, enable SMEs to build active social circles and foster subscriber interaction, which, in turn, promotes customer loyalty and enhances competitive positioning. The effective use of social media for content creation and subscriber engagement emerges as a key marketing strategy for SMEs, driving both market presence and consumer trust.

The systematic use of digital marketing technologies by enterprises during the

COVID-19 pandemic enhanced competitiveness, value, and resilience (Kovalchuk et al., 2023). A comprehensive toolkit, including contextual advertising, SEO/SEM, banner ads, message-based campaigns (SMS, messenger ads), viral advertising, QR codes, and teaser and retargeting strategies, significantly increases market reach and sales potential under disruptive conditions. Furthermore, the adoption of innovative tools such as chatbots, video marketing, voice search, interactive content, and online testing via AR has the potential to sustain enterprise growth and stay ahead of post-pandemic consumer trends.

Shymanska and Bondarchuk (2022) conduct a qualitative analysis of case studies involving Ukrainian SMEs using online promotion channels to reach foreign markets, focusing on tools such as SEO, contextual advertising, social media platforms, and influencer collaborations. The strategic use of multi-channel digital communication, particularly through influencers and social media, significantly enhances brand visibility and export opportunities, even for resource-limited SMEs. Critical barriers to effective implementation include a lack of unified strategies, limited digital marketing expertise, and unclear performance indicators. SMEs need to develop structured influencer marketing strategies and performance measurement tools tailored to their needs, with particular attention to resource constraints and local market conditions.

Digital marketing significantly improves performance, brand visibility, and customer insight, yet SMEs face resource and skill constraints (Sharabati et al., 2024). Integrating PPC, SEO, social media, and online engagement markedly improves SME performance, while digital transformation plays a mediating role.

Despite its advantages, Ukrainian SMEs face challenges in implementing and utilizing digital marketing tools. Many enterprises continue to rely heavily on traditional marketing methods or operate without formal marketing strategies. SMEs face resource, skill, and technological barriers in their digital transformation strategies. The main barriers hindering the adoption of digital technologies by SMEs in Ukraine include:

- limited financial resources for advertising spending (Vynogradova and Nedopako, 2021);
- lack of digital competencies and qualified personnel (Prodius and Donetskova, 2022);
- insufficient infrastructure in war-affected regions (Kovalchuk, 2023);
- strategic uncertainty and psychological resistance to investing in new technologies during times of crisis (O'Neill, 2023).

Comprehensive promotional strategies of Ukrainian enterprises integrate digital marketing tools, including SEO, contextual advertising, email marketing, and social media (Prodius and Donetskova, 2022). The combined and strategic use of digital tools significantly enhances communication efficiency and customer acquisition, especially for SMEs operating under resource constraints. However, many businesses struggle with a lack of digital expertise, fragmented implementation, and the absence of performance analytics, which limits the effectiveness of campaigns. Structured digital marketing planning and investment in staff training improve digital marketing performance.

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DIGITAL TRANSFORMATION OF THE TOURISM INDUSTRY IN UKRAINE: TECHNOLOGIES, MARKETING STRATEGIES, AND POST-WAR RECOVERY EFFECTS

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Digital technologies are fostering the development of the tourism industry in Ukraine. The implementation of ERP, CRM, and BI systems serves as an indicator of the digital maturity of tourism enterprises. According to the latest statistical data, only 12.8% of companies were using ERP systems in 2024. CRM systems were adopted by 16.8% of enterprises, while BI analytics tools were used by only 6.4% of companies (State Statistics Service of Ukraine, 2025).

The overall level of adoption of modern management systems remains low. The use of business intelligence systems is particularly limited, which is critical.

The implementation of Big Data technologies and consumer preference analytics enables the development of more personalised tourism offerings, which contributes to

increased customer loyalty. Companies that have integrated Big Data tools into their marketing strategies have reported a 15% increase in average transaction value (State Statistics Service of Ukraine, 2025).

Currently, the use of Big Data by tourism enterprises remains limited. Only 22.4% of companies conducted Big Data analysis in 2024. Most frequently, companies analysed customer data (20.0%) and transaction data (11.2%).

Big Data holds significant potential for gaining deep insights into consumer behaviour; however, its current level of adoption is insufficient. To address this issue, enterprises should develop customer profiles based on transaction analysis and online behavioural data, and use analytics to deliver personalised travel packages and services.

The growing use of cloud services is a positive trend; however, their full potential for reducing costs and increasing operational flexibility has yet to be realised. In 2024, 25.6% of tourism companies reported using cloud computing services (State Statistics Service of Ukraine, 2025).

To improve the level of cloud computing adoption, tourism enterprises should scale up the use of cloud services for reservation systems, customer data management, and payment processing. In addition, cloud solutions should be employed for remote work and data backup.

One of the key innovation directions in the tourism sector is the implementation of artificial intelligence (AI). The use of AI enables improved customer service quality, accelerated booking processes, enhanced personalisation of travel offers, and the optimisation of marketing strategies.

Despite its potential, the use of artificial intelligence by tourism enterprises remains limited. In 2024, only 6.4% of companies reported the use of AI technologies. The main application areas include marketing and sales (4.7%), business administration (3.2%), and accounting and finance (1.6%) (State Statistics Service of Ukraine, 2025). Thus, the current level of AI adoption is low, with most implementations focusing on marketing and internal process automation.

To increase the adoption of AI technologies, tourism enterprises should utilise AI for demand forecasting, implement voice assistants and chatbots for travel booking, and foster partnerships with IT companies to develop customised AI solutions.

Digital transformation contributes not only to enhancing the competitiveness of tourism enterprises but also accelerates the post-war recovery of the industry (Kravchenko et al., 2021). According to expert estimates, companies that invested in the digitalisation of services increased the volume of domestic tourism flows by 25% in 2023. These trends have created new jobs, supported the development of small and medium-sized enterprises, and stimulated the growth of related sectors such as transport, food services, and culture.

The socio-economic impact of digital transformation in tourism is evident in the increased accessibility of tourism services, improved service quality, and the revitalisation of entrepreneurial activity. In 2023 the volume of services provided by travel agencies and tour operators through digital channels increased by 41% compared to the previous year (State Statistics Service of Ukraine, 2025).

Therefore, the use of innovative technologies and digital tools in the tourism business not only improves operational efficiency but also performs an important socio-economic function. Digital technologies support regional recovery, maintain employment, and contribute to forming a positive international image of Ukraine as a

safe and attractive tourist destination.

The positive impact of tourism digitalisation includes enhanced business resilience under wartime conditions through online operations and remote services; expansion of the customer base beyond Ukraine via online sales; increased employment in digital professions (such as SMM, content management, data analytics, and web development); and the creation of new tourism products, including online tours, virtual excursions, and hybrid travel packages integrating AR/VR elements.

Consequently, the continued development of digital technologies in Ukraine's tourism sector is a key factor in enhancing competitiveness, shaping a resilient business model, and supporting the successful post-war recovery of the tourism industry.

In the post-war context, digital marketing has become a crucial component of tourism enterprises' development strategies in Ukraine. The war has significantly altered consumer behaviour, increasing the demand for safety, accessible information, personalised service, and brand trust. Digital marketing enables tourism companies to effectively respond to these new challenges, maintain competitiveness, and foster sustainable domestic demand (Babushko et al., 2020).

One of the fundamental areas of digital marketing is search engine optimisation (SEO), which ensures high visibility of tourism websites in search engine results. Improved Google rankings lead to increased organic traffic, reduced customer acquisition costs, and greater trust due to a prominent presence on the first pages of search results (Abate, 2024). For tourism enterprises, an effective SEO strategy results in higher levels of unpaid traffic, better targeting of the intended audience, and stable growth, particularly under conditions of a constrained advertising budget.

Pay-per-click (PPC) advertising in search engines allows companies to attract audiences rapidly based on specific search queries. It is particularly effective during periods of demand fluctuations, as it enables instant adaptation of advertising messages to reflect current travel offerings.

In situations where physical sales channels are limited, contextual advertising via Google Ads enables tourism companies to immediately reach their target audience (Sharafuddin et al., 2024). As a result, the click-through rate (CTR) of advertising campaigns increases, while the customer acquisition cost decreases. This is especially important during periods of rapid regional change, as advertising facilitates the promotion of up-to-date and safe travel packages.

Email marketing remains a powerful tool for personalised communication with tourists. Personalised newsletters have become an essential instrument for maintaining contact with clients. Regular email campaigns allow tourism companies to inform customers about new offers, special promotions, travel condition updates, and to increase audience loyalty while stimulating repeat bookings. In times of uncertainty, consumers tend to prefer a personal approach and expect timely and relevant information (Sharafuddin et al., 2024).

Referral marketing is becoming an effective method of attracting new customers at minimal cost. Under challenging conditions, people place greater trust in recommendations, which enhances the role of loyalty programmes, referral bonuses, and other customer acquisition incentives (Babushko et al., 2020). Given budget constraints, referral programmes represent one of the most cost-effective methods for attracting new clients. Through the recommendations of satisfied customers, tourism businesses are able to maintain trust and consistently expand their customer base.

Tourism company websites play a key role in customer communication. A well-designed website enables prompt updates on tourism services, safety recommendations, booking conditions, and facilitates direct online sales. It has a crucial function when physical sales channels are limited. Websites also allow companies to communicate real-time information about the security situation, current offers, and travel conditions, which is critical in times of instability (Awad et al., 2025).

The share of tourism enterprises with their own website has remained relatively stable: from 66.5% in 2018 to 66.7% in 2024. A slight decline in 2021 to 64.3% can be attributed to the impact of COVID-19 and the subsequent reduction in the activity of some enterprises (State Statistics Service of Ukraine, 2025). The improvement recorded in 2024 indicates a gradual recovery and growing awareness of the importance of digital presence in the tourism sector.

In terms of website functionality, only 54.7% of websites in 2024 contain product or service descriptions along with pricing information. The option to place or book orders online is available on 48.7% of websites. This reflects a slight improvement from 2021 (46.3%) but remains insufficient. Only 21.3% of websites offer product or service customisation options, indicating a low level of interactivity. The ability to track order status remains consistently low at 40.4% in 2024, with no change since 2021. Only 33.3% of websites provide personalised content for returning customers, limiting opportunities to enhance customer loyalty. However, chat services for customer support are available on 38.4% of websites in 2024, this is a positive development in improving service quality (State Statistics Service of Ukraine, 2025).

Social media marketing (SMM) has become a key channel for maintaining continuous communication with clients. The use of platforms such as Facebook, Instagram, and TikTok enables rapid communication, promotion of current offers, timely response to regional developments, and the creation of emotional attachment to the brand. Tour operators utilise Facebook and Instagram to maintain customer trust by promptly providing updates on route changes, special promotions, and safe travel options.

Social media advertising (Social Ads) allows tourism businesses to reach a broad audience with tailored targeting based on interests, behaviour, and geography. This is particularly important in the context of a growing focus on domestic tourism and safe destinations. Advertising campaigns on social media help tourism enterprises reach audiences based on their interests and sustain engagement with travel even under difficult circumstances, when traditional marketing channels may not be functioning effectively (Sharafuddin et al., 2024).

In 2024, the share of enterprises using social media is 62.0%, nearly matching the level observed in 2018 (62.7%). The most common form of usage remains social networking platforms (59.3% in 2024). Multimedia content-sharing websites are actively used by 28.0% of enterprises, a significant increase compared to 2022 (21.2%). Wiki-based knowledge-sharing tools are used by only 34.4% of enterprises, indicating some progress but remaining a niche application. The share of enterprises using two or more types of social media stands at 38.7% in 2024, demonstrating a trend towards increasing multichannel communication (State Statistics Service of Ukraine, 2025).

Thus, while the majority of tourism businesses recognise the importance of digital presence, having a website alone does not guarantee effective use of its functionalities. The limited number of websites offering online booking and personalisation indicates

underutilised potential for customer acquisition and retention. Social media activity remains relatively stable; however, the structure of channel usage suggests a need to expand multimedia content and adopt new communication formats.

The use of digital marketing tools enables tourism enterprises in Ukraine not only to survive during wartime but also to actively grow their businesses, adapt to new market realities, enhance their competitive advantages, build a reliable brand image, and lay the foundation for the successful post-war recovery of the tourism sector.

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DIGITAL TRANSFORMATION OF UKRAINIAN SMES DURING WARTIME: RESILIENCE, ADAPTATION, AND MANAGEMENT STRATEGIES

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In the current unstable business environment in Ukraine, companies cannot maintain competitiveness or ensure sustainable operations without the digital transformation of marketing, sales, and other core business processes. During wartime, communication and sales channels are significantly limited, and traditional marketing tools are often no longer sufficient. Digital transformation has become a critical means of maintaining customer communication, reducing costs, and optimising internal operations.

The full-scale war launched by the Russian Federation caused serious disruption to Ukrainian SMEs. Many were forced to shut down, which led to rising unemployment across the country. At the onset of the war, Ukrainian SMEs suffered substantial losses. According to Payoneer (2023), the damages incurred by SMEs in the early months of 2022 exceeded USD 83 billion. An estimated 77% of businesses experienced significant disruptions due to the war. Approximately 10 million Ukrainians were displaced, either relocating within the country or seeking refuge abroad. Over time, however, the situation has evolved. Many enterprises have resumed operations, and a considerable portion of the workforce has returned. While businesses operated in survival mode throughout 2022, by 2023, many began adapting to new realities and planning for the future.

A study conducted by the United Nations Development Programme (UNDP, 2024b) between March 2022 and January 2024 reveals the main challenges faced by SMEs. Prior to the full-scale Russian invasion, around 22.3% of businesses assessed their financial and economic situation as either poor or unstable. By the end of 2023, this figure had increased to 78.1%. Only 36.5% of SMEs in Ukraine continued operations during the war. Approximately 6% were forced to suspend their business activities for over a year.

The eastern and southern regions of Ukraine experienced the most severe impacts. In the east, 18.2% of businesses reported suspending operations for 12 months or longer. In the south, this figure stood at 12.7%. Certain sectors were more heavily affected than others. Construction, transportation, food services, and tourism reported the greatest losses, while the IT and agricultural sectors showed comparatively higher resilience.

According to the United Nations Development Programme (UNDP, 2024b), the Ukrainian Business Index (UBI) in January 2024 was recorded at 37.3 out of a possible 100 points. This marked a slight improvement compared to November 2023, when the index stood at 36.3. However, it remained below the local peak of 38.2 reached in August 2023. The index reflects ongoing challenges in the business environment, including fatigue caused by prolonged uncertainty and market stagnation. These conditions have contributed to a decline in product sales volumes. Despite this, medium-sized enterprises accounted for 44.4% of the total domestic sales volume in 2022, while small enterprises contributed 19.4%, slightly more than in 2021.

Despite war-related disruptions, including broken logistics chains, economic instability, and persistent security risks, SMEs continue to serve as the primary source of employment in Ukraine, supporting around three-quarters of the working population. In particular, medium-sized enterprises employ nearly 50% of the workforce, while more than 25% are employed in small businesses. In 2023, SMEs played a leading role in driving the first signs of economic recovery. This was partly due to their shift toward the production of dual-use goods and military equipment, which contributed to the restoration of jobs. Medium-sized enterprises demonstrated the highest levels of resilience, and their employment share increased in 2022.

The most significant employment contributions from SMEs were observed in agriculture, where small and medium-sized enterprises employed 38.8% and 53.3% of the workforce, respectively. In industry, 50.3% of employees worked in medium-sized businesses, while in construction, SMEs employed 55.6% and 40.2% of workers, respectively (UNDP, 2024b).

Undoubtedly, the destructive impact of full-scale war has limited the ability of businesses to function normally. In Ukraine, 18.5% of SMEs reported a significant reduction in staff compared to the pre-war period, with workforce decreases ranging from 50% to 100%. Another 23.7% reduced staff by 20–40%, and 12.2% reported a minor reduction of around 10%. Only 30.4% of businesses maintained the same number of employees as before the war (UNDP, 2024b).

Even amid wartime conditions, many SMEs have shown remarkable resilience. They have continued operations, adjusted to shifting environments, and, in some sectors, led recovery efforts. Their agility and flexible organisational structures have enabled them to respond quickly to disruptions, positioning them as key actors in Ukraine's post-war recovery process.

Despite these challenges, many businesses express optimistic expectations for 2024. According to the same study, 44.5% of respondents anticipate staff increases. Among them, 26% expect a modest increase of up to 10%, while 14.5% plan to expand their workforce by 20–40%. A further 4% intend to increase staff by more than 50%. At the same time, 42.5% of companies do not anticipate any change in employee numbers. Compared to 2023, the overall expected increase in employment across all enterprises in 2024 is estimated at 4.4%. Broken down by business size, the expectations are: 6.8% for small enterprises, 5.3% for micro-enterprises, and 5% for medium-sized firms (UNDP, 2024b). Regionally, the most positive forecasts come from businesses based in Western and Central Ukraine – areas more distant from active combat zones.

Looking at expectations by sector, the main areas of SME development in 2024 include construction, agriculture, industry, energy and water supply, marketing, consulting, and design. Among SMEs in these sectors, 20–25% expect to grow their

workforce by 20–50% (National Institute for Strategic Studies, 2024).

Most surveyed businesses also plan to improve working conditions. In particular, 87% of respondents indicated their intention to increase employee wages. Of these, 46% plan an increase of up to 10%, while 41% intend to raise wages by 10–20%. Another 12% expect salaries to remain unchanged, and only 1% plan wage reductions. Notably, in 2023, 73% of SME managers were able to increase employee pay (UNDP, 2024b).

Despite the challenges caused by the full-scale war, many Ukrainian SMEs have managed to adapt their operations to wartime conditions and continue providing employment. Some businesses identified new opportunities by responding to demand for specific goods and services in areas near active combat zones or in recently liberated territories. For instance, there was increased demand in the construction and logistics sectors. Others succeeded by shifting their focus to exports. According to a recent study, 40% of SMEs in Ukraine engaged in foreign economic activities in 2023, while an additional 8% expressed interest in entering international markets in 2024. However, major barriers to internationalisation remain. Survey participants identified the lack of European clients (35.6%), insufficient financial resources (34.5%), and a shortage of qualified personnel (21.8%) as the most significant obstacles. At the same time, 57.2% of Ukrainian SMEs continue to operate exclusively in the domestic market (UNDP, 2024b).

SMEs are highly responsive to changes in the economic environment. As a result, they are often the first to experience the effects of economic disruptions and crises. The war has affected all aspects of SME operations, including financial, production, logistics, communications, innovation, and organisational structure. Faced with uncertainty, business owners must address numerous risks to preserve their operations, restore productivity, and safeguard jobs. Among the most pressing challenges, 42.1% of surveyed SMEs cited the shortage of skilled workers as a critical barrier to recovery (UNDP, 2024b).

The main difficulties facing SMEs during the war include disrupted business operations, reduced staffing, sector-specific losses, market stagnation, logistical constraints, and financial instability. Many businesses, particularly in Eastern and Southern Ukraine, were forced to shut down or suspend operations, leading to job losses and reduced incomes. In some cases, companies had to cut up to 100% of their workforce. The most heavily affected industries include construction, transport, food services, and tourism. The overall economic instability has contributed to lower demand and reduced sales volumes. Additionally, supply chains have been disrupted, limiting access to raw materials and complicating communication with clients. A large number of SMEs have struggled with a lack of financial resources to sustain or grow their operations.

The strategic digital transformation of SMEs has emerged as a central focus for Ukraine's wartime economic resilience and future reconstruction. The war has intensified the urgency for SMEs to adopt digital tools to sustain operations and to enhance their ability to navigate uncertain conditions. Digitalisation enables SMEs to access wider markets, improve internal processes, and reduce operational costs, contributing to business continuity and growth during a crisis. Technologies such as cloud services, e-commerce platforms, digital payment solutions, and cybersecurity systems are becoming increasingly integrated into SME operations.

Digital technologies can offer practical solutions to many of these challenges. By using digital platforms, SMEs can transition to remote work models and continue

operations even when access to physical locations is restricted. Shifting to e-commerce and online sales channels allows them to reach broader markets, including international customers. Cloud computing supports more efficient resource management and reduces dependency on physical infrastructure. Digital marketing and social media help businesses maintain customer engagement and attract new clients under restrictive conditions. Automation and AI tools assist in reducing operational costs and maintaining productivity with smaller teams. Cybersecurity tools are essential for protecting business assets and sensitive information, especially during times of elevated risk. Furthermore, digital solutions enable SMEs to access foreign markets through online trade platforms and international cooperation, even in the face of local disruptions.

Modern businesses can expand their customer base and increase sales thanks to the digitalisation of markets, the economy, and society. Reaching a global audience is now more feasible than ever before, but a professional web presence is essential. According to recent statistics, the volume of e-commerce sales in Ukraine has reached USD 3.37 billion (Statista, 2025). For SMEs, having a well-designed and functional website has become a key factor for success and competitiveness.

Online sales platforms offer numerous advantages for SMEs. These include access to international markets, 24/7 customer availability, audience expansion, and increased sales. Running an online business also helps reduce operating costs by eliminating the need for physical retail spaces, especially important for new or resource-constrained entrepreneurs. Furthermore, websites allow SMEs to digitise other areas of their operations by integrating with CRM systems, accounting platforms, and supply chain management tools, thus streamlining business processes. Online presence also reduces advertising costs, as digital promotion can be more targeted and cost-effective. In today's digital economy, establishing an online presence is no longer optional but essential for SME development. The internet acts as a global marketplace, enabling businesses to reach new audiences and strengthen their market position.

Another key tool in the digital transformation of SME sales is social media. For businesses, it has evolved from a trend into a necessity. Social media platforms offer a unique opportunity to attract new clients, enhance brand reputation, and drive sales. They are particularly well-suited to SMEs, as their target audiences are often highly active on popular platforms. Engaging content can capture attention, strengthen customer relationships, and build trust and loyalty. As such, social media can serve as a powerful sales and communication tool, provided that businesses adopt clear strategies, select the right platforms, and actively engage with their audiences.

However, Ukrainian SMEs do not always have adequate access to quality digital, advertising, or IT services. A number of barriers hinder their digital development. These include a shortage of qualified personnel, insufficient financial resources to hire external IT specialists or service providers, limited awareness among small business owners about the benefits of digitalisation, and a lack of strategic vision. These constraints limit the ability of Ukrainian SMEs to fully capitalise on e-commerce and digital marketing opportunities and, more broadly, impede their long-term development and competitiveness.

SMEs remain vital to Ukraine's economy. They provide employment and contribute significantly to economic stability. Despite the devastating effects of the ongoing war, many SMEs have demonstrated resilience, especially those in essential sectors such as agriculture, construction, and defence-related manufacturing. Looking ahead, there is

cautious optimism about recovery. Many enterprises anticipate job growth and improved working conditions in the near future. Despite the ongoing uncertainty, SMEs continue to play a central role in Ukraine's economic revival.

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MANAGEMENT OF DIGITAL TRANSFORMATION IN UKRAINIAN SMES: POLICY AND PRACTICE IN POST-WAR RECOVERY

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The rapid expansion of the digital economy has far-reaching implications for national development, serving as a catalyst for GDP growth and the creation of new employment opportunities. It enhances business efficiency and productivity, thereby contributing to overall economic advancement. From the consumer perspective, digitalisation facilitates greater access to a wider range of goods and services, frequently at reduced costs and with improved convenience (Kane et al., 2015).

In socially significant sectors, digital transformation plays a crucial role in addressing systemic challenges by enhancing access to vital services, including healthcare, education, and utilities. The integration of digital technologies into business

processes leads to productivity gains, reductions in operational costs, and the generation of added value for end users (Deloitte, 2019). As a result, transitioning towards a digital economy has become a strategic objective for governments worldwide.

Ongoing efforts to reinforce the digital economy are evident in targeted investments in digital infrastructure and dedicated programmes aimed at fostering digital innovation across various sectors, including public administration and social services. In Ukraine, policy initiatives such as the *Concept of Development of the Digital Economy and Society of Ukraine for 2018–2020* (Digital Agenda of Ukraine) underscore the strategic importance of digital transformation. Nevertheless, further investigation into the dynamics of digital business transformation and its influence on Ukraine’s digital economy remains essential for the formulation of effective policy measures and long-term strategic planning in this domain.

Small and medium-sized enterprises (SMEs) represent a vital part of the market economy. They contribute to economic stability, generate tax revenues, create employment, supply goods and services, and foster competition. SMEs are also highly adaptable. They respond quickly to social and economic changes, adjust to market demands, and actively adopt new technologies. Their development supports the emergence of a middle class, promotes civil society, reduces inequality and social tension, and contributes to the democratisation of economic relations and the maintenance of social stability.

SMEs play an essential role in Ukraine’s economy, especially during periods of crisis. Their contribution to GDP, employment, and innovation is particularly significant for both current economic stability and the country’s future recovery. In 2023, SMEs accounted for approximately 99.9% of all enterprises in Ukraine and contributed 55% to the national GDP (UNDP, 2024). Moreover, they generated around 64% of value added, employed 74% of the private sector workforce, and contributed 37% of total tax revenues.

Between 2014 and 2022, the structure of business entities in Ukraine remained largely unchanged. Small businesses consistently accounted for about 95% of all enterprises, while medium-sized businesses made up nearly 5% (National Institute for Strategic Studies, 2024).

Digital transformation of SMEs contributes significantly to the development of the digital economy. It allows businesses to integrate into the global digital ecosystem and interact with key stakeholders, including business partners, government institutions, and consumers. Successful transformation, however, requires both skilled personnel and robust digital infrastructure within enterprises (Westerman et al., 2011). On the demand side, consumers must have access to digital technologies, infrastructure, and sufficient digital literacy to fully engage in the digital economy. At the national level, advanced infrastructure, a digitally competent population, and supportive policy frameworks are critical for promoting a thriving digital economy.

Ukrainian SMEs are currently facing severe and unprecedented challenges. The ongoing military conflict, now in its second year, has triggered a deep economic crisis, mass displacement of the population, and a significant outflow of skilled professionals abroad. Despite these conditions, Ukrainian SMEs have demonstrated notable strength and competitiveness. Their contribution to sustaining the national economy and employment remains critically important.

In this context, supporting the recovery and growth of SMEs has become a critical

priority. Since December 2022, the majority of Ukrainian enterprises have been operating under restrictions, often in online formats with reduced territorial coverage. Limited financial and physical resources have accelerated the shift toward digital transformation and the adoption of online business models.

The Ukrainian government has acknowledged the importance of digital transformation for SMEs as a driver of economic growth and competitiveness. With digitalisation gaining momentum globally, Ukraine has introduced a series of initiatives aimed at supporting SMEs in adopting digital tools and processes. These initiatives aim to modernise business operations, enhance efficiency, and improve the domestic and international reach of Ukrainian enterprises.

One of the most prominent initiatives is the “Diia Business” programme, developed by the Ministry of Digital Transformation of Ukraine. It provides SMEs with a broad range of services, including online consultations, training modules, and self-assessment tools to guide businesses through the complexities of digital transformation (ITU, 2021). The platform also includes a catalogue of services and documentation, enabling firms to improve operations and financial management. Importantly, “Diia Business” supports SMEs in expanding into international markets by offering resources that facilitate access to foreign partners and export opportunities.

In addition to “Diia Business,” the Ukrainian government launched the “E-residency” programme, which allows foreign entrepreneurs to conduct business remotely in Ukraine (ITU, 2021). This digital service enables access to administrative functions without requiring physical presence in the country. It not only promotes foreign investment but also integrates Ukrainian SMEs into global digital trade networks, encouraging cross-border collaboration.

Another major initiative is “Diia City,” which focuses on fostering innovation and supporting the IT sector. It offers a dedicated legal framework, preferential tax conditions, and intellectual property protections to attract both domestic and foreign tech firms (ITU, 2021). The project aims to retain Ukrainian talent and create a favourable business environment for IT professionals and enterprises. By encouraging the growth of the IT sector, “Diia City” plays an important role in supporting digital SMEs and boosting technological innovation at the national level.

The government’s broader innovation agenda is further reflected in the creation of the Ukrainian Startup Fund (USF). This initiative provides early-stage financing and mentorship to start-ups, helping them gain exposure on international platforms. Since its launch, the fund has facilitated millions in investment, supporting new business development and enabling SMEs to connect with global investors. The USF demonstrates how targeted government support can help SMEs access capital and expand operations.

Despite these achievements, significant challenges remain. Many SMEs continue to face limited access to funding, a shortage of digital skills, and a lack of awareness about available digitalisation tools. To address these issues, future policies should focus on expanding access to financial grants, particularly from international donors and development institutions. In parallel, efforts should be made to enhance digital literacy and build the skills required for technology adoption.

International cooperation also plays a crucial role in advancing Ukraine’s digital transformation. Partnerships with organisations such as the United Nations Development Programme (UNDP) and the European Union (EU) have supported initiatives like the

Eastern Partnership Startup Ecosystem. These collaborations offer technical expertise and provide Ukrainian SMEs with opportunities to access global markets and international financing. Strengthening such partnerships will be essential for sustaining progress in the digital economy.

Moving forward, policy efforts should aim to reduce administrative barriers and provide targeted support to innovative SMEs and start-ups. Expanding access to international markets, increasing financial resources, and investing in digital skills will help ensure that SMEs remain competitive in a fast-changing global environment. However, long-term success will require the creation of inclusive and sustainable support systems that guarantee equal access to resources for all businesses, regardless of size.

Government support has played a significant role in advancing the digital transformation of Ukrainian SMEs. Programmes such as “Diia Business,” “Diia City,” and the Ukrainian Startup Fund have provided essential tools for innovation, growth, and global integration. By continuing to promote international cooperation, expand access to finance, and develop digital skills, Ukraine can strengthen its digital economy. At the same time, addressing persistent challenges, such as data gaps and unequal access to support, will be crucial to realising the full potential of digital transformation for SMEs.

Looking ahead, the digital transformation of SMEs is expected to play a strategic role in Ukraine’s recovery. First, it can help bridge infrastructure gaps caused by physical destruction, enabling businesses to operate remotely and expand internationally. Second, in a context where access to capital and resources remains limited, digital tools can improve efficiency and support cost-saving measures. Third, digitalisation fosters innovation, which is essential for maintaining competitiveness in the global economy.

Support from the Ukrainian government, international donors, and private sector partners will be essential to accelerate this transition. Key areas of support include dedicated financing for digital technologies, workforce training programmes to improve digital skills, and incentives to encourage the adoption of advanced tools. By prioritising digital transformation, Ukraine can lay the foundation for a more sustainable, competitive, and innovative SME sector, capable of leading the economic recovery and contributing to long-term growth in the global digital economy.

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THE BASICS OF FORMULATING AN INNOVATION DEVELOPMENT STRATEGY FOR ENTERPRISES

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Risk analysis is a critical step in developing an innovation development strategy, as it helps identify potential threats and predict ways to mitigate them.

In the contemporary economy, characterized by rapid technological and economic advancements, innovations serve as a key factor to ensure enterprise success and competitiveness. Innovation development is not only a means to improve operational efficiency but also a strategic tool for maintaining market positions and adapting to global changes. Developing an innovation strategy has become a priority task for managers as it allows enterprises to achieve long-term goals by systematically integrating innovations into all business processes.

The goal of this research is to deeply analyze the conceptual bases and practical aspects of forming a strategy for innovation development in enterprises, including methods and approaches to planning, as well as studying the role of risk analysis in this process.

Innovation development is defined as a process of creating, implementing, and utilizing innovations aimed at improving enterprise efficiency, adopting new technologies, and strengthening market positions. According to the OECD (2018), innovations can be categorized into the following types:

- Product innovations: creating new or improving existing goods/services.
- Process innovations: reorganizing or optimizing production processes.
- Marketing innovations: introducing new promotion strategies.
- Organizational innovations: changes in management structure or approaches.

Innovation development is a dynamic, multidisciplinary activity that ensures the enterprise's sustainability in rapidly evolving market conditions (OESD Eurostat, 2018).

The innovation development strategy is a long-term action plan aimed at achieving innovation objectives through the rational use of resources and change management. As noted by Zamkova N., Bokovets V. (2017), the strategy ensures "preparing the enterprise for sustainable growth in conditions of constant modernization of the external environment".

Two primary approaches are identified:

- Proactive approach: focusing on forward development by mastering cutting-edge technologies (e.g., companies like Tesla and Apple).
- Reactive approach: responding to competitors' initiatives or external pressures.

The table below lists the main methods with their advantages, disadvantages, and short descriptions.

Table 1

The methods facilitate identifying, systematizing, and prioritizing innovation goals.

Method	Short Description	Advantages	Disadvantages
SWOT Analysis	Analyzing internal and external factors influencing the innovation strategy.	Evaluates strengths, weaknesses, opportunities, and threats.	Subjectivity in assessing threats and opportunities.
Technology Foresight	Forecasting trends to identify innovation focus areas.	Predicts future technological and market changes.	Heavily reliant on expert opinions.
Goal Tree ("Tree of Objectives")	Structures development goals hierarchically with clear prioritization.	Encourages a clear formulation of innovation directions.	Excessive detailing can complicate management processes.
Ansoff Matrix	Analytical model for determining growth strategies through products and markets.	Combines new solutions with market opportunities.	Does not factor in the complexity of technological barriers.

Key Risk Areas:

- Technological risks: Potential technical or operational failures of proposed solutions.
- Financial risks: Lack of financing or insufficient budgets for implementation.
- Regulatory risks: Non-compliance of innovation decisions with regulatory frameworks.

Risk Management Tools:

- Conducting scenario analysis to foresee possible obstacles.
- Developing alternative action plans to respond to critical situations.
- Using a risk matrix to prioritize and evaluate potential threats.

Innovation development is an indispensable component of the successful functioning of modern enterprises. An innovation development strategy should be based on a clear analysis of internal and external factors, utilizing adaptable methods and tools for risk assessment. A systematic approach to forming strategies enables businesses to

successfully implement innovations, maintain competitiveness, and adapt to dynamic environments.

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SOCIAL AND CULTURAL ISSUES OF SUSTAINABLE DEVELOPMENT

THE WAY OF LIFE AND CULTURE OF MEDIA

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General definition of culture and historical condition

In interpreting the word culture we must go into the past since the word derived from the Latin language meant tillage and crop production (*colere, Colo*). It can be seen therefore apparent relevance to human activity. Only later came to be used also in a figurative sense, and that the designation of manners, education and enlightenment of man. In 45 BC, Cicero has in its *Tuskulsky* talks marked the philosophical thinking as a "culture of reason." According to him, it was necessary to constantly cultivate and develop thinking like how to cultivate the land for cultivation. The main component content in his work, the culture was, therefore growing mental capacities.

The 21st century has witnessed a profound in the way media influences every day life and culture. Rapid technological advancements, especially the rise of digital platforms and social media, have reshaped communication, social interaction, and cultural production. This paper explores the evolving relationship between media, lifestyle, and culture, highlighting the implication of media omnipresence on identity formation, social behavior, and cultural trends.

Key words: history, culture, education, media, society.

Later during the Renaissance began to use the term culture in the broader sense. It covers a man's development to the extent consistent with its own essence. Often, however, the essence of a person interpreted the wrong way. Consequently the notion of culture greatly distorted. At the time of onset of the bourgeoisie which had its own philosophy and own ideas on culture, the culture was understood solely as a psycho. According to this philosophy culture based on artistic philosophical moral and religious matters which was contrary to a fair and practical existence of man.

According to this philosophy, the culture was always the result of intellectual wealth of the highest layers thus privileged elites then society and its activities. According to the bourgeois philosophers therefore there was the possibility that participated in the creation of a common culture of ordinary citizen, since it was notable to follow them. The only thing which was capable of, it was only a passive acceptance of cultural values which created a greater society.

Culture and understanding its importance was again modified in the 18th century French enlighten. They explain it in a different way which was based on the fact that culture is a great power through which individuals can get rid of bad or unfair position in the then society. Social inequality under Enlightenment philosophers stemmed from the fact that man is fallible and often absent due to their own ignorance. Containing culture was because at that time constantly developing cognitive skills training i.e., growth

honours which makes the person should get rid of prejudices.

Culture is not represented only by what degree of spirituality and education a person achieves. Likewise it is not only important how you managed to acquire spiritual values characteristic of the society and civilization as a whole. Culture is also a significant degree of relationship that one has on sovereign people in society with nature and what conditions have to develop their own individuality. In this sense culture is part of the process and understands the extent to which humanized human relations its proportions contacts and behavior.

Culture can be understood as everything that is the work of man that is what created the result of its activities. In this sense therefore the culture can not be considered something that was related to the nature and processes there in. Culture is shaped solely

by historical processes in the society and its development. Some experts say the human culture as a second nature. But is not nature itself but a product of history which was created after decade whole generations. The results of this human activity and human activity itself is a culture. While the nature and as such exists and operates without interfering with a person in it as well as being without human intervention are going on and change the culture of this aspect it differs significantly. In order for the culture can change or evolve in any way it is essential that the objective interest of man and his needs. The line between culture and nature because it affects the extent to which a person is mature as developed his mental and material values the degree of universality and the like.

In the past, culture and its maturity level and characterized as the degree achieved by the person in control of the forces of nature for its own activities. However this was only unnecessary Floating human capabilities, which had the nature itself negative impacts (deforestation of the Brazilian forests and the subsequent disruption of micro - and macroclimate etc.). Up over time researchers have demonstrated the great importance of forests for human life, as these are the reservoir of drinking water. The conclusion is that culture should reflect a person's ability to prevail over nature, but rather should represent his ability to adapt to nature and laws, which govern it. It must be because you realize that nature is a gift for the man with whom should know properly handled as they know the other living creatures on the planet. While the media parts that are open to promote human works, only a small space dedicated to what one its activities contrary destroyed.

For the life of today's man is characteristic that surround him things that are not the work of nature, but that he himself created. In this respect the culture and its practical existence expressed by these creations. Needless to say the products of human activity are significantly different from the creations of nature, as they are the final product of the work of man. Cultural objects themselves embodied not only in nature that originate from the material but also bear the qualities that they were in the process of manufacturing the man. These are the qualities that come from purposeful human activity and can therefore be regarded as the cultural characteristics of the object. These features are it becomes a cultural object.

One of the main characteristics of such a product of human activity is the ability of that object satisfy the needs of man. This feature is not enough to make it possible

the matter should be considered as a cultural object. The company is in fact constantly evolving and changing needs of the people are also in it, as well as the possibility of satisfying those needs. For cultural object can therefore be regarded only as

an object which is capable of satisfying human needs in the most developed historical levels of these needs. The subjects are often referred to as the cultural things made. This expression refers to the fact that a given subject in itself reflects all the requirements of the present time in culture. These requirements are related to areas such as technical design of an object, its practical and functional website design, aesthetic design and the like. All these requirements for cultural object, therefore based on the current level of development of society and people's capacities for these items. Cultural value of the object can be measured depending on its quality, so from that given subject than it can satisfy the need of man and his team measured the overall cultural significance. The quality of doing so depends on several factors. One of them is the quality of the work, through which the article produced. True that the work is given more perfect is better and more versatile also manufactured article, that the resulting product. The working process is a active, conscious and purposeful human activity through which man materializes their skills, knowledge and acquired skills. Qualitative aspects of work suited to the developmental level of a person who carries it. It also reflects his aesthetic perception and feeling, moral and intellectual development. If we perceive culture in the present form, it is possible through the creations of man. However, this is only their external form of the existence of culture in society. Inside, that a culture is constantly advancing the development of human abilities and strengths that a person has acquired historical development. These capabilities are represented by the diversity and richness of that man-made reality.

Culture however has its personality form of existence. In this case we see through human culture, its development and activities. For culture can not be regarded only certain works of art that man has created, or knowledge it has gained by studying and experience. Culture represents the personality traits of man which has reached a certain stage of their intellectual development. It is culture represented by the skills and abilities that one needs to do to be able to carry out creative activity. On this basis it is possible to deduce the existence of two main forms of culture:

- cultural items - for products produced by man of a certain knowledge and spiritual development and these objects are societal wealth created by human hands,
- personal form of culture - they actively manifesting abilities of man.
- Culture itself is constantly changing, depending on changes in the social system. On the other hand, the cultural influences and effects on the system so that it performs the functions that the system needs for its own existence and its development. Culture has several functions. For her important, integral function can be considered its efforts to shape a person. This function can therefore be regarded as a function of education. Due to the fact that human culture nurtures with respect to the applicable social system meets the needs of the whole of human existence.

For another important function of culture can be considered cognitive function. With this feature a person acquires new knowledge needed to do to be able to carry out a professional activity these findings also affect its behavior in society. This fact every individual sets standards of conduct to be followed. The regulation of these standards is

also one of the functions of culture and normative function. In the event that an individual violates these standards comes the sanctions against him. Every nation has its norms, traditions and values that are typical for him and characteristic. Just creating these norms and values are at the normative functions of culture.

From the perspective of the whole society requires that people living in it adopt standards presented normative function of culture as well so that they are willing to accept evidence submitted registration plates function of culture. Individual cultural values in society are accumulated in a form to be further distributors or to allow their transmission to future generations. This transfer of information is again a function of culture. It should be noted that the transmission of information, namely the transfer of cultural values between generations is only possible to contact these generations. This contacting is carried out mainly through language and also other means that are within the cultural values. Accordingly, we can define another function of culture, and communication functions. By a culture that fulfills all of these functions, acting as a force through which social development is not only spontaneous, but it is controlled and manipulated by. Through the various functions of culture reinforces the entire social system and thanks to them you can individuals strengthen their personal qualities, which

the whole system actually formed. Culture is the result of a specific human activity. As part of this activity is to engage people in the process which interact with each other outside environment and human needs, goals and interests. Culture thus affects virtually all areas of an individual, but also society-wide activities. Affects work, thinking man, his leisure and everyday life survival. Takes such an important and significant role in developing and shaping the personality of a person, but also social groups or the whole social system. Represents a conscious orientation, which operates the socio - psychological factors on the values and needs of people. Through it affects the standard of their behavior and their social interactions. In this respect we can say that how a person living their life is given by what level of culture achieved. Even though the way of living culture and life are at a glance different terms, there is the mutual connection of the content and also their functional proximity. Culture is characterized by man's relationship to nature and the degree of humanization of the relationship as well as relationships between people themselves and the relationship of man to himself together. Culture thus determines the quality of lifestyle, but plays an important role in the process of creation itself change and development in a historical context. The existence and functioning of culture however is subject to fixed standards in society activities in it behavior stereotyped behavior and this cooperation also people who live in this society. Assumption is that these standards are already established in the company actively engaged in society and influence the way of life in it. Between culture and way of life is a relationship that is given several aspects at different levels. Culture being viewed from a sociological point of view in which culture acts as a union between man and the historical development of society. For this interconnection is derived human behavior, which is determined by the rules, patterns and standards that culture provides. Culture is represented by a large number of diverse things created by man himself, these things are part of the built environment. During its cultural development in the individual creates his own unity thus psychologically individual behavior that is socially standardized. It looks like the way his life is given by linking several areas such as reproduction, production and consumption on the one hand and aesthetic or moral area on the other. The way of life is actually a multi - cultural forms.

It is not always possible to clarify inconsistencies or specifics in the way of life of people on the basis of political, social or economic conditions. In some cases it is possible to describe the characteristics of the cultural fund of the company, individual or group.

In connection with the way of life and culture theory based on the current level of knowledge of these areas we can on this issue derive some basic approaches.

For the first approach concerns the definition of culture as an activity that is active and creative, focusing on human development and understanding of the world as such. However, this approach is not ideal. Problems occur when it is necessary, for example due to research to define the sphere of human activity are specificities of cultural phenomena. In the second approach is based on the determination of culture on cultural standards and stereotypes. The notion of a cultural stereotype is predominantly used in ethnography, but from there it took sociology. In ethnographic terms characterized by cultural stereotypes as the sum of spiritual and material culture and for them to appropriate standards of behavior. On the other hand, sociology is characterized by cultural stereotypes as uniform and steady course of action, behavior and thinking. We include here the traditions, customs and other cultural patterns. Cultural stereotype may go through different changes, because of the traditions of innovation. For the same cultural standard is considered to be something that is common in the company and settled, something that members of this society understood as desirable and normal.

The most widespread approach to the way of life is an approach that is based on the coupling of culture and spiritual life, respectively with the humanities community. This approach represents socially desirable standards of behavior. Approach combines elements of culture with positive values, and this connection considered optimal in terms of human development.

A further approach include equation of culture with artistic fields and cultural institutions in society. This approach considers relevant art, which in his opinion is an important element of creating way of life. As such, while representing a relatively wide sphere. The last, the latest approach is definition of culture as the way in which it is possible to integrate into social life following the principles of relations between the individual and the material and social environment. Culture has in this case, so to speak, technological nature. This approach is typical of Western European understanding of the

concept of culture. All of these approaches are expression of the culture and way of life are phenomena which can not be used interchangeably, although it is a relationship between them, and sometimes even enabling. Every life has its own particular form and content, and is the epitome of culture in action. This lively cultural materia is constantly growing, and normal, everyday practical activity. Culture can thus be regarded as a phenomenon that makes it possible to express the uniqueness and individuality of each lifestyle. In this respect we can talk about culture as a stabilizing component and humanizing way of life.

Culture and media

Canonized McLuhan's dictum - medium determines the message - is the basic (counterintuitive) semiotic knowledge: media or forms of expression are not something that only means predetermined contexts and presented them further (i.e.,: the emergence of new media does not mean that it is still the same contents will continue to transmit even with new tools) but have (perhaps decisive) influence and what kind of content will communicate (such as tone, in what spirit). "The scale form and negotiation of human

form and manage the media." (McLuhan, 2000, p. 252)

Culture of a company is thus characterized if not defined, its structure media communication. (Postman: Culture is communication.)

Entry of new media, new communication technologies on the scene is a fundamental cultural change not just some technical innovation in the infrastructure of culture, but allcultural general social reform. Communicating culture and communication, newspapers and books is how TV - culture: a new mass medium fundamentally transformed the content, themes, ideas and communication and presentation styles as well as intellectual, perceptual, cognitive habits and fashion. Changing technology means a change of civilization. According to Thompson, "we must accept the idea that the use of communication media in turn includes the creation of new forms of negotiation and interaction in society, new social relations..., Development of communication media is essentially the recasting of the symbolic nature of social life... terms of restructuring the ways in which the individual relates to other individuals and to himself." (Thompson, 2004, s. 9, p. 15)

Let us note some examples of how the entry of new media, new communication technologies change the whole wide range of socio-cultural behavior of people:

New media may initially seem like mere codes of transmission over the results and established patterns of thinking... Letterpress allow for the existence of literature. This does not mean that literature only encoded." (McLuhan, 2000, p. 252.)

Entry and so little sophisticated media such as paper, changed the nature of the Islamic empire in the 9th century, "when the place started using papyrus paper, all efforts to limit the increase in administration have been in vain, since the new material greatly expedite bureaucratic proliferation." (Lewis, 1997, p. 141)

More - less long after the document has reached the validity of such oral declarations - e.g. diplomacy 11 century: "... asked them Pope, whether the words in the text of the guarantee." (Kosmas).

Today the opposite approach ("what is written, it is given"), but not exclusively: Postman attention to the conservative behaving institutions incurred prior to typography, which still prefer oral testimony before the written protocols (dealing with the court, the test for university).

Letterpress also contributed significantly to the technical - industrial memofund: "Invention manual rate became the forerunner of all assembly lines and it would be foolish to overlook what impact technological forms of printing the psychic life who reads." (McLuhan, 2000, p. 266)

Revolution in social - communicative behavior of people in the 20th century caused the equipment and facilities to enable the creation of text discontinued at any stages so far distributed continuous outcome anywhere in turn establish and continue finalizing the text. - "Xerox allows immediate recap of the current event - that kind of prior summary of the story"... Xerox has completely changed the nature of the conferences and the increased frequency of meetings." (McLuhan, 2000, p. 258)

Even more beneficial for the development of bureaucratic meetinglies genres impressed with PC text and spreadsheet editor.

Late 20 century has significantly transformed the entire nature of the media conversation: "Instead of contributing to optimize the flow of information by e-mail only strengthen flood poury to the staff via phone, fax, or mail. Premiere of information it maintains in a state of permanent readiness as having continuous extinguish hundreds of

small fires. The worst impact this has on the absorption ability of concentration, each

link is a distraction, after which the victim must re-focus on work in progress. The cumulative effect of continuous disturbance so results in chronic inattention and this is nothing compared to the impact of mobile phones.

Postman states in the development of cultural epochs each one delimited domination of mass - communication medium over the other. Assumes that the first basis in any medium provokes a different style and other topics of communication (McLuhan), but 2 the style and the topics on which provokes that brings people media, prevailing, dominant. The transforming its image to the styles and themes communicated in other media. Postman (in response to McLuhan and Havelock) hypothesis states that the change in the media of social communication are reflected by changes in the structure of the human mind and cognitive abilities. Insists that "significant new media causes changes in the structure of communication forms of expression of truth." While in culture before typography consisted mainly of intelligence and ingenuity aphoristic mind at age print is created primarily through the following capabilities: endure in peace, keep the distance and objectivity to be immune to excuse abstract concepts and generalizations etc. It is essential that the means of communication by less influential media are adapting the method and style provoked medium in which time the most influential. Postman referred to examples such as speech, commercial advertising, political propaganda, as the style and shape of these events has changed from a book - literary features in 19 century up to the Comic - TV feature today. During the second half of the 20th century "total information environment is gradually becoming a mirror image of the televin.

By adopting these two theses McLuhan and Postman we find ourselves in a world in which the importance, impact and share media and communication media for everything that happens in it including human perception, cognition and survival cannot hardly see nor appreciate.

Before us has given rise to large-scale paintings eras: before letterpress, literary and television. Perhaps even more - interactivity, perhaps the most important feature of the new media, supports demasification public communication - and thus indicates a possible twilight media (and asymmetric communication session information and instructions).

Already entering into a new era post-TV? And what will? Or: what kind of we when we find ourselves in it?

Can agree with the statement: "To be truly educated person today must be educated in the media." (McLuhan, 2000, p. 257)- semiotics calls for building media literacy. "We need new forms of critical competencies previously unknown art of selection and suppression of information just new wisdom." (Eco, p. 123)

And what about 21st century?

The media landscape in the 21st century is characterized by unprecedented access to information, interactivity, and immediacy. Traditional media such as newspapers, television, and radio have been supplemented—and often supplanted—by digital media platforms that offer user-generated content and global connectivity (Jenkins, 2006). This shift has deeply affected societal norms, values, and cultural practices, creating a new media culture that permeates all aspects of life.

Cultural Implications

The culture of media in the 21st century is marked by convergence, participation, and hybridity. Media users are no longer passive consumers but active producers and

distributors of content (Jenkins, 2006). This democratization of media production challenges traditional power structures and introduces new cultural forms and identities. Moreover, the blending of local and global influences fosters multiculturalism but also raises concerns about cultural homogenization and digital divides (Appadurai, 1996).

Identity and Social Behavior

Social media platforms have transformed self-presentation and social interaction. The curation of online identities influences real-life behavior and perceptions (boyd, 2014). The culture of sharing and constant connectivity impacts privacy notions, mental health, and social relationships. Furthermore, algorithm-driven content creates echo chambers that shape worldviews and cultural polarization (Pariser, 2011).

Challenges and Future Directions

While media culture offers opportunities for creativity and connectivity, it also poses challenges such as misinformation, digital addiction, and surveillance (Zuboff, 2019). Future research should address ethical considerations, media literacy, and the development of inclusive digital spaces. Policymakers, educators, and media creators

must collaborate to foster a healthy media culture that supports democratic values and cultural diversity.

Conclusion

The way of life and culture of media in the 21st century reflects a complex interplay between technology, society, and culture. Media's pervasive role reshapes identities, social interactions, and cultural dynamics, presenting both opportunities and challenges. Understanding this evolving media culture is crucial for navigating and shaping the future of society.

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ENVIRONMENTAL AND TECHNICAL ISSUES OF SUSTAINABLE DEVELOPMENT

ENERGY COOPERATIVES: THE EVOLUTION OF BUSINESS-MODELS TOWARDS SUSTAINABLE ENERGY

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The advantages of an energy supply decentralization are the enhancement of the security of supply, and in general the operation of energy sources as close as possible to the places of consumption reduces the technological costs of its transportation, which ultimately reduces the cost of energy due to the removal of the “transmission and distribution” component of the cost, as it allows electricity to be supplied to the end consumer without transmission and distribution fees in accordance with the amount of electricity consumed, and during wartime – greater autonomy and independence from centralized energy sources. Thus, the cost advantages of decentralization combined with security benefits form the basis for a sustainable energy transition (Sotnyk et al., 2024). Energy cooperatives are able to bring together a wide range of actors from civil society, agriculture, and business to meet energy needs at different levels.

Energy cooperatives are created around a wide range of economically available and technically feasible technologies for the use of alternative energy sources, as well as in combination of these technologies with highly efficient traditional ones (gas turbine, gas piston, and electric storage technologies). However, it is not only technology that determines the type of energy cooperative, but mainly the function of the cooperative in providing energy to the community: energy production, energy supply and efficient procurement, energy service as a type of activity in the energy sector. D. Oliynyk identifies such activities of energy cooperatives as the sale of energy to end users, provision of energy supply and energy efficiency services, which aims to reduce energy poverty and develop local energy infrastructure (Oliynyk, 2017). This flexibility of functions and types is a significant advantage of the cooperative organizational and legal form. Based on these functions, the following are formed: production cooperatives specializing in the production of energy resources and/or the cultivation and processing of energy raw materials, and the use of secondary energy resources; consumer cooperatives that act as trading entities in the energy markets to ensure the interests of their members: energy service cooperatives that can operate as ESCO companies under the performance contracting mechanism, as well as provide engineering and technical support services.

The model of an energy cooperative as a set of active consumers requires RES and/or energy storage facilities connected to the consumer's internal networks (in order to

participate in the ancillary services market, provide balancing services and purchase and sale of electricity) and provides for participation in organized market segments independently or as part of aggregated groups. The status of an active consumer provides the cooperative with advantages in the electricity market, namely: no connection fee when connecting to the networks of other consumers, electricity supply to the distribution system operator (DSO) and transmission system operator (TSO) networks within the permitted capacity, operation in the market under the net metering mechanism, easier access to bank guarantees, capacity tenders and co-financing projects to expand existing capacities.

The model of an energy cooperative as a member of a balancing group provides for the sale of surplus electricity to this enterprise, which is also the party responsible for the balance, at feed-in tariff rates. The group's electricity is traded at bilateral auctions or at day-ahead markets (DAM).

The global experience of forming various business models of energy cooperatives as an institution indicates common principles of their functioning with enterprises (profit), and at the same time, with a self-governing community – democratic governance, social orientation and adherence to the principles of sustainable development. The principle of “one member, one vote” allows members of local communities to influence their development and determine its strategic directions.

A generalization of business models and types of cooperatives depending on the energy technology is presented in the Table 1:

Table 1

Business models of energy cooperatives

By combination of energy technologies	By scale and “industrial / domestic / industrial-domestic” feature
<ul style="list-style-type: none"> - Industrial and domestic with a gas piston / gas turbine unit - Photovoltaic + cogeneration - With heat storage - “Optimal Wartsila configuration” - With local networks (USA) - With thermal insulation of buildings (energy efficiency cooperatives) 	<ul style="list-style-type: none"> - Energy centers (energy hubs) - Bioenergy villages - Cooperatives for heat supply - Cooperatives around the source of renewable energy - Cooperatives with an industrial enterprise as a part
	By main function
<ul style="list-style-type: none"> - Photovoltaic - Photovoltaic + wind - Photovoltaic + biogas - Biogas / biomass - Heat pump - Electric storage 	<ul style="list-style-type: none"> - Production - Consumer - Energy service
	Participation in the energy market
	<ul style="list-style-type: none"> - Participant in spot energy market segments (DAM and IDM) - Active consumer - Member of the balancing group

Although the construction and operation of an energy cooperative based on a single energy technology is organizationally and economically simpler, the advantages of basing an energy cooperative on a combination of energy technologies over a mono-technology are:

(1) minimization of RES limitations, optimization of schedules of power output by generation types;

(2) the ability to offer a competitive level of electricity prices for transmission to the grid due to the combination of RES and highly maneuverable technologies, since in power systems with a high share of RES, the equilibrium price depends mainly on the balance of supply and demand rather than the cost;

(3) diversification of energy sources, which increases the reliability of energy supply in the event of equipment failure or reduced availability of fuel (e.g., shortages or logistical disruptions in biomass supply).

The most common model is based on photovoltaic mono-technology (solar panels) – the model of a photovoltaic cooperative, which mainly takes the form of consumer cooperatives for self-sufficiency and sale of surplus electricity under the green tariff and net billing scheme (Trypolska & Rosner, 2022; Trypolska et al, 2024).

The formation of energy cooperatives using biomass is usually localized in communities that develop the cultivation of energy raw materials for biofuel production and/or have sources of biomass production as waste from woodworking industrial processes. For example, in Austria and Poland, biomass processing cooperatives are a very common type of energy cooperative. The cooperative is formed on the basis of a farm, wood harvesting, forestry, or furniture company. Other common cooperative options are biomass farms, CHP/mini-CHP/biomass boiler house with district heating systems. Such facilities can be jointly owned by the community, farmers, and forest land owners and can bring together a large number of farmers. Cooperatives based on biomass district heating and electricity systems are a type of consumer cooperative where citizens unite to purchase and distribute electricity and heat from a cogeneration source.

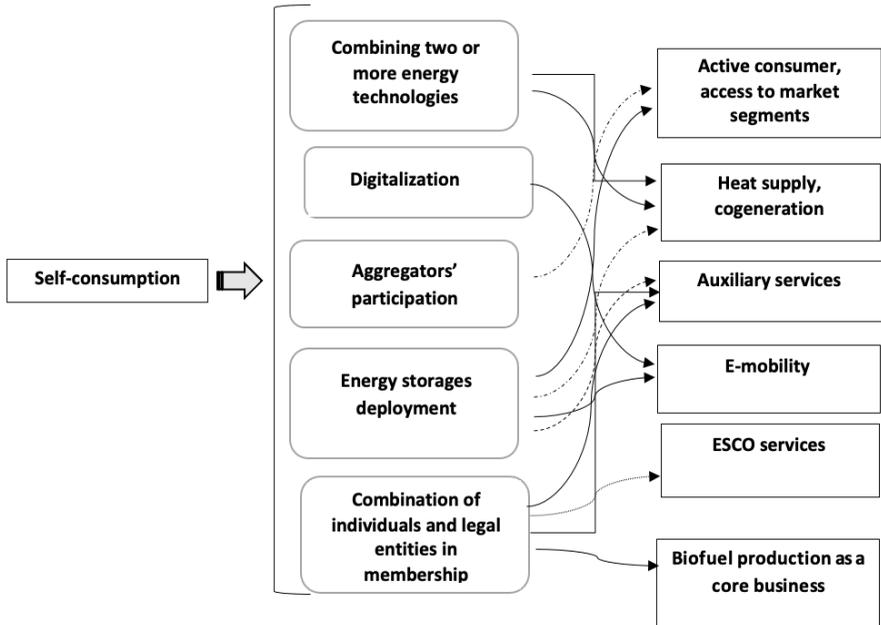


Fig. 1. Evolution of business models of energy cooperatives

The evolution of business models of energy cooperatives takes place from the initial model of self-sufficient demand (self-consumption) to six main models (Fig. 1), which are essentially self-sufficient demand models with the provision of energy and non-energy services to third parties: active consumption (prosumers); models with heat supply (cogeneration); system services (provision of services to the system operator from the primary, secondary, and tertiary reserves); electric mobility (providing charging services for electric vehicles to their owners); energy efficiency contracting (provision of energy efficient services to third parties); biofuel production businesses.

The prerequisites for the emergence of new business models are the following: the emergence of new market agents – aggregators – on the market and legislative consolidation, increased flexibility by combining several energy technologies, including cogeneration, electric storage, coverage of the district heating sector in the territory of the cooperative, including the use of heat storage to optimize the load of power generating equipment. A separate factor was the awareness of cooperative members and the regulatory and legal support from the state for the creation of energy cooperatives with mixed participation of individuals and legal entities. Legal entities that are members of the cooperative are industrial enterprises as:

- owners of decentralized generation of small and medium capacity - gas piston, gas turbine, industrial heat pump, etc;
- sources of fuel and raw materials and secondary energy resources for the cooperative (farms, logging enterprises, food processing enterprises (oil extraction plants, fruit and vegetable processing).

The expansion of energy cooperatives as an institutional form capable of

implementing a sustainable energy transition requires symbiotic interaction with another institution in the energy market – aggregators, a combination of energy technologies for greater flexibility and optimization of the load of power generating equipment, promotion of the creation of energy cooperatives with mixed participation of individuals and legal entities (owners of decentralized generation of fuel and raw materials and secondary energy resources for the cooperative, enterprises as businesses that run cooperatives as their main activity), as well as with the participation of the state (public-private partnership).

It is important to promote not only the horizon-wide development of energy cooperatives within the same business model (increasing the number of sources of self-sufficient demand based on solar power plants), but also the creation of cooperatives based on the following business models: active consumption (promoters), models with heat supply (cogeneration), system service providers, electric mobility services, energy storage, energy efficient contracting, and biofuel production and sales businesses, with full use of local energy balances. Regarding the combination of energy technologies used by an energy cooperative, it is necessary to move from the most common model based on photovoltaic mono-technology to models that include cogeneration, heat pumps, biogas, electricity and heat storage equipment, industrial and domestic with gas piston/gas turbine units, biomass CHP, etc.

The prerequisites for the successful operation of energy cooperatives are the combination of several functional purposes of the cooperative for the community, which allows solving two or more goals simultaneously, as well as the use of available community resources, which can reduce the cost of using technology. Also, the role of the community in the creation and operation of the cooperative is to overcome barriers that depend on it.

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THE TELEX NARRATIVE IN ENGLISH-LANGUAGE COVERAGE OF THE UKRAINE-RUSSIA INFORMATION WAR

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Ukraine and Russia are waging an information war on many platforms and English-language media has guided how the rest of the world sees this conflict. Telex which comes from Hungary, is an independent source that gives a unique perspective on issues related to the conflict. It evaluates how Telex shares news in the wider English-language media, especially by exposing propaganda and offering clear and useful explanations on recent information warfare events.

Telex is recognized for offering factual news stories and additional explanations. According to Telex's article, "You can escape propaganda from the war, but it always finds ways to reach you," which suggests that Russian propaganda is everywhere even outside political contexts (Telex, 2024). By explaining examples of bias and the ways it is applied, Telex helps readers evaluate most pieces of information.

In contrast, this method is different from other English outlets that highlight exciting headlines instead of understanding Eastern European geopolitics fully. For example, while large Western media usually focus on events happening at the top levels, Telex shares insights from those affected by the struggle in normalized settings.

The way Telex tells its stories reflects 'connective strategic narratives', where the public is involved in the process (Zakharchenko, 2025). Telex encourages people to be more informed and involved with the issues discussed.

Additionally, the reports provided by Telex help to fight disinformation as a whole. The RAND Corporation has detailed the use of offensive language and untrue stories by Russian media to explain and excuse their aggressive actions (Paul & Matthews, 2023). Outlets such as Telex weaken propaganda by highlighting these tactics and presenting correct information.

According to the Atlantic Council, fighting false narratives is important to ensure information is accurate (Aleksejeva, 2023). Telex also writes stories related to this matter, highlighting how disinformation occurs and the roles of informed viewing in our society.

Even so, propaganda is shared extensively using social media platforms. Researchers have found that groups collaborate to spread false information on Twitter (Alieva et al., 2024). Telex regularly analyzes how various digital strategies are changing the fight against information warfare.

Overall, Telex serves as an example of how independent media is important in covering the Ukraine-Russia conflict in English. Through meticulous reporting and a commitment to contextual depth, it provides readers with the necessary tools to navigate a complex informational environment. As the battle for narrative dominance continues, the contributions of outlets like Telex remain indispensable in fostering an informed and resilient global audience.

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REGIONAL FEATURES OF SUSTAINABLE DEVELOPMENT

THE SPECIFICITIES OF TOURISM IN ZAKARPATTIA DURING WARTIME

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The full-scale invasion of Ukraine in 2022 has radically reshaped the socio-economic status of the country, displacing millions and stretching all industries to the limit, including tourism and travel. In these aspects, the westernmost region of Ukraine, Zakarpattia, located in the Carpathian Mountains and bordering Hungary, Slovakia, Romania, and Poland, has already become a fairly safe and stable region in a war-torn country. Traditionally rich in its multicultural background, mineral springs, wooden churches, and skiing, as well as natural beauty, Zakarpattia is in the process of redefining itself as a tourist destination (Mykytiuk, Tovkanets, 2023). The geopolitical change that occurred during the warfare has excluded central and eastern Ukraine from tourist demand and instead placed the west as a tourist destination, which also makes Zakarpattia a refuge and a domestic tourism center. As the region is still under active hostilities elsewhere, it has since become a locus of internal displacement, humanitarian logistics operations, and local tourism recovery. The identified transformation also emphasizes not the fortitude of regional tourism systems, but the strategic significance of Zakarpattia in terms of national economic activity preservation and cultural survival on the verge of a national crisis.

The importance of the study of tourism trends in Zakarpattia in wartime is the two-fold nature of the region as a humanitarian corridor and stabilizer of the economy. Tourism does not only mean a source of recreation: it is a critical part of regional GDP, labor market, and tax base. As infrastructure in the east and south has been devastatingly impaired, and cultural heritage locations either threatened or in ruin, the western regions have taken up new roles as identity saviors and the place of safe experiences for their citizens and for a few select foreign nationals. The overall losses in the cultural and tourism industries of Ukraine have already amounted to more than 3.5 billion and are expected to cost recovery of at least 9 billion in the next 10 years, as stated by UNESCO (2024). The case of Zakarpattia shows that cooling the tension and ensuring the sustainability of their tourism sector despite the upheavals in the nation can help regions improve their regional development and plan their sustainable tourism strategies during the post-conflict period (Visit Ukraine, 2023).

The 2023/2024 statistical data indicate the increasing role of Zakarpattia in the tourism market in times of war. Over 2.5 million foreigners visited Ukraine in 2023, including via the border territories (such as Zakarpattia). Although the national tourism is yet to reach the pre-war revenues, western regions such as Zakarpattia, Lviv, and Chernivtsi have recorded significant growth in tourism taxes. In 2023, after the war, the income of the tourism tax in Zakarpattia regained the same indices as in 2021; in terms

of the money received, it corresponds to the pre-war indicators, according to the State Agency for Tourism Development of Ukraine (2023). Also, the collection of tourism tax at the national level improved by 32 percent between 2022 and 2023. Between the first three quarters of 2024, overall tourist visits finished 21% higher on a year-to-year basis in Ukraine by general category, with the western regions of Zakarpattia and bordering oblasts displaying a 17 percent demonstration of tourism tax earnings increase. It is this resilience that is in comparison to the regions where there are active hostilities or infrastructure breakdown, so this is what makes Zakarpattia unique.

Such numbers indicate geographical and demographic realignments of tourism patterns. Domestic tourism to Zakarpattia has indeed grown well, with many of the regions predominantly visited being by internally displaced peoples (IDPs), volunteers and families taking temporary residence in regions of peace. The health resorts, the eco-tourism sites, as well as the cultural sites, are in good condition, as many go to the region to utilize them. The region has roads and railways that are functioning within the state infrastructure priorities and under the auspices of international aid, including World Bank emergency transport financing, which explains why Zakarpattia is physically accessible, both in terms of humanitarian transport as well as in terms of recreational traffic (World Bank, 2023). The location near the borders of the EU also means that the region is a major entry point to humanitarian convoys, as well as rare tourist or foreign reporter visits.

Total revenues generated by the tourism industry in Ukraine are still about 30 percent lower than before 2021, and the loss of foreign tourism markets is keenly experienced. The UNESCO evaluation of intellectual damages of 3.5 billion dollars comprises numerous monuments and historical places in the western world, which are currently being stretched by overutilization or misuse (UNESCO, 2024). The wooden churches in Zakarpattia, such as those on the UNESCO World Heritage list, risk preservation due to the lack of conservation funding, which is distributed toward military and humanitarian efforts (UNESCO, 2023). The level of environmental pressures is also rising, and uncontrolled expansion of temporary abodes, growth in traffic are leading to accumulation of waste, pollution, and deterioration of the natural reserve such as Uzhanskyi National Nature Park.

Considering this mixed prognosis, a number of recommendations can be offered on how to facilitate the sustainable progress of tourism in Zakarpattia in wartime. To start with, specific investment in transport and accommodation infrastructure ought to be implemented to facilitate safe, reliable access to the most important tourist sights whilst keeping environmental distress to a minimum. Modernization of transport is already expected to be part of the World Bank post-war monies that Ukraine receives to support the economic recovery process, and this could be regionalized. Second, the cultural and architectural heritage of Zakarpattia needs attention on the spot. The cooperation with UNESCO and foreign NGOs must be improved to conserve or rehabilitate iconic sites, especially those currently accommodating IDPs or humanitarian activities. Third, local government should encourage green tourism and health tourism programs, focusing on the clear air, mineral water, and hiking paths of the area, which are becoming more appealing to domestically war-weary travelers. Fourth, safe corridor traffic, small in one sense but significant in another, modest and shallow cultural interactions, and volunteer tourism might be marketed and publicly discussed through marketing and communications campaigns addressed to people abroad in neighboring countries (in

Hungary, Romania, and Slovakia). Lastly, the national leadership in Ukraine can collaborate with the insurance sector to design policies regarding war tourism risks insurance to create confidence in future tourists to the country, diaspora Ukrainians, and humanitarian workers.

In conclusion, tourism in war times in Zakarpattia is a significant story of Ukrainian resilience and regional adjustment. The region, which was once a cross-border traditional leisure destination, has also become a central point in the domestic tourism network during the war, which is considered both economically stable and psychologically comforting to its people. Tax returns are nearing pre-war levels, and infrastructure remains functional despite the fact that it has not been destroyed infrastructurally. Zakarpattia has been used as an example in the instance of continuing to generate tourists during any form of crisis. But, unless concerted efforts to invest in the environment, steward it, and preserve and protect culture are carried out, such short-term success may lead to a long-term degradation. Finding a balance between short-term and long-term results will be key as Ukraine gets ready not merely to recover, but to re-enter the European tourism and cultural area in the post-war world.

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INTERNATIONAL COOPERATION FOR SUSTAINABLE DEVELOPMENT

THE ROLE OF DIGITAL TECHNOLOGIES IN ENHANCING THE INVESTMENT ATTRACTIVENESS OF ENTERPRISES

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The rapid advancement of digital technologies has revolutionized the way enterprises operate, compete, and grow. Investment attractiveness refers to the ability of a business to draw in capital from investors, which is influenced by factors such as profitability, growth potential, risk management, and innovation capacity. In an era where digital disruption is the norm, enterprises that leverage digital tools not only enhance their internal efficiencies but also signal to investors their readiness for future challenges. For instance, digitalization can lead to increased market value by boosting stock demand for publicly traded companies and attracting potential investors through demonstrated technological prowess (Bashynska & Prokopenko, 2024a). This thesis outlines key mechanisms through which digital technologies contribute to this enhancement, structured around operational improvements, innovation drivers, risk mitigation, and global market integration.

One of the primary ways digital technologies enhance investment attractiveness is by optimizing operations and reducing costs. Digitalization enables businesses to automate routine processes, improve data management, and enhance connectivity across supply chains. For example, the adoption of AI and machine learning can automate inventory management, predictive maintenance, and customer service, leading to significant cost savings and higher productivity. These efficiencies translate into better financial metrics, such as improved return on assets (ROA) and return on equity (ROE), which are critical indicators for investors evaluating enterprise viability.

Studies indicate that enterprises undergoing digital transformation experience streamlined operations that directly impact their bottom line. Automation reduces human error and operational downtime, while advanced data analytics provide real-time insights for decision-making (Wang et al., 2023). In the manufacturing sector, for instance, the integration of IoT devices allows for smart factories where machines communicate seamlessly, minimizing waste and accelerating production cycles. This not only boosts profitability but also positions the enterprise as a low-risk investment, as efficient operations imply resilience against economic fluctuations.

Furthermore, digital tools facilitate better resource allocation. Cloud computing, for example, offers scalable infrastructure without the need for heavy upfront capital expenditure, allowing enterprises to pivot quickly in response to market demands. Investors are drawn to such agility, as it signals sustainable growth potential. Empirical evidence from industrial enterprises shows that digital technologies can increase competitiveness by reshaping value chains and reducing time-to-market. Overall, these

operational enhancements create a virtuous cycle where cost savings are reinvested into further innovation, amplifying the enterprise's appeal to venture capitalists and institutional investors.

Fostering Innovation and New Revenue Streams. Digital technologies are instrumental in driving innovation, which is a cornerstone of investment attractiveness. By investing in digital tools, enterprises can develop new products, services, and business models that open up untapped markets. AI and big data analytics, for instance, enable personalized marketing and customer engagement strategies that enhance loyalty and retention. This innovation not only increases revenue but also differentiates the enterprise in crowded markets, making it more attractive to investors seeking high-growth opportunities.

Blockchain technology exemplifies this by providing secure, transparent transactions that can revolutionize sectors like finance and supply chain management. Enterprises adopting blockchain can reduce fraud risks and improve traceability, which appeals to investors concerned with ethical and sustainable practices. Research highlights that synergistic approaches involving AI, big data, and blockchain significantly improve financial performance and operational transparency, thereby elevating investment appeal (Oriekhova et al., 2025).

Moreover, digital transformation encourages a culture of continuous innovation. Enterprises can use digital platforms to collaborate with startups, access global talent, and experiment with emerging technologies like augmented reality or virtual reality. This proactive stance signals to investors that the enterprise is future-proofed against obsolescence. In the context of the digital economy, investment attractiveness increasingly depends on a firm's ability to innovate and lead digitally. For example, companies that integrate digital marketing innovations see enhanced customer acquisition, directly correlating with higher valuation multiples during funding rounds.

Risk Mitigation and Regulatory Compliance. Investors prioritize enterprises that effectively manage risks, and digital technologies offer robust solutions in this domain (Filyppova et al., 2019). Cybersecurity tools, powered by AI, can detect and prevent threats in real-time, safeguarding intellectual property and customer data (Bashynska & Prokopenko, 2024b). This reduces the likelihood of costly breaches, which could otherwise deter investment. Additionally, digital analytics enable better forecasting and scenario planning, allowing enterprises to navigate economic uncertainties with greater confidence.

Blockchain and smart contracts further mitigate risks by ensuring immutable records and automated compliance with regulations. In international contexts, digitalization reduces information costs for cross-border investments, making enterprises more attractive for foreign direct investment. Enterprises that demonstrate strong digital governance are viewed as lower-risk propositions, as they comply more easily with evolving regulatory frameworks, such as data privacy laws like GDPR.

Digital tools also enhance transparency through real-time reporting and dashboards, providing investors with accurate, up-to-date financial insights. This transparency builds trust and can lead to premium valuations. Studies on digital finance show positive impacts on technological progress and risk management, further underscoring its role in investment attractiveness.

Global Market Integration and Economic Development.

On a broader scale, digital technologies facilitate global connectivity, enabling

enterprises to expand into new markets and attract international capital. E-commerce platforms and digital payment systems lower barriers to entry for global trade, while data analytics help identify lucrative opportunities abroad. This expansion potential is a key draw for investors looking for scalable ventures.

Technology advancements increase the connectedness of the world, allowing businesses to tap into new customers and markets. In developing economies, digitalization is crucial for attracting FDI by improving infrastructure and efficiency. Trade liberalization, supported by digital tools, accelerates technological progress and investment inflows.

Governments and enterprises alike are adopting digital strategies to enhance investment environments. For instance, creating digital ecosystems with high-speed internet and supportive policies can make regions more appealing for tech-driven investments. This integration not only boosts individual enterprise attractiveness but also contributes to national economic development.

Challenges and Considerations.

Despite the benefits, challenges such as high initial costs, skill gaps, and cybersecurity threats must be addressed. Enterprises need strategic investments in digital infrastructure and workforce training to fully realize these gains. Measuring returns on digital investments remains a hurdle, but tools like KPIs and analytics can help.

Thus, digital technologies are indispensable for enhancing the investment attractiveness of enterprises. Through operational efficiencies, innovation, risk mitigation, and global integration, they create compelling value propositions for investors. As the digital economy evolves, enterprises that prioritize digital transformation will not only survive but thrive, securing sustained capital inflows and competitive advantages. Policymakers and business leaders should foster environments conducive to digital adoption to maximize these benefits. Future research could explore sector-specific impacts and long-term ROI metrics to further refine these strategies.

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