

DRIVING FORCES OF SUCCESS FOR SUSTAINABLE ENTREPRENEURSHIP: UKRAINE’S EXPERIENCE

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Abstract. The paper’s objective is to study the driving forces behind sustainable entrepreneurship success, considering the Ukrainian experience of digital innovations. The essence of sustainable entrepreneurship is considered. Innovative factors (digital competences) are highlighted among the driving forces of sustainable entrepreneurial success. The global ranking of the population’s digital life in 2022, and the digital skills of the adult population in Ukraine by areas of competence in 2019-2023 are analysed. The key trends in mastering the digital skills of adults are highlighted. The role of higher education in this process is indicated. Digital competence is a key component of human lifelong learning, approaches to its formation and development for successful sustainable entrepreneurship in the European economy are considered. The Concept of improving European education for sustainable entrepreneurship in the context of using the Ukrainian experience of digital innovations is developed and proposed.

Keywords: sustainable entrepreneurship, higher education, digital innovations, European economy, Ukrainian economic growth.

JEL Classification: O32, I23, O30.

1. Introduction

The 21st century is the time of active development of digital technologies that provide significant opportunities, ensure basic business processes, and promise good prospects for businesses, the state, and citizens who have mastered digital competencies. Nowadays digital technologies (blockchain, cloud technologies, mobile communications, artificial intelligence, information and communication technologies, robotics, smart cities, etc.) have become integral to our lives. Their active users are businesses, citizens, and the state, as digital technologies open up new opportunities for all users (population, investors, state, business, etc.). The knowledge and

skills that digital education is designed to form will determine the competitiveness level of specialists, the level and quality of life of people, and the sustainability of the development of enterprises in particular and the national economy in general. That is, digital technologies become innovations of the 21st century, which activate business and revitalize the sustainable socially oriented development of the economy.

Currently, industrialized countries owe 60-90% of their GDP growth to the innovation factor, and scientists raise the most pressing question of the time: “Can innovation stimulate GDP growth with the same efficiency in those countries that do not belong to the category of

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industrialized countries?” (Bondar-Pidhurska, 2016). The answer to this question lies in positioning digital innovations through their role as factors of production.

At the same time, those attempts to use certain innovations in specific production acquire not only social significance but the formation of a holistic concept and management system capable of solving the tasks of sustainable entrepreneurship success, modernization, changing the technological base, transition to a higher technological order and more complete satisfaction of the vital interests of the population countries. This determines the expediency of finding new drivers of growth that would comprehensively cover the aspects of sustainable, innovative, socially oriented development of the European economy.

The analysis of information sources on the state and trends of digital education allowed us to single out the names of such scientists as Bondar-Pidhurska (2016), Bibik et al. (2004), Fedorenko & Butko (2019), Dieguez (2021), Janamandra & Indiran (2023), Saiz-Alvarez (2020) considered the issues of sustainable entrepreneurship.

However, the issues of digital competencies as driving forces for the success of sustainable entrepreneurship in European countries, taking into account the Ukrainian experience, require more detailed research.

The purpose of the article is to study the driving forces behind the success of sustainable entrepreneurship, taking into account the Ukrainian experience and digital innovations.

The structural and logical scheme of the study is as follows: “Studying innovative factors as driving forces of sustainable entrepreneurship and economic development – Positioning digital competencies as a driving force for the success of sustainable entrepreneurship: global ranking of digital life of the population and opportunities for Ukraine – Digital competence as a key component of human lifelong learning – Approaches to the formation and development of digital competencies for successful sustainable entrepreneurship in the European economy – Development of the Concept of Improving European Education for Sustainable Entrepreneurship in the Context of Using the Ukrainian Experience of Digital Innovation”.

Research methods: analysis and synthesis, comparison, generalization, logic, literature analysis.

2. Study of innovative factors as driving forces of sustainable entrepreneurship and economic development

Dieguez, T. (2021) considers sustainable entrepreneurship as a business strategy aimed at increasing value for society, the environment, and the company or business.

Janamandra & Indiran (2023) define sustainable entrepreneurship as the practice of creating, managing and developing a business that takes into account environmental, social and economic sustainability. This involves the creation and implementation of innovative solutions that solve social and environmental problems while creating economic value.

Saiz-Alvarez (2020) defines sustainable entrepreneurship as a type of business that includes both social development and environmental protection in the company's mission, vision and values.

Thus, sustainable entrepreneurship is becoming a requirement of the times and a business ideology in the 21st century, which necessitates the search for the driving forces of its success.

Joseph Schumpeter warned about the difficulty of obtaining a reliable forecast about the direction of innovations, and the possible reduction of profits, output volumes, and even bankruptcy of firms, if they do not take into account the new quality of modern economic competition, that is, competition based on innovations. The main factors of production since the time of Adam Smith are land, labour and capital. Marginalists added to this list another factor of production, that is, entrepreneurship. At the same time, entrepreneurship is understood as the ability to optimally combine the first three factors of production in order to achieve the highest (at this time and in this spatial area) productivity. And “the factor of entrepreneurship as a driving force begins to work effectively only if the possibilities of using classical factors are close to the limit” (Fedorenko & Butko, 2019). This confirms the irreplaceability of the innovation vector in the development of the European economy and the success of sustainable entrepreneurship, and actualizes the feasibility of researching the concept of “new driving forces or innovation factor” (Table 1).

Table 1. Definition of the concept of “Innovative Factor” of development

Author	Explanation of the concept
Innovation factor as a force for economic growth	
R. M. Solow (Solow, 1957)	The author proved that the doubling of gross output per man-hour spent in the USA for the period from 1909 to 1949 occurred by 12.5% due to the increase in the capitalization of labor and by 87.5% due to technological changes, that is, innovative factors. For this work, R. Solow received the Nobel Prize in 1987.
V. I. Chizhova and L. V. Strashynska (Chizhova & Strashynska, 2008)	By innovative factors is understood the achievement of such a technical and technological level of the enterprises of the food industry of Ukraine, which would meet the modern progressive world trends and market requirements, and became a decisive factor in the effective development of food production based on the reduction of material, fund, labour and energy intensity of production according to conditions of appropriate technical and technological control.
Innovation factor as entrepreneurship	
V. P. Solovyov (Solovyov, 2011)	The entrepreneurship factor as an innovative factor begins to work effectively only if the possibilities of using classical factors are close to the limit.

End of Table 1

Author	Explanation of the concept
Innovation factor as an integral concept of successful economic system transformation	
O. Valion (Valion, 2016)	Innovation factors are defined as the development and implementation of state innovative development programs aimed at increasing the competitiveness of the national economy.
N. P. Meshko and D. M. Shchyotov (Meshko & Shchyotov, 2016)	High-tech services are understood as an innovative factor in the development of the global economy.
The innovation factor as an element of the dynamic mechanism of society development	
E. A. Arsanukaeva (Arsanukaeva, 2005)	The innovative factor of economic development is considered as an important element of the dynamic development mechanism of the post-industrial and information society.
S. V. Ivanov and Yu. M. Kharazishvili (Ivanov & Kharazishvili, 2017)	Innovative factors of the development of the transport industry are called the rate of NTP, the level of wages in production, the level of investment, the level of renewal of fixed assets, the level of production technology, the level of shadowing of transport and communication, the level of VAT created by shadow wages, the level of shadow employment (p. 49).
L. I. Fedulova (Fedulova, 2017)	The impact of the innovative factor on the process of achieving the goals of sustainable development of the regions was determined, and problems that require strengthening the role of the state regional policy were substantiated. Thus, modern regional economic policy needs specific, different from traditional economics, approaches to defining and implementing the tasks of sustainable innovative development. These features in a generalized form are reduced to the implementation of security mechanisms balancing the efforts of the state and regions to obtain the maximum result of economic and social development, taking into account the innovative factor.
The innovation factor as a driving force in achieving the goals of sustainable development	
Author's interpretation	Innovative factors are the driving forces of economic growth and improvement of the quality of life of the population. At the same time, innovations are considered as the result of a combination of not only production factors (according to Schumpeter), but with the addition of social (<i>entrepreneurship and digital competences of personnel</i>) and environmental elements that ensure socio-economic transformations.

Source: summarized, compiled and constructed by the authors of this article in tabular form on the basis of the above information sources.

Thus, based on the analysis and synthesis of scientists' opinions, we came to the conclusion that under innovative factors it makes sense to understand the driving forces of economic growth and improvement of the quality of life of the population. At the same time, innovations are considered as the result of a combination of not only production factors (according to Schumpeter), but with the addition of social (entrepreneurship and digital competences of personnel) and environmental elements that ensure socio-economic transformations.

Note that the driving forces (innovations, legislative and regulatory acts, institutional formations, political movements, information and communication technologies, the establishment, etc.) contribute to qualitative and quantitative changes aimed at a new positive result in satisfying the vital interests of the population and increasing the level of socio-economic development of the country. Moreover, the development of the economy can be conditioned by a certain innovative factor in accordance with time. Today, entrepreneurship and digital competences are responsible for the development of the information and digital European economy of the 21st century and belong to the tasks of higher education.

Therefore, the relevance of the research topic is due to the need to resolve the contradiction between the growing trends in the growth of the digital economy in the world, the increasing intensity of sustainable entrepreneurship and the insufficient level of digital competencies of personnel as a driving force for the sustainable socially oriented development of the European economy.

It is noted that digital innovations, which require appropriate competencies of the population, are now driving the success of sustainable entrepreneurship.

3. Positioning digital competencies as a driving force for the success of sustainable entrepreneurship: global ranking of digital life of the population and opportunities for Ukraine

The quality of life of the country's population and the success of sustainable entrepreneurship in the 21st century is increasingly dependent on digital technologies. Countries differ among themselves on various criteria, among which access to the Internet is currently the easiest. Many regions of the world suffer from a lack of not only universal access to the Internet, but also a lack of digital infrastructure. To analyze countries' digital well-being, consider the 2022 Digital Quality of Life (DQL) Index published by Surfshark. Data from the United Nations, the World Bank, Freedom House, and the International Communications Union were used to calculate this index, and 5 indicators of digital well-being were selected. The DQL index covers 117 countries with available data, representing 92% of the world's population. Each country is evaluated according to five criteria: (1) Internet availability, i.e. the amount of time people have to work to have a stable Internet connection; (2) Internet quality, that is, how fast and reliable (stable) the Internet

connection is in the country and how much it can be improved; (3) e-infrastructure, i.e. how well developed and inclusive is the country's existing e-infrastructure; (4) e-security, i.e. how safe and secure people feel in the country; 5) electronic government, i.e. how developed and digitized state services are in the country. Visualization of the digital quality of life of the population in the countries of Europe, Ukraine and the world in 2022 is presented in Table 2.

The results of the analysis of the table. 2 showed that Ukraine ranked only 50th in the DQL index, which covers 117 countries of the world. Europe and Asia topped this rating (of digital quality of life).

In addition, Israel ranked first with an incredibly high rate of Internet accessibility. In addition, the Asia region was represented at the top by Japan at №8, South Korea at №10 and Singapore at №15.

Table 2. Excerpt from the Digital Quality of Life Ranking of Countries in 2022: Opportunities for Sustainable Entrepreneurship in Ukraine

Rank	Country	Affordability	Quality	E-infra-structure
1	Israel	0.1917	0.0981	0.1668
2	Denmark	0.047	0.1186	0.1968
3	Germany	0.0718	0.0926	0.1922
4	France	0.0534	0.111	0.1834
5	Sweden	0.0213	0.1059	0.1958
6	Netherlands	0.0241	0.0985	0.1956
7	Finland	0.0171	0.0973	0.192
8	Japan	0.0684	0.1024	0.1846
9	U.K.	0.0413	0.0898	0.1882
10	South Korea	0.0252	0.1139	0.1884
...				
41	Uruguay	0.0051	0.1054	0.1569
42	Russia	0.0556	0.0794	0.1512
43	China	0.0241	0.1045	0.1485
44	U.A.E.	0.0071	0.1148	0.1779
45	Argentina	0.0073	0.0694	0.1575
46	Qatar	0.0077	0.1077	0.1705
47	Armenia	0.1009	0.07	0.1356
48	Serbia	0.0184	0.0739	0.1387
49	Thailand	0.0081	0.1045	0.151
50	Ukraine	0.0259	0.0581	0.1613
...				
111	Laos	0.0066	0.0489	0.0955
112	Tajikistan	0.0108	0.0485	0.073
113	Cameroon	0.0014	0.0178	0.073
114	Mozambique	0.0021	0.0378	0.0526
115	Ethiopia	0.0032	0.0472	0.048
116	Yemen	0.007	0.0644	0.0479
117	Congo DR	0.0063	0.0596	0.0446

Source: compiled and compiled by the authors of this article in tabular form based on the processing of the information source (Wallach, 2022)

The only non-Asian and non-European country that entered the top 20 was the USA (12th place). A total of 15 of the 20 countries with the highest DQL index scores in 2022 were located in Europe, including Denmark №2 and Germany №3, reflecting the region's high performance in e-infrastructure and security (Wallach, 2022).

Therefore, the development of technologies in the information economy of the 21st century has created a need for new skills and knowledge, that is, digital competencies of personnel and the population of countries in general. Digital competences have become the driving forces of sustainable socially oriented development of national economies and the success of sustainable entrepreneurship. However, the low rating of some European countries and Ukraine in particular requires effective measures on the part of higher education.

4. Digital competence as a key component of human lifelong learning

During the development of the information economy in the 21st century, digital literacy ("competence") of the population as a whole and the personnel of enterprises in particular became a key factor. This allows you to get knowledge in a new format and apply it when needed. In the professional and educational dictionary, the concept of "competence" (from the Latin *Competo*, i.e., suitable, suitable) means a set of knowledge and skills necessary for effective professional activity: the ability to analyze, predict the consequences of professional activity, use information (Honcharenko, 2000). In the "DeSeCo" (Definition and Selection of Competencies) program, competence is the ability to successfully satisfy individual and social needs, to act and fulfill assigned tasks. Each competence is based on a combination of relevant knowledge, skills and practical skills, attitudes and values, behavioral components, that is, everything that a person can mobilize for active action (Bibik et al., 2004, p. 90). Therefore, competence is the possession of not abstract, but necessary targeted knowledge and skills that will allow to work effectively, react and adapt to changes, effectively use available information and communication technologies and engage in self-education of a person throughout his life. In the European Union, the DigComp project has been launched since 2010, which is implemented by the Joint Research Center on behalf of the European Commission on digital skills policy and the development and measurement of digital competences. DigComp has become an important tool to support the EU Action Plan on Digital Education for 2021-2027, which, in turn, contributes to the implementation of the Commission's priority "A Europe fit for the digital era" and the development of the next generations of the EU (DigComp, 2023). Thus, the result of the implementation of this project is a list of specific digital competencies (twenty-one points) that are necessary for a person to live in modern European

society and effectively use the achievements of scientific and technical progress, build relationships based on using information and communication technologies, interact, be successful in sustainable entrepreneurship and professional activity.

This was also reflected in the implementation of the Lifelong Education Concept, where in 2018 digital competence was included among the key competences: (1) literacy; (2) language competence; language skills; (3) mathematical competence and competence in science, technology and engineering; (4) Digital competence; (5) personal, social and educational competence; (6) Civic competence; (7) Competence of entrepreneurship; (8) Cultural awareness and competence of self-expression. The European Union has defined these competencies as those that are formed during a person's life and contribute to the successful organization of the life process, the satisfaction of his vital needs. Thus, all the listed competencies are important and can be used in various combinations during a person's life, by the personnel of enterprises for the success of sustainable entrepreneurship and the development of the European economy, provided that the role of higher education is increased.

In the conditions of a high level of uncertainty, dynamic changes, rapid development of digital innovations, information changes rapidly, and sometimes lose its relevance, as well as individual knowledge and skills. In the 21st century, globalization, pandemics, and wars are becoming real threats to the development of staff competencies in their professional activities. At the same time, the population's possession of digital competences allows not only to ensure its livelihood, but also to reduce the risks of losing funds and information, which in the age of digitalization becomes the basis for the success of sustainable entrepreneurship and the development of the European economy as a whole. For example, on the territory of Ukraine there is a struggle in two planes (realities): physical and virtual. Thus, at the beginning of the invasion of the aggressor, citizens tried to use digital technologies to warn their relatives about the danger, but their actions led to a negative result (panic moods, spread of fakes, etc.), which negatively affected the physical condition of the population, the life of enterprises, the state of the economy and the country as a whole. According to a study by News Guard (a site that monitors misinformation on the Internet), new users can be recommended false content about Ukraine within 40 minutes (Prishchepa, 2022; Ukrinform, 2022; Thedigital, 2022; Tereshchenko, 2022; Bilal, 2021; Sardarizade, 2022)

Therefore, the Centre for Combating Disinformation at the National Security and Defence Council of Ukraine joined the fight against fakes in Ukraine. The antidote to the spread of fake information and increasing the level of information security when using digital innovations is knowledge, namely the possession

of digital skills. This experience can be useful for sustainable entrepreneurship and the development of European education and economy.

So, the trends of the rapid development of the Internet opened up new opportunities for society (communication, business, education, travel, etc.), but at the same time, it created new threats, namely: theft of personal data, confidential information, funds, pressure, etc. This, in turn, requires the appropriate digital competences of both the population as a whole and the personnel of specific enterprises. At the same time, the role and importance of the level of personnel competences is growing, since the development and rapid implementation of digital solutions by society precisely thanks to it (competence) allows solving the current tasks of the enterprise, solving urgent problems, and satisfying the vital interests of the workforce.

Note that the war intensifies the issue of protection against threats, and the post-war period requires the acquisition of digital competences by the personnel of enterprises and the population as a whole regarding secure communications, interaction, management decision-making, etc. Thus, V. Hutmacher gives a list of five key competencies adopted by the Council of Europe, which "young Europeans must possess": political and social; intercultural; communication; informative; educational.

We note that digital competences are important for the activation of entrepreneurship, business development, education, economy, the positioning of a citizen's position, and the realization of the rights of every person. This is due to the pace of development of the information economy, which is closely correlated with the introduction of digital services. Therefore, Polish researchers also distinguish five key competencies, including: educational, communicative, social, activity and computer (Fedorenko & Butko, 2019). Considering the fact of Ukraine's European integration policy, in our opinion, it is expedient to single out key competences for Ukrainians, namely: political and social; intercultural; communication; informative; educational and digital (Bondar-Pidhurska & Glebova, 2020).

Therefore, digital competences are now becoming activators of entrepreneurship development and an innovative factor of sustainable socially oriented development of the national economy, that is, driving forces of economic growth and improvement of the quality of life of the population (Bondar-Pidhurska & Solovyov, 2017).

The Model of Digital Competence is based on four constructs, that includes the Information skills, Communication skills, Problem solving skills, Digital content creation skills. The characteristics of their dynamics are presented in Table 3.

We analyzed the data of the Ministry of Digital Transformation of Ukraine (2023). A positive trend of reducing the proportion of adults who do not have digital skills is highlighted. At the same time, it was emphasized that there were no significant changes in

the share of the adult population with a basic level of skills by competence area in 2019–2023. This is a negative trend, which is mainly driven by higher education.

Table 3. The digital skills dynamics of the Ukrainian adult population by competence areas in 2019–2023, %

Digital skills	Years			Deviation from 2023	
	2019	2021	2023	2019	2021
Information skills					
No skills	18.6	15.9	9.1	-9.5	-6.8
Basic skills	6.9	5.1	4.8	-2.1	-0.3
Above basic skills	74.5	78.9	86.1	11.6	7.2
Total	100	100	100	x	x
Communication skills					
No skills	19.1	15.6	8.7	-10.4	-6.9
Basic skills	5.6	5.2	3.4	-2.2	-1.8
Above basic skills	75.3	79.2	87.9	12.6	8.7
Total	100	100	100	x	x
Problem solving skills					
No skills	20.1	17.4	13.8	-6.3	-3.6
Basic skills	24.3	26.7	25	0.7	-1.7
Above basic skills	55.6	55.8	61.2	5.6	5.4
Total	100	100	100	x	x
Digital content creation skills					
No skills	52.2	45.6	39.8	-12.4	-5.8
Basic skills	19	17.7	19	0	1.3
Above basic skills	28.8	36.8	41.2	12.4	4.4
Total	100	100	100	x	x

Source: compiled and constructed by the authors of this paper based on the processing of sources (Ministry of Digital Transformation of Ukraine, 2023)

5. Approaches to the formation and development of digital competencies of successful sustainable entrepreneurship in the European economy

For sustainable entrepreneurship and the development of the European economy, the issue of formation and development of digital competences is now vital and acquires strategic importance. Taking into account the Ukrainian experience, it is worth mentioning the order of the Cabinet of Ministers of Ukraine dated January 17, 2018 No. 67-r on the “Concept for the development of the digital economy and society of Ukraine for 2018-2020” (Verkhovna Rada of Ukraine, 2018). During this, one of the priority tasks on the way to the accelerated development of the digital economy of Ukraine was highlighted

the issue of developing and implementing a national program for training general and professional digital competencies and knowledge.

In 2021, the decree of the Cabinet of Ministers of Ukraine dated March 3, 2021 No. 167 published the “Concept for the development of digital competences of citizens of Ukraine and the approval of the plan of measures for its implementation” (Verkhovna Rada of Ukraine, 2021), where it was stated that “a significant number of educational activities aimed at the formation of digital competences are currently being carried out, but they do not have a systemic nature, provide only the formation of individual skills and do not solve the issue of increasing the level of digital skills in society and citizens’ awareness of digital rights.”

The main problems of the development of digital competences today are: lack of legal regulation of the development of digital competences; lack of a system and description of digital competence (framework of digital competence), requirements for levels of possession of digital skills and digital competences of different categories of employees; lack of uniform approaches to the definition of digital competences in professional standards and uniform requirements for educational programs for the development of information and digital competence of specialists of various professions; lack of uniform requirements for digital competencies in the education system and requirements for digital competencies in professional standards (Verkhovna Rada of Ukraine, 2021).

It is undeniable that digital competences are becoming more and more important for the success of sustainable entrepreneurship, the development of education and the European economy, as digital technologies have been actively implemented by many countries around the world in recent years. This is confirmed by the Digital Agenda of Ukraine (Uriadovyi Portal, 2016), which demonstrates the importance of digital competencies, which will play a key role in the development of Ukraine’s economy in the post-war period.

It is positive that the Law of Ukraine “On Education” recognizes information and communication competence as one of the key things that every modern person needs for a successful life (Verkhovna Rada of Ukraine, 2018). Therefore, today it is important that the formation of digital competences takes place not only through the system of self-education (Prometheus, EdEra, Coursera, etc.), but also through European higher education institutions as part of the formation of their educational and professional programs.

Thus, in the professional standards of formation of specialists of various fields, general and professional competences are used, which involve training in information and communication technologies, which allows to reflect only certain aspects. At the same time, digital competence is a much more complex and complex concept, and it needs to be studied in depth and in detail within the framework of every European educational program.

Threats of the 21st century (pandemic, wars, globalization) have become a real test for entrepreneurs and managers of various levels in all countries of the world and have influenced the formation of their competencies, which takes place in the European education system.

For example, since 2018, during the training of management specialists for various branches of the Ukrainian economy, a competency-based approach is used, which is based on the selection of general and special competencies that a successful entrepreneur and manager must possess.

The introduction of the competency-based approach in Ukraine necessitated the modernization of the educational process due to the fact that the set of professional and special competencies began to change dynamically, and the educational process became slower. Thus, these competencies will allow the population to effectively engage in a specific professional activity.

General competencies are universal competencies that do not depend on the subject field, but are important for the successful further professional and social activities of the acquirer in various fields and for his personal development. Special (professional, subject) competencies are competencies that depend on the subject field and are important for successful professional activity in a certain specialty (Honcharenko, 2000).

However, globalization processes have created prerequisites for the formation of not only general and special competencies, but also global ones. This was first noted at the Program for International Student Assessment [PISA] conference on October 21–21, 2020 in Singapore, where it was announced that global competence, unlike general and special, is formed throughout life and is based on the concept of sustainable development. This conference emphasized that global competence enables people to learn about local, regional and cross-cultural issues, understand and appreciate different perspectives and worldviews, interact successfully and respectfully with others, and take responsible action for sustainable development and collective well-being.

Andreas Schleicher (OECD Director of Education and Skills) noted that global competence aims to: 1) the development of the involvement of the individual and staff, that is, the opening of the mind, 2) compassion that opens the heart, 3) courage, that is, the mobilization of our cognitive, social and emotional resources to build a more humane world.

And it is also the best weapon against the greatest threats of modernity, namely a closed mind, a closed heart, and fear as the enemy of free will (Afs in Your Country, 2020).

Therefore, the Concept of Global Competence is a continuation of the two modern concepts “Lifelong Education” and “Concept of Sustainable Development”, where education plays a key role, and global competence is the first step towards building a new entrepreneurial society that operates in conditions of globalization and the development of digital innovations, encourages for the fate of current and future generations.

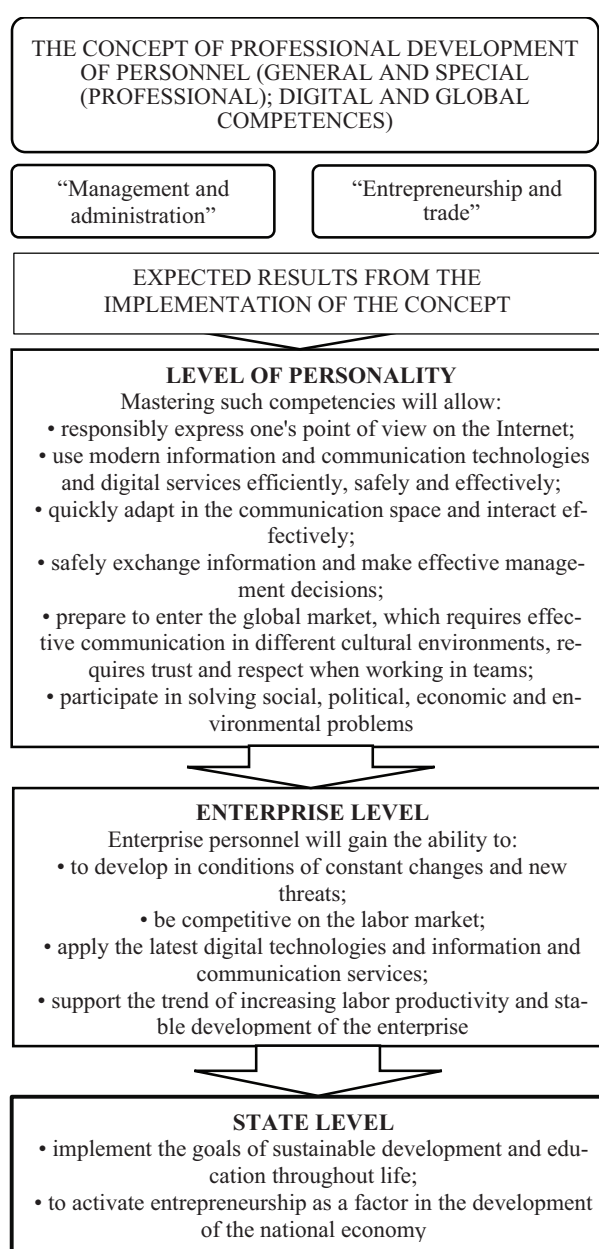


Figure 1. The concept of improving the European education of sustainable entrepreneurship in the context of using the Ukrainian experience of digital innovations. *Source:* compiled and constructed by the authors of this paper based on Verkhovna Rada of Ukraine, 2021; Honcharenko, 2000; Afs in Your Country, 2020; Bondar-Pidhurska & Solovyov, 2017; Bondar-Pidhurska & Glebova, 2020

The scientific novelty of the study consists in: a) the positioning of the digital competencies of personnel as driving forces for the success of sustainable entrepreneurship and the development of the European information (digital) economy on the basis of increasing the role of education; b) formation of the Concept of improvement of the European education of sustainable entrepreneurship in the context of using the Ukrainian experience of digital innovations; c) substantiation of the feasibility of including digital competences in the educational and professional programs of specialties “Management and administration” and “Entrepreneurship and trade” of

higher educational institutions in Europe and Ukraine as a basis for educating a new generation of entrepreneurs and managers (Figure 1).

Thus, the formation of modern digital competences of the personnel of enterprises of the 21st century will allow clearly establishing the types of work, skills (hard and soft) for each profession by improving modern educational and professional programs of the corresponding profession, which will contribute to successful sustainable entrepreneurship and innovative socially oriented development of the European economy, maintaining a high level of labour productivity in the face of new threats and changes.

6. Conclusions

The results of the study allowed us to formulate the following conclusions and substantiate the prospects for further research.

Based on the processing of information sources, the concept of “innovative factors” as driving forces of economic growth and improving the quality of the population life has been clarified. At the same time, innovations are seen as the result of a combination of not only production factors (according to Schumpeter), but also social factors, such as entrepreneurship and digital competencies of personnel, and environmental elements that ensure socio-economic transformations.

The digital competencies of personnel in the information (digital) economy play a dual role: they are the driving force behind its development and an activator of the sustainable entrepreneurship success.

The key competencies for the staff of European enterprises are identified, namely: political, social, intercultural, communication, information; educational, digital. They will allow to strengthen the position of the citizen, realize their rights, activate the sustainable entrepreneurship success, develop European business, education, and economy.

Based on comprehensive and systematic approaches, the Concept for Improving European Education on Sustainable Entrepreneurship in the Context of Using Ukrainian Experience of Digital Innovation was formed. It is based on the principles of general, special, digital and global competencies and is designed to contribute to the realization of the goals of the European economy, the intensification of the sustainable entrepreneurship success, and the introduction of lifelong learning.

The expediency of including digital competencies in the educational and professional programs of the specialties “Management and Administration” and “Entrepreneurship and Trade” of higher education institutions in Europe and Ukraine is emphasized.

Disclosure statement

Authors have no competing financial, professional, or personal interests to declare.

References

- Bibik, N. M., Vashchenko, L. S., Lokshina, O. I., Ovcharuk, O. V., & Parashchenko, L. I. (2004) *Kompetentnisnyi pidkhdid u suchasni osviti: svitovi dosvid ta ukraiynski perspektyvy: Biblioteka z osvithoi polityky: kolektyvna monohrafiia* (in Ukrainian). [Competency approach in modern education: world experience and Ukrainian perspectives: Library of educational policy: collective monograph]. Kyiv, K.I.C.
- Bondar-Pidhurska, O. V., & Solovyov, V. P. (2017) The strategy of sustainable innovative society-oriented development of Ukrainian economy (by the example of mineral resource industry). *Scientific Bulletin of National Mining University*, 4(160), 122–132. <http://www.nvngu.in.ua/index.php/en/component/jdownloads/finish/69-04/8684-04-2017-bondar/0>
- Bondar-Pidhurska, O. V. (2016). Rozrobka strukturnoi ekonometrychnoi modeli upravlinnia innovatsiinymy faktory stalooho sotsialno oriietovanoho rozvytku ekonomiky [Development of a structural econometric model of management of innovative factors of sustainable socially oriented development of the economy]. *Ekonomika i Rehion*, 6(61), 12–19 (In Ukrainian). http://www.irbis-nbu.gov.ua/cgi-bin/irbis_nbu/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&2_S21P03=FILA=&2_S21STR=econrig_2016_6_4
- Bondar-Pidhurska, O., & Glebova, A. (2020). Information security as a digital technology’s development factor of innovative socially oriented economy. In A. Appolloni, F. Caracciolo, Z. Ding, P. Gogas, G. Huang, G. Narrea, T. Ngo & W. Strielkowski (Eds.), *Advances in Economics, Business and Management Research*, 156, 307–313. Atlantis Press. <https://doi.org/10.2991/aebmr.k.201205.051>
- Chizhova, V. I., & Strashynska, L. V. (2008). Innovatsiinyi faktor rozvytku vitchyznianoho prodovolchoho rynku [Innovative factor of development of the fatherland food market]. *Produktyvni Syly i Rehionalna Ekonomika*, 1, 203–208 (in Ukrainian). <https://dspace.nuft.edu.ua/jspui/bitstream/123456789/11999/1/Innovation.pdf>
- Dieguez, T. (2021). Cultural Approach to Mitigate COVID-19’s Impact: Comparative Perspective. In *Handbook of Research on Strategies and Interventions to Mitigate COVID-19 Impact on SMEs*. <https://www.igi-global.com/chapter/cultural-approach-to-mitigate-covid-19s-impact/280671>
- DigComp. (2023). *The Digital Competence Framework for Citizens (DigComp) provides a common understanding of what digital competence is*. European Commission Research Center 2023. https://joint-research-centre.ec.europa.eu/dig-comp_en
- Ministry of Digital Transformation of Ukraine. (2023). *Research on digital skills of Ukrainians: Third edition* (in Ukrainian). https://osvita.diia.gov.ua/uploads/1/8800-ua_cifrova_gratmotnist_naselenna_ukraini_2023.pdf
- Fedorenko, S. A., & Butko, L. V. (2019). Kliuchovi kompetentnosti yak obiekt dydaktychnykh rozvidok [Key competences as the object of didactic investigations]. *Visnyk KrNU imeni Mykhaila Ostrohradskoho*, 3(116), 19–24 (in Ukrainian). <https://doi.org/10.30929/1995-0519.2019.3.19-24>
- Fedulova, L. I. (2017). Innovatsiinyi faktor zabezpechennia stalooho rozvytku rehioniv Ukrainy [An innovative factor in ensuring the sustainable development of the regions of Ukraine]. *Ekonomichnyi visnyk universytetu*,

- 33(1), 62–71 (In Ukrainian). http://nbuv.gov.ua/UJRN/ecvu_2017_33%281%29__10
- Honcharenko, S. U. (2000). *Profesiina osvita: Slovnyk* [Professional education: Dictionary] (in Ukrainian). Kyiv, Vyscha shkola.
- Ivanov, S. V., & Kharazishvili, Yu. M. (2017). Innovatsiini faktory rozvytku transportnoi systemy Ukrainy [Innovative factors of transport development systems of Ukraine]. *Visnyk ekonomichnoi nauky Ukrainy*, 2, 47–55 (in Ukrainian). [http://www.venu-journal.org/download/2017/2\(33\)/pdf/10-Ivanov.pdf](http://www.venu-journal.org/download/2017/2(33)/pdf/10-Ivanov.pdf)
- Meshko, N. P., & Shchytyov D. M. (2016). Vysokotekhnolohichni posluhy yak innovatsiyniy faktor rozvytku svitovoho hospodarstva v umovakh hlobalnoi ekonomichnoi intehratsii [High-tech services as an innovative factor in the development of the world economy in the conditions of global economic integration]. *Visnyk Dnipropetrovskoho universytetu. Seriya: Menedzhment innovatsii*, 6, 87–94 (in Ukrainian). <https://doi.org/10.15421/191609>
- Saiz-Alvarez, J. M. (2020). The Online Platform Economy as an Entrepreneurship-Based Strategy for Value Creation: Some Considerations. In *Analyzing the Relationship Between Innovation, Value Creation, and Entrepreneurship*. <https://www.igi-global.com/chapter/the-online-platform-economy-as-an-entrepreneurship-based-strategy-for-value-creation/240368>
- Solovyov, V. P. (2011). *Innovatsii v kontekste rynochnykh otnoshenij i social'nyh ozhidaniy* [Innovation in the context of market relations and social expectations] (in Russian). Novosibirsk, FSPI Trendy.
- Solow, R. M. (1957). Technical change and the aggregate production function. *The Review of Economics and Statistics*, 39(3), 312–320. <https://doi.org/10.2307/1926047>
- The digital. (2022). *Novyny*. Ministerstvo tsyfrovoy transformatsii Ukrainy [News. Ministry of Digital Transformation of Ukraine] (in Ukrainian). <https://thedigital.gov.ua/news>
- Ukrinform. (2022). *Feik* [Fakes] (In Ukrainian). <https://www.ukrinform.ua/tag-fejk>
- Valion, O. (2016). *Innovatsiyniy faktor v ekonomitsi Respubliki Bilorus na pochatku XXI st.* [Innovation factor in the economy Republic of Belarus on the earlier of the XXI century] (In Ukrainian). https://chtyvo.org.ua/authors/Valion_Oksana/Innovatsiyniy_faktor_v_ekonomitsi_Respubliki_Bilorus_na_pochatku_XXI_st/; https://shron1.chtyvo.org.ua/Valion_Oksana/Innovatsiyniy_faktor_v_ekonomitsi_Respubliki_Bilorus_na_pochatku_XXI_st.pdf?
- Verkhovna Rada of Ukraine. (2018). *Rozporiadzhennia Kabinetu Ministriv Ukrainy "Pro skhvalennia Kontseptsii rozvytku tsyfrovoy ekonomiky ta suspilstva Ukrainy na 2018-2020 roky ta zatverdzhennia planu zakhodiv shchodo yii realizatsii"* 67-r. [Decree of the Cabinet of Ministers of Ukraine "Concept of the development of the digital economy and society of Ukraine for 2018–2020" No. 67-r] (In Ukrainian). <https://zakon.rada.gov.ua/laws/show/67-2018-%D1%80#Text>
- Verkhovna Rada of Ukraine. (2021). *Rozporiadzhennia Kabinetu Ministriv Ukrainy "Pro skhvalennia Kontseptsii rozvytku tsyfrovoykh kompetentnosti ta zatverdzhennia planu zakhodiv z yii realizatsii"*, 167-r (In Ukrainian). [Decree of the Cabinet of Ministers of Ukraine "On the approval of the Concept of the development of digital competences of citizens of Ukraine and the approval of the plan of measures for its implementation". No. 167-r (2021)] (In Ukrainian). <https://zakon.rada.gov.ua/laws/show/167-2021-%D1%80#Text>
- Yanamandra, R., & Indiran, L. (2023). *Handbook of Research on Designing Sustainable Strategies to Develop Entrepreneurial Intention*. <https://www.igi-global.com/book/handbook-research-designing-sustainable-strategies/315768>
- Arsanukaeva, E. A. (2005, September 12–16). *Innovatsionnyy faktor obespecheniya ustoychivogo ekonomicheskogo razvitiya* [Innovative factor for ensuring sustainable economic development]. Problemi i perspektivi innovatsionnogo razvitiya ekonomiki: X mezhdunarodnaya nauchno-prakticheskaya konferentsiya po innovatsionnoi deyatelnosti (In Russian) [Problems and prospects for innovative development of the economy: 10th international scientific and practical conference on innovation activity]. Kiev-Simferopol-Alushta, Natsionalna akademiia nauk Ukrainy. <https://iee.org.ua/ru/news/10/>
- Uriadovi portal. (2016, December 9). *Tsyfrovoy adzhendy Ukrainy – 2020* [Digital agenda of Ukraine – 2020] (in Ukrainian). <https://www.kmu.gov.ua/news/249575382>
- Afs in Your Country. (2020, February 3). *OECD's PISA Global Competence Assessment Results to be announced at the AFS Global Conference*. AFS. <https://afs.org/2020/02/03/launching-afscn-2020/>
- Bilal, A. (2021, November 30). *Hybrid warfare – new threats, complexity and "trust" as an antidote*. NATO review. <https://www.nato.int/docu/review/articles/2021/11/30/hybrid-warfare-new-threats-complexity-and-trust-as-the-antidote/index.html>
- Tereshchenko, O. (2022, March 17). *Viina Rosii proty Ukrainy: Sprostovuiemo 30 feikiv okupantiv* [Russia's war against Ukraine: we refute 30 fakes of the occupiers]. 24 kanal (in Ukrainian). https://24tv.ua/viyna-rosiyi-proti-ukrayini-sprostovuyemo-feyki-okupantiv-onovlyuyetsya_n1889316
- Prishchepa, Ya. (2022, April 4). *Rozvinchuvannia rosiiskykh feikiv 4 kvitnia* [Debunking Russian fakes on April 4]. Suspilne-Novyny (In Ukrainian). <https://suspilne.media/225215-rozvincuvanna-rosijskih-fejkiv-4-kvitna/>
- Sardarizade, S. (2022, April 26). *Yak feiky pro viinu v Ukraini zbyraiut miliony perehliadiv u TikTok* [How fakes about the war in Ukraine collect millions of views on TikTok]. BBC News Ukraine (in Ukrainian). <https://www.bbc.com/ukrainian/features-61220423>
- Wallach, O. (2022, December 26). *Ranking Countries by Digital Quality of Life in 2022*. Visual Capitalist. <https://www.visualcapitalist.com/cp/ranking-countries-by-digital-quality-of-life-2022/>