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Analysis of the prospects for the introduction of digital technologies in the Ukrainian economy and accounting

Análisis de las perspectivas de introducción de las tecnologías digitales en la economía y la contabilidad ucranianas

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Resumen

La relevancia del estudio se debe a que, en el mundo moderno, la innovación se está convirtiendo en el factor más importante del desarrollo económico. En el periodo comprendido entre 2019 y 2022, el proceso global de transformación digital afectó a todas las esferas de la sociedad. Esto también se aplica a la industria contable y a la economía en su conjunto. En este sentido, el artículo tiene por objeto dar a conocer cuestiones de actualidad relacionadas con la aplicación y las perspectivas de la introducción de tecnologías innovadoras en la economía y la contabilidad de Ucrania. El objetivo del estudio es identificar las principales tecnologías modernizadas utilizadas para la contabilidad y analizar su impacto en la economía ucraniana. Con este fin, se resolvieron las principales tareas: analizar los requisitos clave de las tecnologías digitales modernas en la contabilidad, caracterizar el estado actual de la economía ucraniana en general y estudiar las perspectivas de introducción de tecnologías innovadoras tanto en la contabilidad como en la economía ucraniana en general. Las principales líneas de investigación están determinadas por la falta de desarrollo teórico y metodológico de este tema y su creciente importancia práctica. El método principal para estudiar este problema es analizar las tecnologías digitales más populares y efectivas en contabilidad y economía, así como las perspectivas para el desarrollo de tecnologías digitales en la economía y la contabilidad de Ucrania. Se han estudiado los materiales de expertos extranjeros, lo que permite una consideración integral de la importancia de implementar la transformación digital en la contabilidad y la economía. Los materiales del artículo tienen un valor práctico y pueden utilizarse para mejorar el sistema económico de Ucrania y la contabilidad en particular.

Palabras clave: economía, transformación digital, innovaciones, contabilidad, nuevas tecnologías.

Abstract

The relevance of the study is due to the fact that in the modern world, innovation is becoming the most important factor in economic development. In the period from 2019 to 2022, the global process of digital transformation affected all spheres of society. This also applies to the accounting industry and the economy as a whole. In this regard, the article is aimed at disclosing topical issues related to the application and prospects for the introduction of innovative technologies in the Ukrainian economy and accounting. The purpose of the study is to identify the main modernized technologies used for accounting and analyze their impact on the Ukrainian economy. To this end, the main tasks were solved: to analyze the key requirements for modern digital technologies in accounting, to characterize the current state of the Ukrainian economy in general, and to study the prospects for the introduction of innovative technologies both in accounting and in the Ukrainian economy in general. The main directions of research are determined by the lack of theoretical and methodological development of this issue and its growing practical importance. The leading method of studying this problem is to analyze the most popular and effective digital technologies in accounting and economics, as well as the prospects for the development of digital technologies in the Ukrainian economy and accounting. The materials of foreign experts have been studied, which allows for a comprehensive consideration of the importance of implementing digital transformation in accounting and the economy. The materials of the article are of practical value and can be used to improve the economic system of Ukraine and accounting in particular.

Keywords: economy, digital transformation, innovations, accounting, new technologies.

Introduction

The study of the prospects for the introduction of digital technologies into the economy is quite relevant today, as there is a rapid transition from a raw material economy to innovative high-tech production. This process is stimulated by current trends in the latest technological solutions and capabilities, as well as the period of globalization. At the same time, it is worth noting that digital transformation is focused on international European cooperation to bring Ukraine into the European Union and to enable it to enter the newest international market. Digital transformation also serves as an effective tool for economic growth by increasing competitiveness and productivity, as Abdullayeva (2022) notes. In addition, the correct use of digital economy tools is a means of ensuring information security and stability. The above factors determine the interest in studying this area.

According to Kolesnikov (2020), in practice, the digital economy is a type of economy that is aimed at the consumer, that is, it outlines the ability of the state to provide services of various kinds. In particular, we are talking about citizens receiving inquiries, requests, or applications, and electronic responses. In addition, it is a market for quick orders and a wide range of goods and services through the use of online stores, special applications or social networks, online banking, etc. The digital transformation of the economy is taking place both through relevant reforms in the areas of public life and directly in governance.

It is also worth noting that the role of the state in the implementation of the digital economy is quite significant. First, the state acts as a regulator that implements and establishes the relevant rules, principles, and foundations for the existence of digital economy mechanisms. The methods of their use are controlled and verified, and technological changes are made that consolidate specific relations between society and the government. Secondly, the state can use the latest tools directly when providing services in online commerce and e-government. However, it should be noted that the peculiarity of Ukrainian digital development is that individual users and businesses are far ahead of the state and industry. Ukrainian small and medium-sized businesses are somehow using relevant online applications and digital tools to promote their goods and services, while the state lags far behind.

According to Ladonko (2022), the current conditions of economic development, which are directly related to existing socio-political processes, put forward new requirements for the implementation of effective document management. Thus, the paper-based method of information processing and data transfer has become a kind of atavism in the modern digital environment. Information flow is now so rapid that digital transformation can be compared to a new industrial revolution.

Lazarova (2019) is convinced that digitalization is an integral part of the modern world and the rapidly evolving business environment. Competitive enterprises realize the importance of all the opportunities provided by modernized digital technologies, as without them, the risk of losing certain prospects or even market share increases significantly. Innovations allow businesses of all sizes to improve productivity and enhance the organization's working environment. Digital transformation has also affected accounting activities, according to Moll (2019).

According to Ostropolska (2021), the key task of digital accounting is to integrate robotic information processing and data-matching analytics with classical accounting and auditing methods. Innovations in accounting make it possible to introduce technological advances of the globalization era not only to improve the quality of work but also to increase the level of customer focus. Stages of digital accounting activities are interconnected actions performed through the implementation of special software tools aimed at obtaining, processing, and analyzing data.

Literature Review

Due to the global transformations taking place in the modern world, national economies are actively implementing innovative tools of the Fourth Industrial Revolution (Alsalmi, 2023). The world's leading countries have already begun to use digital technologies for storing, processing, and transmitting data in all areas of management.

It is also worth noting that the pandemic has also become a powerful catalyst for digital transformation in the world, forcing governments and businesses to look for the latest tools to ensure stable socio-economic well-being and effective remote operations. European experts have determined that the speed of penetration of innovative technologies into the digital economy, accounting, and auditing practices in particular, is significantly higher than, for example, the speed of introduction of innovative technologies in industrial production (Berikol, 2021). That is why it is advisable to outline the prospects for the introduction of digital technologies in management processes such as accounting and auditing.

According to some experts, digital transformation is a kind of driving force for technological progress (Bhimani, 2020). It should be noted that in the twenty-first century, digitalization blurs the boundaries between the biological, physical, and digital spheres due to the comprehensive merger of management technologies. A number of European scholars interpret digital transformation as a specific tool for optimizing and improving modern business processes (Bryukhovetska, 2020). Some experts are convinced that digitalization should be understood as a fundamental change and penetration of the latest technologies to automate business processes, increase productivity, and improve customer interaction. Digital transformation includes modern mechanisms for automating not only accounting but also management processes at the enterprise as a whole.

Every year, information and communication digital technologies are becoming more and more widespread in various spheres of life. They are also quite actively penetrating the economic sector, which leads to sustainable economic growth and social development. This trend is also observed in Ukraine, however, it should be noted that this pace is much slower than in other leading countries. Therefore, today it is extremely important to find effective methods to intensify the introduction of digital technologies into public life and production, especially in the economic sphere (Bushman, 2021). This problem requires in-depth research and the development of recommendations for the development of digital transformation in the economy and public administration.

The issue of digital transformation of the economy, which is characterized by the development of the information environment and modern technologies, is becoming increasingly relevant. At this stage, Ukraine is becoming almost the only European country that does not have sufficient digital resources of its own. For this reason, the study of various aspects of the digital economy, its main trends, and prospects is becoming increasingly important. The global change in the content of accounting and auditing practices is due to the development of information technology and the modernization of economic process management systems (Evangelista, 2014). Today's creation of a single information space is becoming a key feature of the digital age. The prospect of accounting development should include the achievements of modern digital technologies, as well as fundamental and applied science.

The integration of information technology functions with the key requirements for the development of theoretical and practical accounting fundamentals can ensure the information modernization of modern economic processes (Goldfarb, 2015). Ukraine's involvement in leading projects and organizations in the field of information resources indicates a change in both the terminology of accounting and the practical system of professional technologies. It should be noted that this is not about the robotization of existing tools for building an accounting system. Data collection and processing in the era of digitalization is undergoing significant changes and is becoming a logical integration of modern scientific developments within the accounting information system (Gonçalves, 2022).

Materials and Methods

In this article, the methodological approach is based on the analysis of the prospects for the introduction of the latest technologies in the Ukrainian economy and accounting activities in the context of globalization. The methodology is based on a systematic approach to the problem under study, a fundamental consideration of the processes of digitalization. Thus, using a systematic approach, the study examined the concept of implementing the latest solutions in the context of accounting activities.

An important area of research is also the formation of an integrated approach that will contribute to the further modernization of both the Ukrainian economic system as a whole and the accounting system. With the help of the research methods used in the article, the author has identified the features of accounting activities as a multi-stage process of accounting and auditing.

The synergistic approach, the method of synthesis, induction and deduction, thesis and antithesis, historical and comparative analysis also contributed to the solution of research tasks. It should be emphasized that the article is based on both general scientific methods, which, for example, include the dialectical method, and the retrospective method, and the method of comparison. The study identifies the impact of IT technology factors on the development of accounting and auditing.

The method of generalization was also used as a research method. This method was used to provide a detailed study of the process of modernization of the existing economic system in Ukraine. The theoretical basis of this article is based on the results of research conducted by a number of European experts, which were aimed at studying the problems associated with the definition of modern accounting approaches as those methods that are fundamental to the formation and comprehensive development of the national economy of Ukraine as a whole. The research methods used in the article also analyze the impact of digital accounting on the sustainable development of Ukraine's economy, analyze the main aspects of the introduction of innovative technologies in accounting, and find out that they have a significant impact on this process.

The main aspects of the introduction of innovative technologies in the accounting process were analyzed and it was found that they significantly affect the efficiency of the economy as a whole. The method of analysis allowed for the most detailed study of the peculiarities of accounting in the context of global digital transformation, as well as to study the issues of improving the modern digital Ukrainian economy.

In addition, the method of comparison was used. This method was used to make an analytical comparison of the results obtained with the conclusions of other scientists who are engaged in the practical development of issues related to an integrated approach to studying the prospects for the introduction of digital technologies into the economy and accounting in particular in the current environment.

These research methods were used to identify the key further prospects for the introduction of digital technologies in accounting and the Ukrainian economy. With the help of the above methods, the article determines the importance of properly implemented new solutions in the system of economy and accounting. It has been found that in modern countries, the introduction of digital technologies is of the greatest importance for economic stability.

Result and discussion

In the period from 2019 to 2022, a large-scale process of digital transformation affected all areas of social activity (Jiang, 2020). At the pace of the modern world, it is necessary to quickly adjust and adapt to changing environmental conditions. Innovation, mobility, and flexibility are key factors in the success and efficiency of any modern enterprise (Kolesnikov, 2020).

The introduction of innovative activities and the creation of the necessary conditions for their development are the main directions of today's Ukrainian state policy aimed at increasing the level of economic efficiency both within individual business entities and in general. It is worth noting that accounting activities are an essential element of the infrastructure of a market economy (Ladonko, 2022).

After gaining independence, Ukraine needed new methods of structuring the economy that would take into account both the national and economic interests of the country. In such circumstances, the optimal development of accounting requires support from related areas as well.

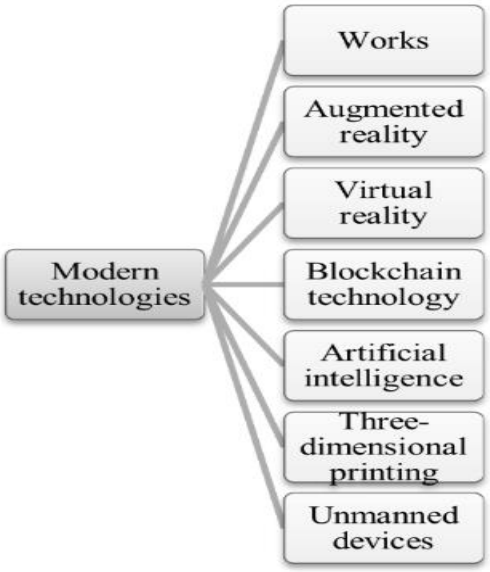
This applies, for example, to finance, law, economic expertise, and technology. Accounting is the identification, measurement, registration, accumulation, and generalization of facts. Reporting is the product of such accounting. Improving the quality of accounting will lead to an improvement in the reliability of reporting data (Lazarova, 2019).

There are several modern methods of improving accounting and auditing:

- implementation of artificial intelligence technologies;
- digital transformation of the program used for reporting;
- development of advanced functions for checking and analyzing typed reports, voice input for faster and better report completion, and personnel performance accounting to identify strengths and weaknesses of the team.

Modern foreign experts identify a total of eight innovative technologies that will be able to radically transform all areas of social activity in the near future (Liu, 2022). The global digital transformation is becoming a turning point when innovative technologies can expand the boundaries of companies. The key innovative technologies that are already beginning to be used at different stages of foreign audit activities are shown in the figure (Figure 1).

Figure 1: Modernized technologies



Source: authors' own development.

In this study, one of the technologies will be discussed in more detail as an example. One of the responsibilities of an accounting and audit specialist is to oversee the inventory of all available assets. However, there are situations in which this process is quite time-consuming. In such situations, unmanned devices can be used (Magomedov, 2020). In this way, the specialist has the opportunity to significantly expand the geography of activities, as there is no longer an urgent need to be present in person at the inventory procedure itself, and the results can be monitored remotely without leaving the office. Unmanned devices allow you to assess the situation on a larger scale, and this approach is effective when inventorying large amounts of property. Drones are also useful in cases where it is unsafe for an accountant to be present at the inventoried property.

Such technology demonstrates a general understanding of the possibility of conducting more efficient accounting activities when implementing innovative methods. In the near future, companies need to become more loyal and flexible to innovations, which will help to expand the firm, minimize costs and risks. In this study, we can outline the main approaches of innovative foreign accounting, as shown in the table (Table 1).

Table 1: Key approaches to innovative accounting activities

№	Name	Feature
1	Accounting for competencies	It is based on the idea that innovations are implemented by specific specialists of an enterprise. The main goal of the methodology is to analyze professional competencies in the industry and to study organizational competencies in more depth. The objects of analysis are the concepts of the management system and structure of the enterprise, the company's ability to transfer and develop competencies with the help of the team.
2	Accounting for activities	Quantitative methods of evaluating the results of innovation activities are fundamental to this principle. The purpose of this approach is to identify evaluation criteria based on the results of the process or work methods. The most popular are time and money costs. Experts have proved that this approach is insufficient for a correct assessment of the company's innovation activities. The disadvantage is that the evaluation criteria are based on past results.
3	Accounting for the innovation process	This approach is based on studying the implementation of the innovation process at an enterprise. It compares the results of the classical model of innovation of innovation activity. The method is based on the conditions that are formed at the enterprise for the development of innovation.

Source: authors' own development.

As for Ukraine, modern Ukrainian specialists are trying to abandon the provision of fully standardized products to enterprises, focusing on individualizing services for the company. Such trends contribute to the generation of new services in accounting companies, the transformation of existing ones, and the development of new control methods (Möller, 2020). It is also worth noting the improvement of client relationships, the purpose of which is risk-oriented control and audit, rather than solely compliance audit. Such processes contribute to the fact that the interaction of auditors and the business community forms organizational innovation.

Ukrainian experts recognize that innovation is a key factor in the productivity of enterprises. Numerous studies prove the importance of innovation in the service sector and its contribution to economic development in general (Oncioiu, 2019). Innovative technologies in audit differ from innovations in the production of goods. The main difference is that the development of innovations in the field of production has more loyal organizational forms and a more gradual pace of implementation, representing a series of phased changes in the list of services offered.

An innovation is the introduction of a new or modernized product, technology, or service, a new marketing or organization method (Ostropolska, 2021). There are four types of innovations: product, marketing, process, and organizational (Pagoropoulos, 2017). For example, organizational innovation refers to the introduction of new organizational methods. It is worth noting that innovation activity includes all technological, scientific, organizational, commercial, and financial activities that actually contribute to the implementation of innovations or are designed for this purpose.

This study can also characterize innovations in accounting activities in Ukraine, which:

– are associated with uncertainty about the effectiveness of their use;
– refers to financial investments;
– involve the use of new knowledge and innovations in existing methods;
– are aimed at improving the productivity and competitiveness of the enterprise by minimizing costs or increasing the demand for audit services.

Thus, innovations in accounting activities in Ukraine are a natural response to changing economic conditions. Since the innovative development of the economy is accompanied by the implementation of certain management tasks of business entities, the requirements for the quality of reporting information are significantly increasing (Raewf, 2020).

Reliability of reporting data, control of financial indicators from the perspective of internal accounting are key elements of modern management decisions. All of this leads to the implementation of the control function of accounting to improve the quality of the accounting process and the reliability of reporting indicators of all types.

We should also consider the audit process, which is carried out in accordance with auditing standards and includes certain stages. For example, at the preliminary stage, the specialist meets with the client, during which he receives reliable information about the company to assess the feasibility of the project, calculate the material costs of accounting (Rusch, 2023). As a result, an agreement between the company and the client is formed and concluded. At the planning stage, an audit schedule is developed and all kinds of risks are assessed. At the final stage, a package of working documents and a report is prepared. All of this is provided to the manager along with the working documentation.

It can be concluded that the accounting process and its audit verification are quite laborious and time-consuming. Therefore, it is important to have a plan in place to minimize the risk of unreliable financial statements. To avoid mistakes in reporting, it is necessary to implement certain technologies that greatly simplify the work of an accountant. For example, you can use the following methods: apply artificial intelligence technologies and a modernized program for data processing; use innovative functions to verify the accuracy of primary information input, analyze financial statements, and assess the quality of a specialist's work; develop a voice input function to reduce the time for entering primary information (Uçar, 2020).

It can be concluded that in Ukraine, the development of innovative activities in the field of accounting is a labor-intensive process due to the sectoral characteristics of the enterprise, but Ukrainian companies do not refuse to apply innovations. Continuous improvement is necessary to increase productivity and competitiveness. The need to develop innovative activities in Ukraine is growing every year, but this requires the creation and development of a comfortable competitive environment for the state, education, business, and science.

This study also shows that approaches to training young highly qualified accountants have changed. In the period from 2019 to 2022, digital transformation has become an integral part of modern society and business (Yigitbasioglu, 2023). Forward-looking companies realize that refusing to use modern digital technologies reduces the competitiveness of the enterprise. Innovations in accounting activities mean the use of modern digital technologies that increase the productivity of the enterprise and improve the work environment in general.

An example is innovative approaches to training young accountants. For example, one of the more innovative digital technologies is the use of credential analytics. Accounting data analytics is an element of identifying and analyzing patterns and algorithms, extracting all useful information from the provided data related to the accountant through modeling and visualization for planning and conducting accounting activities.

Analytical accounting procedures developed with the help of information technology allow for a qualitative assessment of going concern. Also, in practical classes in a modern Ukrainian higher education institution, the methodology of “anomaly analysis” is used. This innovative approach helps to identify deviations from classical values, stable dynamics of indicators in order to determine the risks of fraud, unfair practices, tax evasion.

In this regard, it should be emphasized that artificial intelligence is subject to clearly described algorithms. Therefore, non-standard actions or unprepared credentials may cause incorrect analysis by a computer information system. Software is also not immune to failures, hacker attacks, or errors. That's why accountants need to monitor the results of robotic checks. Innovations in accounting are continuously linked to digital transformation. In turn, digital transformation is associated with such elements of remote interaction as providing remote access to digital client data and the use of networked communicators.

The main advantage of using innovative technologies in accounting activities is the modernization of classical accounting into continuous online accounting activities. The main areas of digital accounting in Ukraine include: robotization of verification procedures; application of artificial intelligence technologies, accounting data analytics based on processing large amounts of information; online accounting activities. The competitive advantage will be gained by enterprises that improve classical methods of work, while retaining elements of interpersonal interaction, a high level of professionalism, and applying innovative methods of work based on the widespread digital transformation of the economy.

Conclusion

Numerous issues related to the identification of the most effective digital technologies for modern accounting activities require careful study to develop improved accounting methods that will allow for a radical change in the outdated accounting system in the period of complete digital transformation of all industries and areas. An important aspect of this issue is to determine the incentives for the development of digital technologies in Ukraine, which is essential for further research to determine the level of impact of this area on the entire accounting and auditing industry. Artificial intelligence, advanced technologies, digital transformation - these areas may radically transform modern society in the near future.

Having analyzed the existing problems in the application and development trends of digital technologies in accounting activities caused by the insufficient development of this issue, we can conclude that the formation of modern high-tech industries will require such stages as, for example, the introduction of modern digital technologies in various areas of production and accounting. In other words, an integrated approach to the development of new methods of digital innovative accounting and audit activities is needed. Awareness of the need to introduce information technology by business leaders will lead to an increase in labor productivity, which will give them a competitive advantage.

The materials of the article are of practical value and can be used in the development of modern methods of accounting activities in Ukraine. Prospects for further research on innovative accounting methods in the context of forming efficient and competitive modern enterprises are due to the outdated economic system and the innovative potential of the modernized accounting system. For specialists of all levels of qualification, the necessary action will be the formation of a unified strategy for innovative accounting activities, which will improve the existing methods of accounting for the economic system in the context of globalization.

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