

Digitization of Accounting in the Management of Business Processes of Enterprises of the Agro-Industrial Complex

Natalia Potryvaieva^{*}, Liliia Kozachenko, Iryna Nedbaylo, Iryna Nesterchuk

Mykolaiv National Agrarian University
54008, 9 Georgiy Gongadze Str., Mykolaiv, Ukraine

Abstract. The article is devoted to the problems of digitalization of accounting in the agricultural sector of Ukraine as the main element of modernization of business processes in the conditions of digitalization. Accordingly, the issue of using modern accounting tools for agricultural enterprises, which largely depends on the implementation of the scenario of digital development of rural areas of Ukraine, in particular, the development of digital infrastructure, is gaining relevance. The purpose of the article is to investigate the current trends in the digitisation of the accounting of agricultural enterprises and their impact on the management of business processes in today's conditions. The research uses the dialectical method of cognition and general scientific techniques and principles of complex research, which include empirical, theoretical-cognitive and general logical methods, in particular: observation, comparison, description, generalization; analysis, synthesis, analogy and abstraction; systematic approach; monographic; comparative analysis. The article examines the benefits of using information technologies in the activities of enterprises in the agrarian sector and identifies factors that slow down the process of its transformation. It was established that the development of an agricultural enterprise based on the digitalization of management processes requires a significant amount of time for implementation, which is associated with making significant investments in the acquisition and support of technologies, as well as training employees in new professional skills. The innovations of the modern information space that can be used in the business environment for the digital transformation of business, in particular for the purpose of productive organization of accounting processes, are considered. The generalized results and formulated conclusions can be applied in the practical activities of Ukrainian agricultural enterprises in the context of the use of the formed information base of technologies, online services, specialized applications for the digitalization of accounting processes, reporting, taxation, as well as the determination of critical factors for slowing down the use of digital technologies, which will contribute to the overall transformation business processes of economic entities of the agro-industrial complex

Keywords: digitalization, digital transformations, accounting, agricultural sphere, information technologies

INTRODUCTION

The modern development of agricultural production depends on the modernization of business process management, which slows down in the conditions of digitalization due to the insufficient use of new modern information technologies. Digitization of accounting processes is the basis for the successful implementation of management decisions of stakeholders, as a single information platform is created for registration, accumulation, summarization and storage of information, reporting, analysis, and control of business processes of the enterprise.

Modernization, optimization and development of an agricultural enterprise based on the digitization of management processes require a significant amount of

time for implementation, which is associated with making significant investments in the acquisition and maintenance of technologies, as well as training employees in new professional competencies.

Agricultural enterprises currently choose the purchase of agricultural machinery and technologies for production and its maintenance, energy carriers, agricultural materials, labour costs and land rent as a priority direction of investment, as this will allow them to produce more products and maximize economic benefits [1]. In particular, according to statistical data, in 2020, the volume of capital investments in agricultural enterprises amounted to UAH 50,679.7 million, of which

Article's History:

Received: 19.12.2021

Revised: 20.01.2022

Accepted: 19.02.2022

Suggested Citation:

Potryvaieva, N., Kozachenko, L., Nedbaylo, I., & Nesterchuk, I. (2022). Digitization of accounting in the management of business processes of enterprises of the agro-industrial complex. *Ukrainian Black Sea Region Agrarian Science*, 26(1), 79-88.

about UAH 48.0 million was directed to software and databases for economic activity. In comparison with the total amount of capital investments in financing software and databases in all branches of the economy of Ukraine, this is 0.4%, while the industry invested 11.7% [1].

When introducing digital technologies into accounting processes in the agricultural sector, a number of other problems arise, in particular: at the micro level – the reluctance of the owners themselves to carry out digital transformations of their own business; insufficient funds for digitalization of accounting; accountants' fear of layoffs and unwillingness to gain additional knowledge; at the macro level – provision of rural areas with access to high-speed Internet and digitalization of the agricultural sector in general. Therefore, the productive integration of digital technologies in the development of the Ukrainian agricultural sector is impossible without state and public support.

The work of many Ukrainian scientists was devoted to the issue of accounting transformation in the agrarian sphere of production, in particular, the following were studied: the impact of digital transformations on the functioning of agricultural enterprises; problems of innovative development of agribusiness; applied aspects of digitization of accounting in Ukraine and others.

In their work, researchers L. Vodyanka and T. Yuriy revealed the modern significance of digitization and digital platforms, which is progressive for the economic development of economic entities in the agrarian sector of the economy. As a result of research, the authors offered a model of a digital platform for the agricultural sector, the implementation of which will significantly speed up the process of digital transformation of agricultural production on domestic and global markets [2].

A group of researchers M. Demchyshak, O. Radux and V. Gryb believe that during the years 2014–2019, the agrarian sector in the post-crisis period ensured the inflow of currency, and employment in rural areas and the restoration of economic growth in Ukraine. The authors claim that the agricultural sector in Ukraine has established prerequisites for further qualitative transformations and the application of innovations and modernization. Justifying the opinion, the researchers believe that digitalization contributes to the emergence of new industries and developed innovative entrepreneurship in the agricultural sector [3].

When studying the use of modern information technologies in the agro-industrial complex, O. Zelinska and S. Suxoczka proved that the use of information technologies increases labour productivity, taking into account that many tasks are solved. In turn, the use of artificial intelligence will make it possible to significantly improve the information support system of the agro-industrial complex, which will be accompanied by an increase in the competitiveness of Ukrainian agricultural production [4].

When studying the issue of accounting in the conditions of the digital economy, scientists determined that despite the dynamic development of digital

technologies in the economy, including the growth of trade volumes via the Internet, their segmentation is evident. It was also found that a holistic scientific approach to the digitalization of accounting and taxation has not been formed. The researchers noted the current trends that should be developed by scientists and practitioners [5].

Modern technologies in the process of digital transformation of agricultural enterprises are key in M. Rudenko research. In his work, the author notes that the main obstacles that prevent technological innovations from entering agro-industrial enterprises are a lack of understanding of the values of technology and a lack of desire to change. The author claims that the expediency of using digitization technologies in each individual enterprise of the agrarian sector is the survival of commodity producers in modern conditions of conducting agrarian business [6].

So, the issue of the transformation of accounting of the agricultural sector in Ukraine is quite widely represented in scientific circles. However, scientific explorations of digitalization of accounting must be continued in order to support the modernization and development of the agrarian sector of the economy. Thus, the paper formulates the advantages of digitization of accounting processes for agribusiness, summarizes the proposals of the IT industry for the accounting of Ukrainian enterprises in the agrarian sector, represented by both ready-made smart technologies and project products, and also reveals the content and areas of application of modern accounting tools with an emphasis on the problems of the accountant's professional activity and the science of accounting.

The purpose of the article is to study the trends of digitalization of the agricultural sector of the economy, in particular, the possibilities of the latest digital accounting technologies in the management of business processes.

MATERIALS AND METHODS

In the research process, the dialectical method of cognition and general scientific methods and principles of complex research, which include empirical, theoretical-cognitive and general logical methods, were used. Thus, the authors used the following methodological tools: observation, comparison, description, and generalization in the study of the essence and features of digital accounting; analysis, synthesis, analogy and abstraction to reveal the trends of digitalization of accounting in the management of business processes of the agrarian sector, as well as the transformation of the social and economic environment in the conditions of the digitalization of the information space of Ukraine; a systematic approach to identifying methodological problems that arise during the implementation of digital technologies in the accounting process of agrarian enterprises and their impact on the management of business processes; monographic to clarify the essence of the relevant categories; comparative analysis to study the features of technologies used

for digitization of accounting; other methods in the field of economic research.

In order to interpret the results, the following stages of the research process were carried out:

- exploratory research, which included the search and selection of problematic aspects of digitalization of the agricultural sector of the economy in general, as well as accounting processes in particular; study of regulatory and legal support, already published scientific works, publications of specialists in the field of accounting and the IT industry, in order to clarify the current state of proposals and the practical use of digital technologies in the implementation of business processes of agricultural enterprises; existing theories of Ukrainian and foreign practice of digital transformation of accounting were identified, which became useful in finding answers to the questions of this study;

- research design, on which the action plan was built, in particular: a set of scientific research methods was selected, including empirical, theoretical-cognitive and general logical methods, in particular, a combination of case studies and action research; the strategy of forming a sample was formed, which involved the study of the problem of the availability of IT products that have an industry focus and are offered for use in the agrar sector;

- conducting a study, which consisted of the pilot testing to identify potential problems in conducting a study of the Ukrainian market of IT products for accounting; data collection, their analysis and interpretation regarding regulatory support, the practice of using digital technologies in the accounting of agricultural enterprises, the presence of digital literacy of accounting personnel, the creation of digital infrastructure at the state level with an emphasis on rural areas, for the purpose of formulating a conclusion, as well as preparing a scientific article.

The information base for the study was: legislative and normative acts regulating digitalization processes in Ukraine, as well as accounting and taxation of economic activities of enterprises, in particular: Decree of the President of Ukraine dated 05/15/2017 No. 133/2017 “On the Decision of the National Security and Defense Council of Ukraine” dated April 28, 2017 “On the Application of Personal Special Economic and Other Restrictive Measures (Sanctions)”; Law of Ukraine dated December 2, 2010 No. 2755-VI “Tax Code of Ukraine”; Law of Ukraine dated July 16, 1999, No. 996-XIV “On Accounting and Financial Reporting in Ukraine”; theoretical and methodological developments of Ukrainian and foreign scientists; statistical and analytical materials of the State Statistics Committee of Ukraine and the Ministry of Agrarian Policy and Food of Ukraine.

The work used data from publications of official websites of software developers and online accounting and reporting services (InfoTAX, iFin, Fair, Taxer, Reportax, BookKeeper, Dilovod, Master: Accounting, Litachok, others), as well as Ukrainian information agencies (Information Agency “AgroNews.ua”, “Economic Truth” Project, “Agravery” Agrarian Information Agency, DOU: Community of Programmers).

RESULTS AND DISCUSSION

The agrarian sphere in economic development

The agrarian sphere of Ukraine plays a leading role in the development of the world economy, which requires the intensification of the general production of agricultural products and the maximum creation of modern working and living conditions for the rural population. The food security of the world depends on the export of agricultural products because Ukraine supplies 10% of the annual consumption of wheat for 15 countries of the world and is a granary for almost 400 million people [7; 8]. Agricultural products traditionally occupy the first place in Ukrainian exports, in particular, the main share is made up of grain and oil crops, which were exported for 18.6 billion dollars in 2021 [7; 8].

Due to the constant dynamics of the development of global markets, as well as changes occurring in their structure, agrarian business, including in Ukraine, is constantly affected. Also, the demand for food in the world is constantly growing, taking into account the challenges in recent years that affect the decrease in the production of agricultural products in the world. Thus, the 2019 outbreak of the novel coronavirus disease (COVID-19) became a public health emergency of international importance. And the destruction in Ukraine caused by the Russian aggressor since February 2022 has already affected about 25% of the world trade in grain, in particular, wheat and sunflower oil. However, despite the critical economic conditions in Ukraine, in January-April 2022, agro-food products were exported for 7.420 billion dollars, which is 3% higher than in January-April 2021 [7]. At present, 90% of agricultural producers have started working in the liberated territories of Ukraine, namely Chernihiv, Sumy, and Kyiv regions, about 50% are near the battle lines, and more than 95% are working in the rest of the free territory of Ukraine [7].

Digitization of business processes of agricultural enterprises

In such crisis times, the state and enterprises face the task of ensuring the operation of all industries in order to preserve the economic stability of Ukraine. At the same time, there is an urgent need to create the safest conditions for the life and health of employees during the performance of their duties, movement in the territory of settlements, etc. Therefore, the maximum provision of digitalization of economic processes makes it possible, where possible, to combine work in a safe place and on the employer's territory, in general, to continue working to support the country's economy, including in the agricultural sector.

Agriculture as an industry has a number of specific opportunities, in each of which you can find your own application of digital technologies [2; 3]:

- the sphere of life of living organisms, plants and animals, in which the breakthrough of technological machines, geo-information systems and equipment took place, can be widely used to control and manage agriculture and minimize human errors;

- reducing the labour intensity of production processes for the employee with the help of digital technologies;
- the possibility of controlling and covering large territories with IT technologies;
- application of new promising digital technologies in the process of collection, processing, production and sale of various agricultural crops.

However, there is a tendency to increase the dependence of agrarian businesses on various types of information, the speed of obtaining it, the possibility of conducting an operational analysis of its own activity indicators and an overview of the agrarian market. Agricultural enterprises are increasingly implementing digital technologies for the digitalization of accounting and its management segment.

In the work of R. Bruxanskyj and I. Spilnyk, the description of digital accounting or, as the authors synonymize it, electronic accounting, consists of the presentation of accounting information in a digital format, which is then processed and transmitted electronically [9].

Since every year more and more developments for digital accounting are released, it is necessary to systematically update the skills of accounting personnel through various formal and informal measures, in particular: obtaining professional and/or higher education, professional development, participation in professional seminars, taking courses; self-education, participation in professional associations, communication with specialist colleagues, etc.

Currently, the digitalization of accounting processes allows employees of the accounting service to perform functional tasks as quickly and with the least errors as possible, to effectively interpret and prepare financial statements, which allows owners to more effectively manage the business processes of the enterprise and achieve the defined strategic goals.

Online accounting implements a full cycle of necessary operations for working with suppliers and contractors, operational accounting of purchased goods and services, calculations for employee payments, electronic tax administration, pricing and control over calculations, use of cloud computing in the accounting process, and more.

To the main technologies that are currently actively used in the business environment for the digital transformation of business, in particular, for the purpose of productive organization of accounting processes, researchers include the following [10-12]:

- BigData – for use in calculations in order to increase efficiency, accuracy and speed when processing extremely large data sets;
- Blockchain – for data systematization and effective control;
- Internet of Things – a complex process of information analysis and operational decision-making to support important business processes;
- Microsoft product – “Microsoft Office 365” – a single economic system of services and programs that are

integrated with each other and provide a single platform for the work of all employees;

- RTA – for performing accounting operations in real-time;
- EDI – for free and fast exchange of electronic data;
- XBRL – extended language of financial, management, and tax reporting of various business areas;
- cloud technologies – for distributed data processing, in which computer resources and capacities are provided to the user as an Internet service;
- RPA and AI – for the use of software robots and artificial intelligence to automate mostly standardized operations, in particular, related to the collection and processing of primary data, preparation of financial statements, etc.

Big Data provides tangible advantages for the digital transformation of business processes. The technology is intended for the organization and structuring of large volumes of information, database management and “Business Intelligence” decision-making, although it was not created directly for accounting. Big Data performs three main operations: processing data with a larger volume; the processing of data that is constantly arriving with an ever-increasing volume; the ability to work with various types of data [12].

Researchers propose to adapt the capabilities of Big Data to the field of accounting, taking into account the following features of this technology [11]:

- horizontal scalability – as the differentiation and detailing of data on accounting objects lead to an increase in the number of computing nodes on which these data are distributed;
- fault tolerance – due to the fact that the number of computing nodes in the information system is incomparably limited, therefore, in the event of computer equipment failure, it is necessary to implement preventive measures;
- data locality – accounting data is distributed among numerous computing nodes, while physically located on one server, and processing takes place on another [11].

Blockchain (Blockchain or Block Chain translated from English – a chain of blocks) is a sequential chain of blocks with information that are stored on different computers and are connected to each other. Many companies are studying the possibilities of applying blockchain technologies everywhere – from accounting, auditing, finance and production [12]. So, blockchain technology involves the creation of a register or account book of events in a digital environment. This technology provides protection of information recorded for the first time from corrections or destruction since each new operation is confirmed by the history of previous records. Such a high level of protection allows you to have a business database that is protected from unauthorized destruction of records or falsification and therefore is an effective prerequisite for obtaining timely and unbiased information by managers [11]. The Internet of Things technology is effective in the organization of primary accounting, which

is a rather labour-intensive part of production. The technology makes it possible not to use the traditional approach to the preparation and transmission of primary documents due to the automatic formation of a database on production processes, the state of equipment, etc. For this, the main nodes, mechanisms of machines and machines are equipped with special sensors, executive and control devices and processors, which will collect analytical data directly during the production process. Therefore, the necessary database for accounting needs is formed automatically after the processes of processing information and placing it in the accounting system [9; 11].

Incidentally, we note that for accounting needs, the use of technology such as Blockchain will allow reducing product losses by 30 million tons; The Internet of Things, which can be used to monitor supply chains, is 35 million tons [13].

One of the well-known and widely used corporate tools that can replace most of the third-party programs accompanying the business processes of the enterprise is the Microsoft product – “Microsoft Office 365”. In the modern program, along with the usual Word, Excel, PowerPoint and other tools for the work of accounting departments of private users, corporations and businesses, there are conditions for working with documents, computing devices, planners and calendars, a service for data exchange, the ability to organize and hold video conferences [14].

Digitization as a vector of accounting

The decision of the National Security and Defense Council of Ukraine dated April 28, 2017 “On the Application of Personal Special Economic and Other Restrictive Measures (sanctions)”, which was put into effect by the Decree of the President of Ukraine dated May 15, became a significant impetus in the development of software products for the digitization of accounting in Ukraine 2017 No. 133/2017 [15].

Currently, the services offered on the market of special technologies for the digitization of accounting are services that to one degree or another solve the problems of Ukrainian enterprises, in particular: InfoTAX, iFin, Fairo, Taxer, Reportax, BookKeeper, Dilovod, Master: Accounting, Litachok, others [16-18]. So, in order to obtain information about the state of settlements with the budget, registration and accounting data, the results of document processing, the occurrence of tax debt, the terms of reporting and payment of taxes, it is possible with the help of the InfoTAX chatbot offered by the State Tax Service of Ukraine [16]. In parallel with the launch of chatbots, the Ukrainian company iFin offers the functioning of electronic, legally significant document flow with controlling bodies and submission of reports in electronic format for various fields of activity [19].

The Fairo tax application for individual entrepreneurs also allows users to create and send tax reports and reports on the amounts of the accrued income of insured persons, the amounts of the accrued single contribution, as well as automate accounting processes, and it is additionally suggested to use banking [17].

The Taxer service provides the following opportunities for entrepreneurs, both for free and with paid packages: creation and sending of electronic reports; online tax payment; interactive calendar with current tax events for the entrepreneur; online accounting; use of information of the current knowledge base; consultations of professional lawyers and accountants [20].

With the help of the Reportax telegram bot service, it is possible to calculate and pay taxes, as well as submit reports to the relevant state structures, the function of reminding entrepreneurs about the deadlines for submitting reports and tax payments is fixed [16].

Another representative that provides the possibilities of modern online accounting for agribusiness in Ukraine is the BookKeeper service, which has created conditions for keeping records of activities, compiling and submitting reports by enterprises and individuals, entrepreneurs of all taxation systems, as well as non-profit organizations using any device [18].

It should be noted that most of the mentioned services operate with the advantage of submission of reports by users who are taxpayers in electronic form, which not only saves time and labour resources but also fully complies with the norms of the Tax Code of Ukraine, which provides for the submission of reports in electronic form [21]. Of course, the digital technologies used by the developers make it possible to constantly update the software in accordance with the current changes in tax legislation, to perform arithmetical control of tax reporting indicators, automatically archive electronic copies of reports and other documents, and most importantly, they are able to protect information from unauthorized viewing and interference [22].

In more detail, we will pay attention to digital solutions Dilovod, MASTER: Accounting, Litachok [23-25], which can be used to digitalize the accounting of agricultural producers, as these products take into account the peculiarities of management in the agricultural sector.

In 2014, the Ukrainian online accounting and reporting service Dilovod began to implement software that allows you to optimize the accounting process and carry out timely control over all business processes [23]. So, among the proposed software products, which are equipped with full functionality for the organization of accounting of natural persons, entrepreneurs and legal entities, there are solutions for enterprises in the agro-industrial sphere, in particular: crop production, harvest production, animal husbandry. The program allows you to automate and control: time-consuming processes of accounting, management and tax accounting; compilation of electronic reporting; calculation, maintenance and payment of wages; production accounting; management of labour resources; supply process management and others. The Dilovod program provides two interfaces, for an entrepreneur and an accountant, and the work of several users at the same time is ensured. It is convenient that the program is used online as a service and there is no need to buy configurations, licenses, and rent or purchase a server. It is also important that all segments of the program are updated in accordance

with changes in the legislation of Ukraine, in particular, the terms of reporting, forms of reports, and primary documents are updated [23]. The first software product from the MASTER line – the software product MASTER: Accounting for small and medium-sized businesses were presented to the Ukrainian market in September 2017. MasterBukh offers the MASTER: Agro software product for comprehensive accounting to agricultural enterprises on the Ukrainian market, which can be available in the cloud and stationary solutions [24].

The accounting program provides accounting and tax accounting, accounting of salaries and personnel, specialized accounting of crop production, animal husbandry, transport and land lease [24].

In order to expand the functional boundaries of the MASTER: Agro software product, applications are provided [24]:

- MASTER: TEP (technological and economic indicators) allows you to plan the production load of sowing areas for the next year according to the specified parameters with the possibility of creating several planning scenarios;

- MASTER: The flow is designed for the operational management of quantitative and qualitative accounting of grain on the flow;

- MASTER: Agronomy is designed to record the work of an agronomist in the system and to account for the actual costs of fieldwork, accounting for work performed in the field;

- MASTER: The operative warehouse is designed for keeping quantitative records of goods and material values, in which each storekeeper has the opportunity to display the arrival and departure of material values, compare their balances, and print orders without using accounting data.

- MASTER: The elevator is designed for keeping quantitative and qualitative records of the grain elevator and for keeping contractual and contractual records at the elevator.

The special Ukrainian software designed for the accountant's work on smartphones, tablets or other mobile devices is the "Airplane" mobile application. The developers of the Mykolaiv National Agrarian University, led by Yu. Volosyuk, provided a significant amount of useful reference and application information for users, which is designed to facilitate users' access to the necessary information, which will always be relevant due to its constant updating by editors [25]. So, the practical functionality of the application includes a chart of accounts; a catalogue of accounting transactions; balance calculation; calculators for calculating value-added tax, personal income tax, income tax, real estate tax, wages, vacation, sick leave, depreciation; catalogue of regulatory documents [25].

Robotic process automation (RPA) is becoming increasingly important in the digitization of accounting processes. The essence of RPA is to use a software robot that is configured to run and control other software. At the same time, studying the features of RPA as software that is programmed to perform basic repetitive tasks

in all applications, researchers point out that ensuring the technical capabilities of the user is only part of the RPA implementation process [26]. It is necessary to standardize and optimize business processes and to create tools such as a scorecard for ranking tasks. It will also be advisable, when including a software bot in certain processes, structured, repetitive, based on rules and with digital inputs, to change the structure of units and the responsibilities of executors in order to avoid duplication of functions and to adjust internal control procedures [26].

The implementation of RPA in the business processes of the enterprise will definitely change the work of accounting employees, which is confirmed by research results [27]. The authors distinguish five roles of accounting employees in the digital transformation of accounting, in particular: identifier, explainer, instructor, supporter, and analyzer of the organization's automation initiatives. Undoubtedly, in order to be competitive in the conditions of digital transformations of business processes of an agricultural enterprise, an accountant needs to acquire new special technical skills [27]. Therefore, an agrarian business that transforms the accounting process with the help of digital technologies will undoubtedly minimize the cost of accountants' working time, accelerate the implementation of accounting functions, have an improved document flow process, a lower level of errors, better quality of reports, which will save financial resources and meet the needs of internal and external stakeholders in information.

We can assert that thanks to the initiatives and with the support of the state regarding the digitization of economic processes in Ukraine, Ukrainian business, in particular agrarian, receives greater competitive advantages, increases profits, has the opportunity to receive investments and pay more taxes, and thus make its contribution to the socio-economic development of the country [28].

As early as 2020, the Project of Conceptual Foundations "Digital Agenda of Ukraine – 2020" set out goals designed to lay the foundation for the transformation of sectors of the Ukrainian economy into competitive and efficient ones due to the formation of a "digital" economy, "digitalization" of business and industry [29].

For the agricultural sector, the technology "Digital" agriculture (e-farming) was provided, which is a new management strategy in agronomy, the fundamental foundations of which are the use of not only "digital" technologies by agricultural enterprises, but also new technical means [29]. The developers of the project proposed to use in combination: management and executive mechanisms; geo-information systems, global positioning, and on-board computers that differentiate methods of cultivation, application rates of fertilizers, chemical meliorates and plant protection agents. According to the given data, such measures will contribute to the economic efficiency of production, increase the yield from 1 ha of land, provide soil protection, reduce crop losses in the fields, and make work in the agricultural sector safe and attractive [29].

Taking into account the fact that according to the level of use of agrochemicals, Ukrainian agricultural production is set aside for 30-40 years due to careless use of soils, the concentration of inefficient production of only cheap raw materials, etc., the introduction of the technology of "Digital" agriculture should have a positive effect on the structural and technological reforming of the agricultural sector and will contribute to the social economic revival of rural areas. An important factor for revitalizing the economy of Ukraine is the "Digitalization" of the socio-economic sphere, which involves the modernization of the "Electronic Payments and Settlements" system, the purpose of which is to facilitate the commercial cooperation of the stakeholders of the economy, as well as to combat the "shadow" circulation of funds [29]. The section "Electronic commerce, cross-border e-commerce", set out in the project of the Conceptual Principles "Digital Agenda of Ukraine – 2020" [29], highlights the changes regarding accounting in the conditions of digital transformation, which provide for amendments to the Law of Ukraine "On Accounting and financial reporting" [30]. Thus, primary documents are the confirmation of business transactions and the basis of their display in accounting, then at the legislative level, it is necessary to recognize electronic documents and notifications made by primary accounting documents [19].

Also, for Ukrainian agrarian business, the Ministry of Agrarian Policy and Food of Ukraine plans to implement a digital transformation, which will allow the use of digital solutions not only in the management of land resources but also in the management of agricultural producers in general [31].

At the first level, the organization of relations between the state and participants of the agrarian sector, who are the main stakeholders of the process, is foreseen. Thus, all relations and services that will arise between agricultural enterprises and the state will have the opportunity to take place on the basis of a digital omnichannel platform. At the second level, the digital transformation of agricultural enterprises will already be carried out directly. It is assumed that such an initiative will be effective in the introduction and systematic updating of information and technological support for the collection of information about the big data industry, the spread of data-driven decision-making methodologies, and the involvement of united territorial communities in the process of digital development of territories [31].

Currently, the All-Ukrainian project "Vkursi Zemli Ukraine – Digitization of the Land Bank of Ukraine" has been launched in Ukraine as part of the system of digital transformation in the field of land use. The service will serve to obtain information about land plots, their owners and tenants, and lease terms on the territory of Ukraine. Also, the online platform "Vkursi Zemli" will help representatives of agrarian businesses effectively manage their land resources, as well as promote the attraction of financial resources by popularizing their

business reputation in front of service and financial companies [32]. Digital developments minimize labour and time costs for accounting operations. Thanks to the latest software, the use of land resources is becoming more and more efficient, because with the increase in the area of cultivation, the volume of produced products and their sale on both domestic and international markets increases. Thus, using the possibilities of precision agriculture will allow to reduce the producer's costs by 100 billion dollars, reduce water consumption by 180 billion m³, and at the same time increase the production of agricultural products by 300 million tons [13].

In the process of research, scientists conclude that objectively digital accounting ensures the systematic implementation of accounting functions, as a rule, it is the implementation of standardized operations (collection and processing of primary data, preparation of various types of reports, data analysis, etc.), as quickly as the technical capabilities of the enterprise allow and accountants' awareness of accounting tools using computer equipment and digital technologies, specialized Internet resources, international and Ukrainian regulatory materials, web links, accounting software and applications [33].

In general, in order to determine the needs of farmers for sowing, the Ministry of Agrarian Policy and Food launched access to the resources necessary for the sowing campaign, created an agricultural platform for collecting the actual needs of farmers for sowing in real-time, and an online platform for improving the logistics routes of farmers in conditions of martial law [34].

The main problems of the widespread implementation of digital accounting by agricultural enterprises, along with limited financial resources and lack of familiarity of accountants with modern accounting technologies, include the problems of information provision outlined by a group of researchers in scientific work, in particular: "insufficient level of information flows for all key users; the use of paper technologies in the collection, processing and analysis of information; lack of statistical indicators at the sectoral, regional and state levels" [35].

It is worth noting that the qualitative transformation of the management component of enterprises of the agro-industrial complex due to the organization of digital accounting depends, first of all, on the solution of the main tasks of the complex normative-legal and organizational approaches to the sphere of "digitalization" of the economic sectors, which consists in the joint efforts of the authorities, the public and business [28; 29; 36]:

- to increase the efficiency of management in the agro-industrial complex through the introduction of end-to-end digital technologies;

- to create technologies for obtaining, checking, structuring, synthesizing and analyzing reliable and up-to-date data on the state of the agro-industrial complex, necessary for making reasonable and timely management decisions;

- to create technologies and services that facilitate

the access of agro-industrial enterprises to credit and insurance products;

- to implement the principles of a unified system of identification and authentication, maintaining a digital profile of enterprises of the agro-industrial complex;

- to increase the effectiveness of state support measures by reducing costs and time in providing this support;

- to encourage the implementation of digital technologies in the production processes of agricultural enterprises, including through state support;

- to increase the effectiveness of the inter-economic interaction of enterprises of the agro-industrial complex with the state.

The fundamental transformation of the agrarian sector continues to gradually grow and contributes to the effective functioning of Ukrainian agrarian business, the modernization of the infrastructure of rural areas in general, and therefore is an effective tool in ensuring the socio-economic effect for the development and stability of the life of the rural community.

CONCLUSIONS

The introduction of digitization of accounting determines the harmonious use of technologies, accounting programs, applications and other business tools, which allows ensuring the recording of business transactions, changes in business processes, prompt response to deviations, as well as the implementation of the unhindered exchange of information in real-time, its updating and synchronization. In the current economic conditions during the martial law

in Ukraine, the digitization of business processes, including the accounting component, becomes an effective form of work organization, enabling safe conditions for employees as much as possible, contributes to the further functioning of agricultural enterprises, which solves the problem of employment of the population, preservation of economic stability countries.

The effectiveness of the digitalization of accounting processes in the activities of agro-industrial enterprises depends on the amount of technology financing, the qualifications and competence of accounting employees, as well as digital transformations of rural areas, in particular, ensuring unhindered access to high-speed Internet.

The methodology and organization of the digitization of accounting processes in the enterprises of the agro-industrial complex, where the practice of using information technologies is not active, and the issue of choosing online services is difficult due to the limited number of software products in the Ukrainian IT market that take into account the sectoral features of business processes, require further scientific research. agricultural sector. A thorough study of the above-mentioned aspects will allow solving the problems of digitalization of accounting in the management of business processes of enterprises of the agro-industrial complex and will contribute to the effective use of their financial resources, the improvement of technologies for obtaining, storing and transmitting analytical information to stakeholders, the methodology of systematization of information, increasing the competence of accounting employees and increasing the prestige of the accounting profession.

REFERENCES

- [1] Official website of the State Statistics Service of Ukraine. (n.d.). Retrieved from <http://www.ukrstat.gov.ua/>.
- [2] Vodyanka, L.D., & Yuriy, T.P. (2020). Digitalization and digital platform in the economic development of the agricultural sector. *Ekonomika APK*, 12, 67-73.
- [3] Demchyshak, N.B., Radux, O.O., & Gryb, V.M. (2020). Digitalization of the agricultural sector in the conditions of opening the land market in Ukraine. *Agrosvit*, 12, 10-18. doi: 10.32702/2306-6792.2020.12.10.
- [4] Zelinska, O.V., & Suxoczka, S.M. (2016). The use of modern information technologies in the agroindustrial complex. *Galician Economic Journal*, 2, 148-152.
- [5] Lukanovska, I.R., & Xorunzhak, N.M. (2019). Accounting in the digital economy: Problems and prospects. *Black Sea Economic Studies*, 45, 175-179.
- [6] Rudenko, M.V. (2019). Digital transformation technologies in agricultural enterprises. *Agrosvit*, 23, 8-18.
- [7] Agricultural business, metallurgists, IT, chemistry and others: How are the giants of the Ukrainian economy doing. (n.d.). Retrieved from <https://www.epravda.com.ua/publications/2022/06/6/687837/>.
- [8] What about our exports and imports? How Ukraine trades in conditions of war. (n.d.). Retrieved from <https://www.epravda.com.ua/publications/2022/03/25/684674/>.
- [9] Bruxanskyj, R., & Spilnyk, I. (2020). Digital accounting: Concepts, roots and current discourse. *The Institute of Accounting, Control and Analysis in the Globalization Circumstances*, 3-4, 7-20. doi: 10.35774/ibo2020.03.007.
- [10] Potryvayeva, N.V., Kozachenko, L.A., & Lugova, O.I. (2020). Adaptation of accounting to the digital economy. In *Accounting, taxation, analysis and audit: Current status, problems and prospects: Materials of the VI international scientific-practical conference* (pp. 98-99). Chernihiv: Chernihiv Polytechnic National University.
- [11] Korol, S.Ya., & Klochko, A.O. (2020). Digital technologies in accounting and auditing. *State and Regions. Series: Economics and Entrepreneurship*, 1, 170-176. Retrieved from http://nbuv.gov.ua/UJRN/drep_2020_1_31.
- [12] Technology industry 4.0. (n.d.). Retrieved from <https://it-enterprise.com/knowledge-base/technology-innovation>.
- [13] The turbulent path of Ukrainian farmers to EU markets. (2019). *AgroNews: The Main Agricultural News*. Retrieved from <https://agronews.ua/news/buremnyy-shliakh-ukrains-kykh-ahrariiv-na-rynky-yes/>.
- [14] Official website of the Microsoft. (n.d.). Retrieved from <https://www.microsoft.com/uk-ua/microsoft-365/enterprise>.

-
- [15] Decree of the President of Ukraine No. 133/2017 “On the Application of Personal Special Economic and Other Restrictive Measures (Sanctions)”. (May, 2017). Retrieved from <https://www.president.gov.ua/documents/1332017-21850>.
- [16] As an IT specialist, you can run your business independently. Advice from a financial consultant. (2022). Retrieved from <https://dou.ua/forums/topic/36133/>.
- [17] Official website of the Fairo. (n.d.). Retrieved from <https://www.fairo.com.ua/>.
- [18] Official website of the Bookkeeper: Ukrainian online accounting. (n.d.). Retrieved from <https://bookkeeper.kiev.ua/>.
- [19] Official website of the iFin. (n.d.). Retrieved from <https://www.ifin.ua/>.
- [20] Official website of the Taxer. (n.d.). Retrieved from <https://taxer.ua/uk/media>.
- [21] Law of Ukraine No. 2755-VI “Tax Code of Ukraine”. (December, 2010). Retrieved from <https://zakon.rada.gov.ua/laws/show/2755-17#Text>.
- [22] Reporting in electronic form – many advantages for taxpayers. (n.d.). Retrieved from <https://lv.tax.gov.ua/media-ark/local-news/print-449361.html>.
- [23] Official website of the Dilovod.ua. (n.d.). Retrieved from <https://dilovod.ua/about/>.
- [24] Official website of the MASTER: Accounting. (n.d.). Retrieved from <https://masterbuh.com/product/4>.
- [25] Volosyuk, Yu.V., Buganov, O.V., & Endres, V.S. (2019). Formation and features of using the android application in the process of higher economic education. *Modern Economics*, 18, 26-30. doi: 10.31521/modecon.V18(2019)-04.
- [26] Kokina, J., & Blanchette, S. (2019). Early evidence of digital labor in accounting: Innovation with Robotic Process Automation. *International Journal of Accounting Information Systems*, 35, article number 100431. doi: 10.1016/j.accinf.2019.100431.
- [27] Kokina, J., Gilleran, R., Blanchette, S., Stoddard, D. (2021) Accountant as digital innovator: Roles and competencies in the age of automation. *Accounting Horizons*, 35(1), 153-184. doi: 10.2308/HORIZONS-19-145.
- [28] Homyakova, D.O., & Starykovska, D.O. (2021). Prospects of using digital technologies in the activities of agricultural enterprises. *Efektivna Ekonomika*, 1. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=8521>.
- [29] Digital Agenda of Ukraine project. (2020). Conceptual principles (version 1.0). Retrieved from <https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf>.
- [30] Law of Ukraine No. 996-XIV “On Accounting and Financial Reporting in Ukraine”. (July, 1999). Retrieved from <https://zakon.rada.gov.ua/laws/show/996-14#Text>.
- [31] Official website of the Ministry of Agrarian Policy and Food of Ukraine. (n.d.). Retrieved from <https://minagro.gov.ua/>.
- [32] Official website of the Vkursi Zemli. (n.d.). Retrieved from <https://vkursi.pro/zemli>.
- [33] Panasyuk, V., Burdenyuk, T., & Muzhevych, N. (2021). Peculiarities of digital accounting transformation. *Galician Economic Journal*, 1(68), 70-76.
- [34] Economic Front: Changes in legislation introduced during the war for agribusiness. (2022). Retrieved from <https://agravery.com/uk/posts/show/ekonomichnij-front-zmini-v-zakonodavstvi-aki-zaprovadili-u-voennij-cas-dla-agrobiznesu>.
- [35] Honcharenko, I., Kozachenko, L., & Moroz, T. (2018). Information provider for the development of rural territories. *Baltic Journal of Economic Studies*, 4, 93-99.
- [36] Shabatura, T.S. (2019). Prospects for development of agricultural sector of economy of Ukraine in the context of digital technologies. *Pryazovskiyi Economic Herald*, 3(14), 123-128.
-

Цифровізація обліку в управлінні бізнес-процесами підприємств агропромислового комплексу

Наталя Володимирівна Потриваєва, Лілія Анатоліївна Козаченко,
Ірина Іванівна Недбайло, Ірина Василівна Нестерчук

Миколаївський національний аграрний університет
54008, вул. Георгія Гонґадзе, 9, м. Миколаїв, Україна

Анотація. Статтю присвячено проблемам цифровізації бухгалтерського обліку в аграрному секторі України як основного елемента модернізації бізнес-процесів в умовах діджиталізації. Відповідно набувають актуальності питання використання сучасного інструментарію бухгалтерського обліку аграрних підприємств, що в більшій мірі залежить від реалізації сценарію цифрового розвитку сільських територій України, зокрема розвитку цифрової інфраструктури. Мета статті – дослідити сучасні тенденції цифровізації обліку підприємств аграрної галузі та їх вплив на управління бізнес-процесами в умовах сьогодення. У дослідженні використано діалектичний метод пізнання та загальнонаукові прийоми і принципи комплексних досліджень, які включають емпіричні, теоретико-когнітивні та загальні логічні методи, зокрема: спостереження, порівняння, опис, узагальнення; аналіз, синтез, аналогію і абстрагування; системний підхід; монографічний; порівняльного аналізу. У статті досліджено вигоди від використання інформаційних технологій у діяльності підприємств аграрного сектору та визначено чинники, які уповільнюють процес його трансформації. Встановлено, що розвиток аграрного підприємства на основі цифровізації управлінських процесів потребує значної кількості часу для впровадження, що пов'язано з вкладенням суттєвих інвестицій у придбання та супровід технологій, а також навчання співробітників новим професійним навичкам. Розглянуто новачі сучасного інформаційного простору, що можуть бути використані у бізнес-середовищі задля цифрової трансформації бізнесу, зокрема з метою продуктивної організації облікових процесів. Узагальнені результати та сформульовані висновки можуть застосовуватися у практичній діяльності українських аграрних підприємств у контексті використання сформованої інформаційної бази технологій, онлайн сервісів, спеціалізованих додатків для цифровізації процесів обліку, складання звітності, оподаткування, а також визначення критичних чинників уповільнення використання цифрових технологій, що сприятиме загальній трансформації бізнес-процесів суб'єктів господарювання агропромислового комплексу

Ключові слова: діджиталізація, цифрові трансформації, бухгалтерський облік, аграрна сфера, інформаційні технології