

DOI: <https://doi.org/10.34069/AI/2022.54.06.23>

How to Cite:

Nazarova, H., Kashchena, N., Nesterenko, I., Kovalevska, N., & Kashperska, A. (2022). Theoretical and methodological aspects of improving the functioning of the accounting system. *Amazonia Investiga*, 11(54), 243-255. <https://doi.org/10.34069/AI/2022.54.06.23>

Theoretical and methodological aspects of improving the functioning of the accounting system

Aspectos teóricos y metodológicos de la mejora del funcionamiento del sistema contable

Received: May 8, 2022

Accepted: June 13, 2022

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Abstract

The objective of this article is to improve the accounting system through the development of the network accounting system vectors based on software products that determine the perspectives of the accounting service. The research used different methodological tools such as comparison, analysis, modeling and generalization. The main result is an organizational model of the transition to a network accounting system based on certain modern software products will have an impact on the development of business units and the economy as a whole. The need to further develop the accounting system has been demonstrated through the phased application of the network accounting system model using digital technologies, which contributes to a timely response to the challenges and risks of our time.

Keywords: program, networks, system, accounting, information, economy, digital, infrastructure.

Resumen

El objetivo de este artículo es mejorar el sistema de contabilidad a través del desarrollo de los vectores del sistema de contabilidad en red basado en productos de software que determinan las perspectivas del servicio de contabilidad. La investigación utilizó diferentes herramientas metodológicas como la comparación, el análisis, la modelización y la generalización. El resultado principal es un modelo de organización de la transición a un sistema de red de la contabilidad sobre la base de determinados productos de software moderno tendrá un impacto en el desarrollo de las unidades de negocio y la economía en su conjunto. Se ha demostrado la necesidad de seguir desarrollando el sistema de contabilidad mediante la aplicación por fases del modelo de sistema de contabilidad en red utilizando tecnologías digitales, lo que contribuye a dar una respuesta oportuna a los retos y riesgos de nuestro tiempo.

Palabras clave: programa, redes, sistema, contabilidad, información, economía, digital, infraestructura.

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Introduction

In economic conditions associated with the challenges of our time a key resource for improving the efficiency of business management of both Ukrainian and foreign companies affecting the development of the economy as a whole is information and technical support.

The problem of the study is that information is an integral part of accounting procedures and plays an important role in assessing the risks of influencing the development of business units and the economy. Especially important in wartime conditions, which leads to a downturn in the economy, which requires significant changes in the organization of the functioning of the accounting system using the tools of digital technology.

The vector of the study is aimed at sufficient provision of business units and the economy as a whole with the necessary information, needing to improve accounting technology through the use of modern information resources of domestic production, and as a consequence of the development of a network accounting system and the formation in the future.

Purpose of the study. To characterize the process of improving the functioning of the accounting system by assessing the essence and problems of integration of digitalization mechanisms in order to develop vectors of development of a network accounting system based on domestic information software products that will determine the prospects of accounting services.

To achieve the result of the study, the following tasks are defined:

1. To analyze the accounting system as information support for business management on economic development;
2. Identify areas to improve the informativeness of the accounting system through the development of vectors of accounting technology based on modern software products that will facilitate the creation of a unified digital infrastructure as an effective way of business management in modern conditions, and as a consequence of the transition to a network accounting system.

Literature Review

The chosen topic of the research correlates with the modern vector of scientific research of theorists and practitioners from different countries on the improvement of the accounting system as an effective tool for managing the development of the economy. In particular, the formation and development of accounting in the conditions of the digital - economy (Hagen, 2018). The pros of digitalization in a growing innovation environment are highlighted, which will improve efficiency, minimize costs, and rapid growth of data, which will lead to the use of modern software products and will contribute to the development of the economy in the long run (Schwab, 2016). The prospect of expanding information to predict the future, which contributes to controlling, meeting the criteria of comprehensiveness and integration, provides a holistic view of the activities of business units in the past, present, and future time. The use of the system approach contributes to quality management based on the identification and solution of problems while integrating and directing new tools to influence the activities of all services to meet the set future objectives, which is especially important today in the context of the development of digital technology. A study of audit quality in an information technology environment in Vietnam (Nguyen et al., 2020) compared approaches to illustrate potential IT audit quality factors. The results show that independence, accounting knowledge, and skills for auditing are the most important factors, i.e., auditors must have sufficient competent and professional skills to conduct high-quality audits, especially in IT environments.

That is, the functioning of the new economy is associated with increased investment in new technologies (Mandel, 2001), where high rates of growth are driven by the growth of capital productivity, which will be observed only if the prices of information technology equipment will tend to decrease, which will increase productivity not only for the computer industry but also for the economy as a whole.

It is important that the new economy does not change economic laws but demonstrates a new quality of growth and opens new opportunities for business and economic development in general. Benefits from the development and implementation of the Internet are significant and will be even greater, as there is a direct link between information technology and production volume, i.e., it promotes the development of the

economy with effective management based on modern information technology, which affects the quality of information. To ensure the reliability, transparency of information is necessary to assess the quality of integrated reporting, the proposed econometric model for assessing the quality of integrated reporting (Chyzhevska et al., 2021), which will be useful to all enterprises that form integrated reporting. The construction of an econometric model for assessing the quality of integrated reporting will make it possible to assess the quality of such statements, and this approach to quality assessment undoubtedly proves the need for continuous investment in information technology, professional development not only for specialists in the accounting department of enterprises but also for other departments, especially important in the current environment. digital - technologies. Attention should be paid to the elements of digitalization, in particular the Internet of Things as a global network of physical devices connected to the Internet, namely things with arranged sensors, sensors capable of transmitting and exchanging information through common control centers, management, and information processing (Klymenko et al, 2022). The authors' understanding of the prospects for the introduction of information technology, the spread of the latest technologies and management systems has a positive impact on the quality of information support for market participants. At the same time, modern business at different levels faces a number of problems: the issues of technological equipment networks, economic security, the optimality of management decisions to create a single digital infrastructure, which cannot be done without the use of modern accounting tools, remain not fully defined.

They substantiated that, in general, the effect of integration manifests itself based on the synergy between information technology and software products, and the coordinated work of departments and employees. Information integration between automated accounting systems and electronic reporting and analysis programs is promising for farms and small agricultural enterprises (Marta et al., 2021). Medium and large agricultural enterprises it is advisable to form integrated information systems based on the combined approach, that is, the integration of software subsystems from different developers in accordance with the business needs of the enterprise. Master: Agro and AgriChain are relevant for agricultural enterprises. The success of implementation and use of integrated information systems largely depends on the

interest of management and the willingness of professionals to work with information and use and develop software products. For effective implementation when implementing projects there is a need to develop software where previous experience has been used to change approaches to control actions and material analysis (Coman et al., 2022). By conducting a study of scholars' views on the impact of digitalization on the quality of accounting information (Powell et al., 2021), it is found that strengthening certain quality attributes does not conceptually change approaches to quality. It is proved that even the best development of technology is not yet able to replace the person - a specialist who determines and sets the direction of the quality of accounting information at the entrance to the accounting system according to the authors. Increasing the innovation potential of Ukrainian companies is possible on the basis of transparency of sustainability reporting that meets the needs of users in a digital technology environment (Vasilieva et al., 2017). It is necessary to determine the factors that negatively affect the process of digitization of the audit and identify possible directions for the development of audit activities in a computerized environment through the refinement of software for auditors in accordance with the requirements of the modern world, which will allow the audit of the highest quality (Nazarova et al., 2021; Sysoieva et al., 2021).

Methodology

Approbation of practical and methodological tools determines the effectiveness of scientific research, where the main hypothesis is the development of vectors of development of network accounting system in terms of improving the technology of accounting service functioning, which will contribute to the formation of a unified digital infrastructure, and as a consequence, the transition to a network economy. The main foundation for the formation of P(S)A accounting system, regulatory legal acts on accounting practices, and the current software products of domestic production. The methodological basis of the study is the comparison of the assessment of the problems and integration of the mechanisms of digitalization; analysis of the factors of the influence of improvement tools on the opportunities and benefits; modeling to develop a model for the organization of accounting development The system approach is the basis for improving the organizational and methodological provisions of the functioning of accounting in conditions of digital - technology.

With the help of the modeling method, the model of methodical maintenance of the organization of development and transition to a network system of accounting was developed. The method of generalization was used for writing conclusions. It should be noted that in the process of research it is necessary to carry out both an assessment of problems of integration of digitalization mechanisms and opportunities and advantages to ensure effective management of the economy, which will contribute to the organization of development and transition to the implementation of the network accounting system using modern software products of domestic production.

The main stages of the organization of development and transition to the network accounting system:

1. Providing normative documents on accounting operations;
2. Obligation for enterprises to use software products of Ukrainian origin;
3. Organization of work on the transition to network accounting system: 3.1. Introduction of electronic document management (platform - EDIN); 3.2. Introduction of accounting software, which will provide a network accounting system (software -MASTER: ACCOUNTING)

The research conducted shows practical results:

- 1) practical application of EDIN platform, which is a Ukrainian provider of electronic document management and has more than 10 services for the exchange of digital data: for retailers, for carriers, for accountants, for small, medium, and large businesses in any industry, the services of which are used by more than 5000 Ukrainian companies;
- 2) EDIN platform is the only Ukrainian provider that took part in the international EU4Digital project and carried out the exchange of documents for transportation with Moldova, Poland, and Armenia;
- 3) dissemination of EDIN experience in the international market as well, as there are many international companies among the platform users: Henkel, Unilever, Auchan, Sandora, Mondeliz, and others.

Prospects are outlined and vectors of translation of full information into a digital form in the

network, using the program - MASTER: ACCOUNTING of Ukrainian developers are declared. After all, the network provides opportunities for socio-economic research of the main characteristics of network problems and identifies the benefits of the impact of modern digital technologies on human behavior, the economic performance of business activities, and assessment of related risks, which will contribute to the process of development of a new network information economy. Generalization of the available research confirms that attention should be paid to the improvement of the functioning of the accounting system in order to obtain information support for economic management using the existing software products of domestic production, which will allow to form a unified digital infrastructure in the network and as a consequence improve the technology of accounting service, which in the future. will contribute to the formation of a network economy.

Results and Discussion

The use to the maximum extent possible of modern current software products and management methods form a new information economy, arising as a result of the adoption and implementation in practice of the technological paradigm. It is well known that the historical moment, characterized by the transformation of our material culture through the work of the technological paradigm, built around information technology, contributes to the construction of a new economy. This economy is a new system of connections and relations, which are formed not only in the sphere of production but also in all other spheres of life, forming the information society as a society of network structures, decentralized management, and modern strategies. Strategies arise as a result of the search for alternative solutions by scientists and managers, given that the possibilities of the mass production system are exhausted, and the future belongs to modern flexible production, which promptly responds to changes in customer demand and supply. This situation contributes to the emergence of so-called "horizontal corporations," emerging when demand is unpredictable in either quantity or quality; when markets around the world have diversified. Let us consider the characteristic of horizontal corporations (Fig. 1).

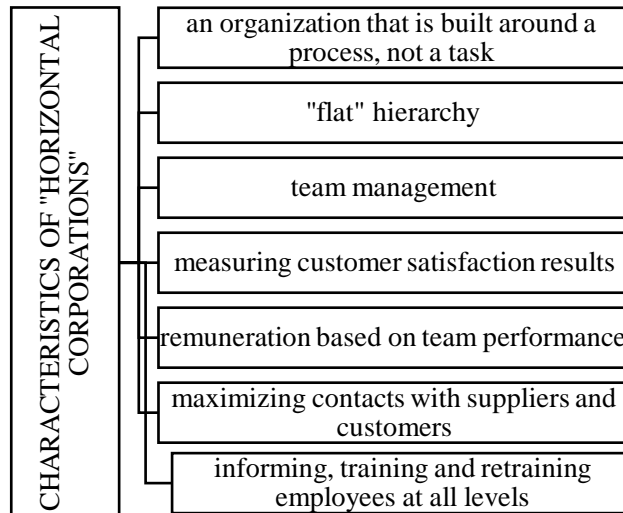


Fig. 1. Characterization of horizontal corporations as a network structure of information modern economy (developed by the authors)

It is important to note that horizontal corporations are network structures in the modern economy, where management is decentralized, production is arranged under the consumer, any of the economic units constituting the corporation has autonomy, allowing to compete with another structural unit within the general strategy of the new economy development.

That is the specific of the new economy is the transition of the information to the networks, which will promote the development of the network economy, where the new network organizations will be formed, which are able to develop because they are based on the information platform, which provides a new technological paradigm. It should be noted that the development of the Internet, information platforms, and software products contribute to the efficiency of network structures, which rely on Internet technologies.

The creation of networked business units will be the basis of e-business, developing through various network strategies. That is, networks are open structures that can expand indefinitely and are capable of communication within it. Network structures are dynamic, promote innovation and, at the same time, do not risk losing balance and

require the information provided by the accounting system, which is extremely important in the development of online trade, which saves administrative costs, reduce the price because there are no intermediaries and reduce the cost of inventory storage, which requires communication. Kelly (1999) noted that "...communications, which is ultimately what we mean by digital technology and communications, is not just a sector of the economy. Communications is the economy itself." That is, the formation of a new information economy with a network approach requires improvement in the functioning of accounting service technology through the development of a network accounting system. This system will improve the technology of accounting services, and as a consequence, the development of a network economy based on flexibility and adaptability.

The transfer of accounting to the networks does not devalue people, companies, regions, or individual activities, but changes their structural meaning, where information becomes the main component of managing the development of a network economy based on the capabilities of the Internet. Let's consider the main opportunities of the Internet to use the network approach in the development of accounting technology (Fig. 2).

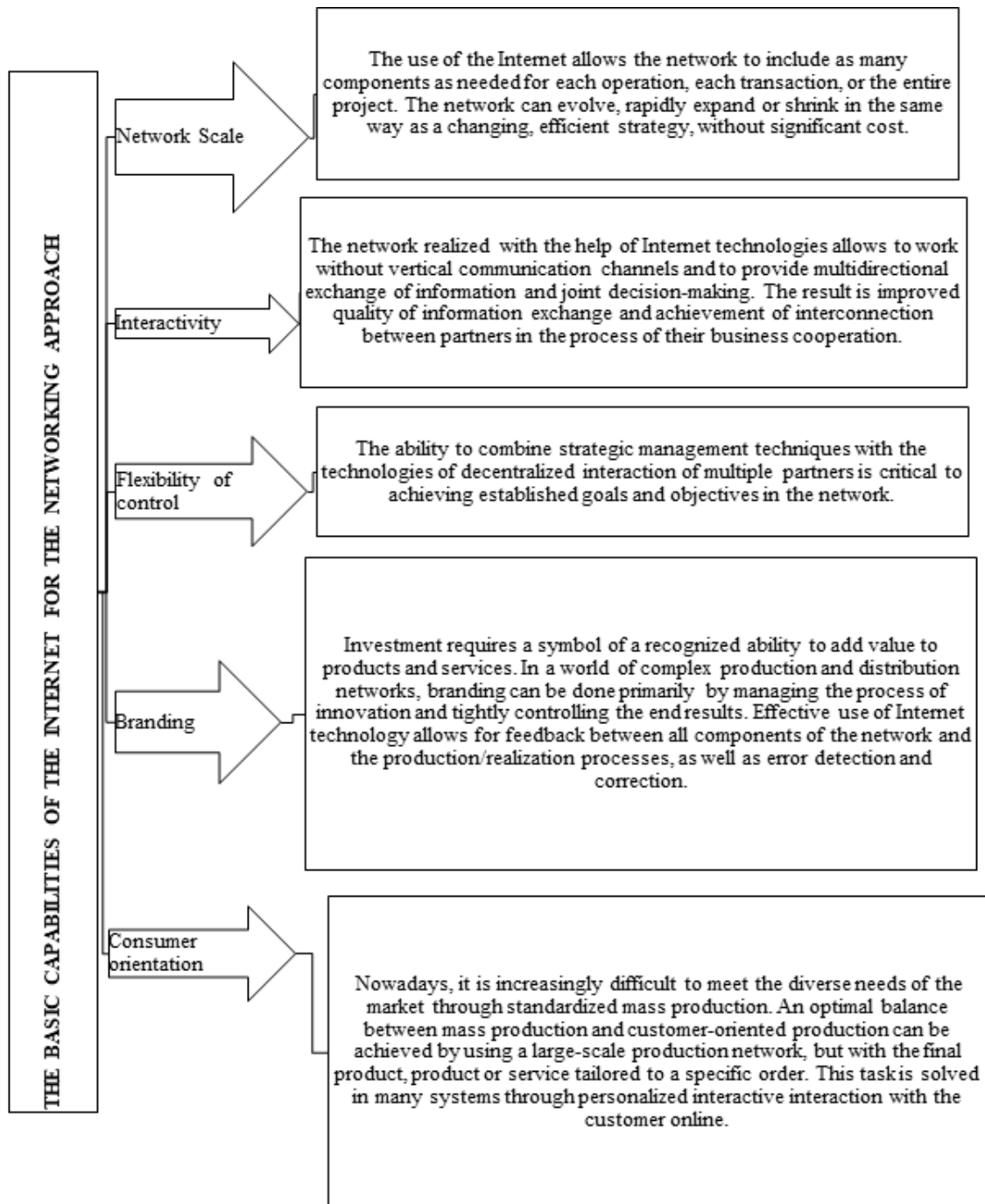


Fig. 2. The main opportunities of the Internet for a network approach to the development of accounting technology (developed by the authors)

The network accounting system can be called an effective management system, which contributes to the rapid receipt, dynamic processing of information for the formation of management decisions for the development of the economy of the country. In this system, there is a close link with all management functions, which will allow in the long term to reduce the costs of business units through the effective management of

resources. This approach to the development of accounting technology requires the use of new modern information technology of domestic production, which is especially important during the war in the country, which will facilitate the formation of a unified digital infrastructure and, consequently, the transition to the implementation of a network accounting system.

This situation is possible with the rational use of resources and the use of information software products of domestic production, which will ensure the development of a new philosophy of accounting in the context of digital technology.

To solve the problems associated with digitalization, it is necessary to use such tools (Nazarova et al., 2021):

- raise public awareness of the benefits and opportunities of using digital technologies through various information platforms (conferences, symposiums, workshops involving domestic experts and foreign specialists);
- create grant funds to conduct state-level financing and its cooperation with commercial banks and non-bank financial institutions to develop support programs that will facilitate the implementation and development of digital technologies;
- stimulate cooperation between businesses, banks, educational institutions, and public organizations with information users (stakeholders), which will help determine information needs in the context of digital technologies.

The practical side of accounting to transfer information to the network space based on software products produced in Ukraine will contribute to the formation of a unified digital infrastructure, and as a consequence, improving the functioning of the accounting system and solving the problems of integration of digitalization mechanisms. That is, the process of adapting accounting to modern requirements in

terms of the development of digital - technology leads to the formation of a new network paradigm of accounting.

It should be noted that to improve the organizational and methodological provisions of the functioning of the accounting system it is necessary to assess the essence and problems of integration of digitalization mechanisms, which point to changes in the organization of accounting technology by transferring information into digital form in the network, which will contribute to a unified digital infrastructure, is the basis of development and transition to a network accounting system using software products of domestic production.

We consider it necessary to highlight the order determining the development of technology and organization of transition to the network accounting system. Firstly, the provision of regulatory and legal documents in the field of accounting practices. Secondly, the use at the initial stage of electronic document management (EDIN platform). Thirdly, effective management requires a systematic approach, which cannot be reduced to solving individual problems only, in particular electronic document management, which requires the introduction of modern, flexible domestic software products, in particular – “MASTER: ACCOUNTING”, which will ensure the creation of a single digital infrastructure.

Let us consider our proposed model for organizing the transition to a network accounting system based on modern Ukrainian software products in conditions of the development of digital technologies (Fig. 3).

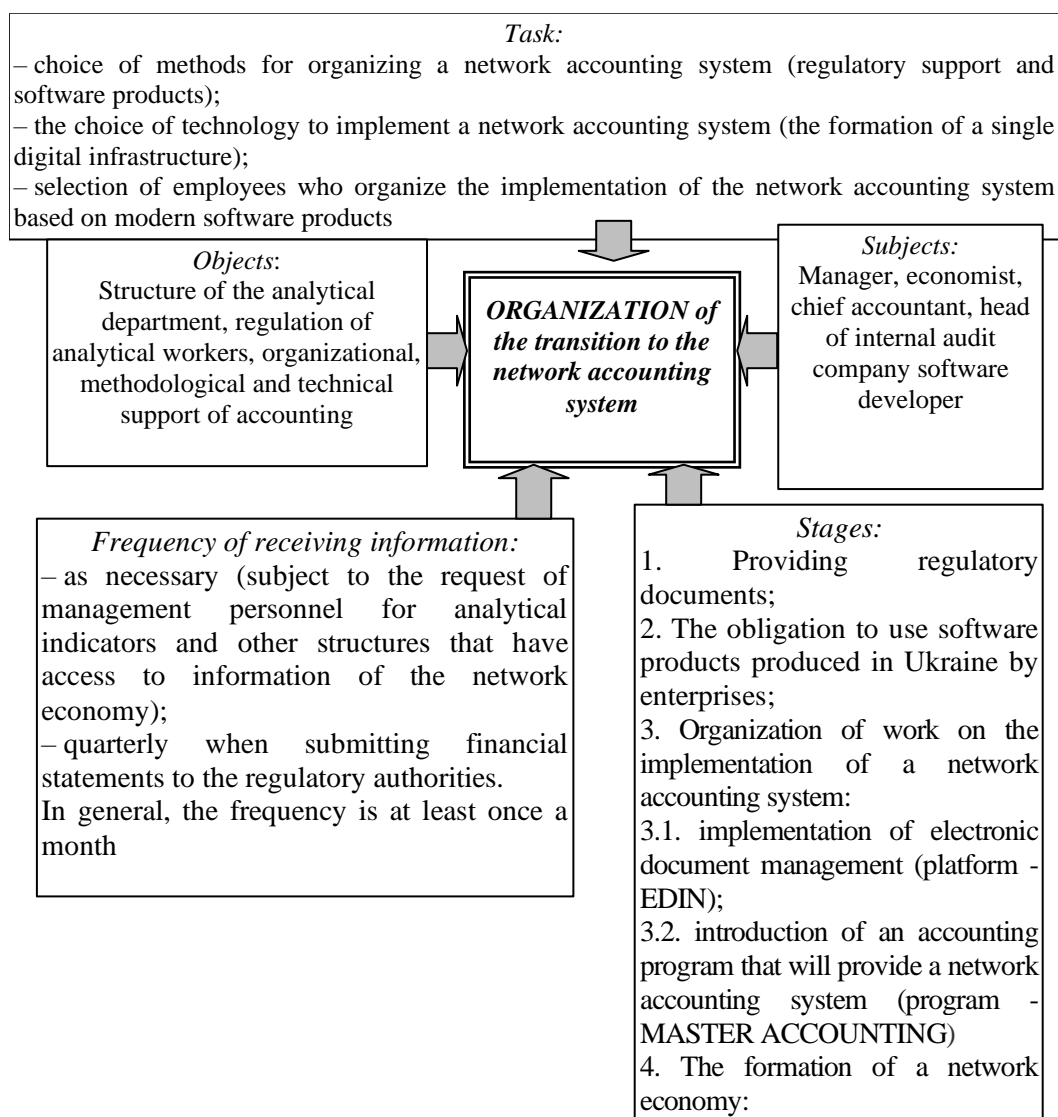


Fig. 3. Model of organization of development and transition to the network accounting system based on modern Ukrainian software products in conditions of digital technologies (developed by the authors)

To implement the proposed model should form a department whose responsibilities will include the functions of timely monitoring, control, and conduct activities for the development and further operation of the network accounting system based on modern software products. It should be noted that the Ukrainian provider of electronic document management EDIN has more than 10 services for the exchange of digital data: for retailers, for carriers, for accountants, for small, medium, and large businesses in any industry, services which are used by more than 5000 Ukrainian companies.

It is worth noting that the EDIN platform is the only Ukrainian provider that took part in the

international EU4Digital project and implemented the exchange of documents for shipments to Moldova, Poland, and Armenia. Numerous international companies such as Henkel, Unilever, Auchan, Sandora, Mondeliz, and others are among the users of the platform, which contributed to the dissemination of EDIN experience on the international market.

Today EDIN offers a separate solution for the cooperation of foreign and Ukrainian retailers and suppliers, which allows the exchange of electronic data for the sale and delivery of goods. Let's consider the characteristics of the most popular services of the EDIN platform - the only Ukrainian provider (Table 1).

Table 1.
The most popular services of the EDIN platform - the only Ukrainian provider.

№	EDIN Services	Feature
1	Free	A free service that allows you to sign deals, send primary and other documents without the complicated registrations and interfaces of similar services
2	EDI-Network	Exchange of all documents between retail chains and suppliers. For new users - FREE usage for 30 days
3	WhiteDoc	Flexible service for small businesses and large corporations with customized document approvals.
4	EDIN-Distribution	Service for electronic interaction between distributors and manufacturers
5	EDIN-e-TTH	Exchange of electronic waybills to simplify transportation
6	EDIN-Tender	Electronic platform for bidding and auctions, which helps to find new partners
7	EDIN-Price	Quick price negotiations between retail chains and suppliers without lengthy negotiations
8	EDIN-Distribution	Service for electronic interaction between distributors and manufacturers
9	EDIN-Certificate	Work with certificates of quality for goods and their search in a digital format
10	E-Good	Service for finding buyers and suppliers of goods online without the need for manual search

Source: compiled by the authors based on the materials EDIN (2020, April 15).

To integrate digitalization mechanisms in the process of improving the functioning of the accounting system, you can use the EDIN

platform, including the EDI-Network service, which provides the following capabilities (Fig. 4).

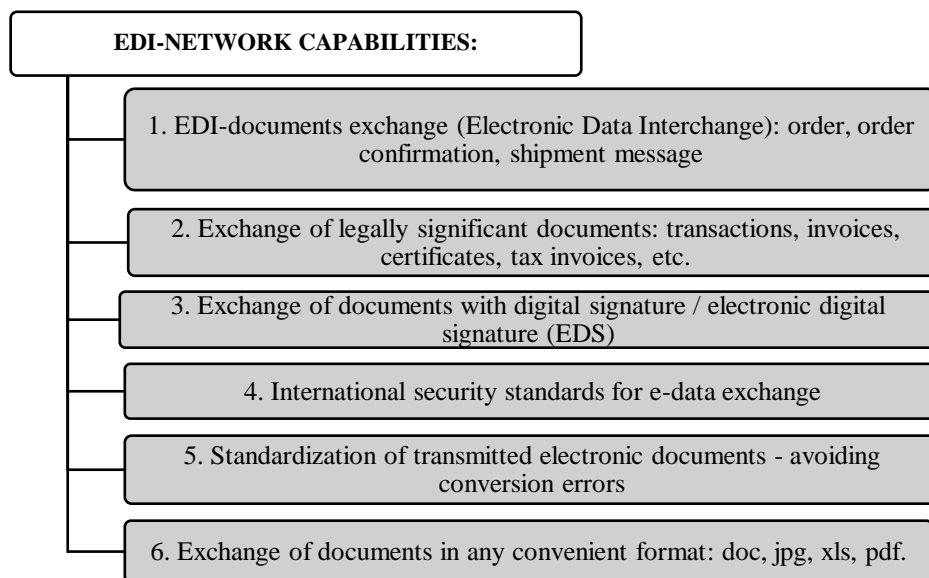


Fig. 4. Possibilities of EDI-Network service in the conditions of digitalization (developed by the author according to materials EDIN (2020, April 15).

Consider the advantages of EDI-Network service in a digital environment (Table 2).

Table 2.
Advantages of EDI-Network service in the context of digitalization.

BENEFITS	
№	
1	For retail chains Confirmation of the supplier's obligation to deliver the goods
2	For suppliers Fast receipt of an order from the network
3	Uniform standards of work with suppliers, transparency of data verification
4	No errors in the documents affecting the additional costs
	Advance preparation of storage capacities and simplification of goods acceptance process
	Automate the process without the need for operators to manually enter the SKU to confirm the order
	Free use of the service for the first 30 days from the date of registration

Source: compiled by the authors based on the materials EDIN (2020, April 15).

Consider the importance of implementing electronic document management to assess the process of improvement as an important step in the transition to the development of a network accounting system. It should be noted that the introduction of the Presidential Decree № 133/(2017) on the imposition of sanctions for Russian software contributed to the creation of a unique, modern, and progressive MASTER-Accounting program by Ukrainian producers, an understandable solution for the use of Ukrainian software for the practice of Ukrainian business units.

Created program is especially important today to block Russian software in the war, developed in accordance with the Russian Accounting Standards, the Tax Code, taking into account other regulations governing accounting issues in Ukraine. This product - MASTER-Accounting system implements a multi-level system of economic information protection, as cloud solution is placed in the best centers and is designed to prevent the infection of client computer and server, preventing malicious software from penetrating into the system.

(On the decision of the National Security and Defense Council of Ukraine of April 28, 2017 “On the application of personal special economic and other restrictive measures (sanctions),” 2017).

Let's consider the problems and mechanisms of their solution of the accounting system in the conditions of digitalization (Fig. 5).

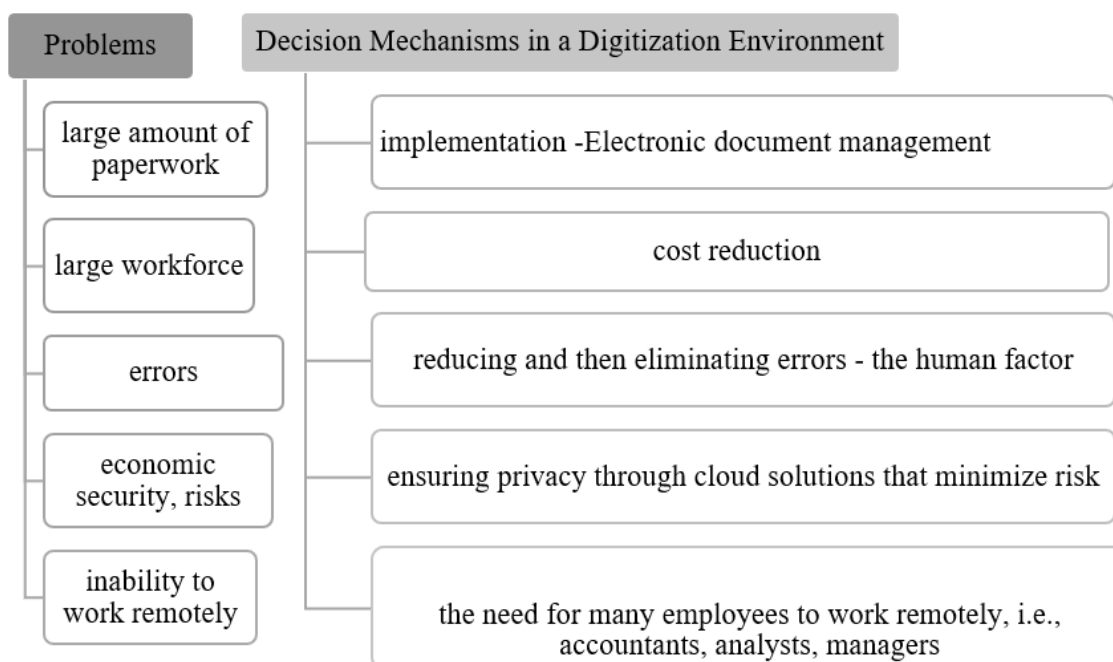


Fig. 5. Problems and mechanisms for solving the accounting system in the context of digitalization (developed by the authors)

The process of digitization of information of Ukrainian business units is slow, which is reflected in the digitalization of accounting services and requires full and reliable information for management decisions on the development of business units and the economy as a whole (Davydova et al., 2020). This situation requires the beginning of the improvement of accounting technologies through the development and implementation of a network accounting system based on the use of electronic document management, the use of cloud technology, the use of software products of domestic production, which is especially important for economic security in the war in the country when working remotely with information.

Using the possibilities of digital technologies in a military operation in Ukraine, which shows the practical effectiveness of its implementation of the main directions of improvement of accounting service technology, in particular, the use of: EDIN platform - further improvement of accounting procedures through electronic document management business units, industries, regions of the country as well as in the global space; the use of the program - MASTER-Accounting, which will contribute to the formation of a single digital infrastructure that will increase the level of information security through the use of cloud technologies for data storage, calculations, data exchange and will contribute to the balance of digitally - technologies and competence of accountants.

Conducting research, it is necessary to determine the possibilities of full transfer of information in networks based on the application of modern information digit - technologies, which will contribute to improving the technology of accounting service based on the development of the concept of implementing a network accounting system. It has been established that a significant part of the above measures is implemented in practice, as evidenced by the developers of information products of domestic production. It is established that the properly implemented organization of the transition to a network accounting system will allow you to control information, ensure economic security through risk reduction, and will contribute to the formation of a network economy based on the adoption of regulations on changes in the organization of accounting.

Conclusions

Based on the research of scientists, the conclusion about the need to improve the functioning of accounting service through the development and transition to a network accounting system using domestically produced information products, which is significant for science and economy especially important for Ukraine during the military operation. We have proposed software products, which have already proved their effectiveness, in particular, the Ukrainian provider of electronic document management - EDIN, has more than 10 digital exchange services and this platform is used by more than 5000 companies, namely Ukrainian - TM Varus, TM Novus, Fozzy Group, METINVEST, Tri Medvedya, TERRA FOOD, Obolon, international companies - Henkel, Unilever, Auchan, Sandora, and more than 35 000 users. The author has proposed a full digitalization of information that will facilitate the transfer of accounting in the network to use the Ukrainian advanced software product - MASTER: ACCOUNTING (2022), and as a consequence of the development and transition to a network accounting system This program will create a unified digital infrastructure, which initially will facilitate the transfer of information in the business units, then industries, then regions and then the country, and as a consequence of the future of a network economy.

Summarizing the results of the study on the improvement of the accounting system in the conditions of digital technology can be divided into two stages:

- 1) providing a system for the transition of accounting technology in the network (development of regulatory and legal documents governing accounting operations; the choice of technical support, namely, information products of domestic production; development of a model for the organization of the transition to the network accounting system);
- 2) organization of the process of transition to a network accounting system (execution of the model; distribution of work between performers; identification of software information products; assessment of capabilities, values, and benefits).

The model for the organization of the transition to the network accounting system in terms of tasks, objects, subjects, frequency, and stages for methodological support of the transition of accounting information into the network as one

of the important factors of effective economic management is outlined. The stages include: the development of regulatory and legal support; obligations at the state level to use business units of Ukrainian software products, in particular the platform - a Ukrainian provider of electronic document management EDIN and program-MASTER: ACCOUNTING.

The model of the organization of network accounting system transition, which provides ample opportunities for an integrated approach to its formation and contributes to the definition of the advantages and risks, and threats, has been developed. As a result of the study, it should be noted that the process of transferring accounting information into digital form in the network will allow you to quickly analyze the information that is dynamically updated, which will contribute to the development of the economy. In the conditions of development of digital - technologies it is networks, instead of enterprises that will become real business units and at the interaction of organizational changes and new software products of domestic production, there will be a new organizational form - network enterprises which will promote the formation of new network economy that will improve the efficiency of the management process.

It is established, that in the conditions of constant updating and dynamics the information in the conditions of modernity gets the valuable resource and the introduction of the network system of the accounting will promote the development of methods of the accounting and the system analysis at the expense of use of digital technologies for its processing, effective methods of acceptance of administrative decisions and corresponding level of preparation of workers of accounting and management.

Prospects for the study of the development of accounting service technology is the expansion of the use of digital - technologies based on certain advantages and opportunities through the introduction of the concept of the network accounting system. This system will facilitate the analysis and control of business processes in the network based on confidential and protected information, using cloud resources for its storage, and as a consequence of the formation of a network economy. At the same time, the full implementation of the network accounting system requires detailed research of technology, clarification, and formation of methodology, but one of the important advantages of the system will be to obtain timely and protected information, which will promote the

development of network economy based on the formed unified digital infrastructure in the network. The administration and developers of the EDIN information platform and MASTER: Accounting software should be thanked for providing assistance and information, which made the research possible.

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