

## TIES 2020

**International conference «Trends and innovations in economic studies»**

### **AN ACCOUNTING AND FINANCE SYSTEM IN THE DIGITAL ECONOMY**

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#### *Abstract*

The article investigates the problem of developing an accounting and finance system in the digital economy. The structure of the accounting and finance system includes financial accounting, financial reporting and financial analysis. In the modern world, the accounting and finance system coexists with a large number of technological and multifunctional digital technologies that are developing very fast. The relevance of the issues of transformation of accounting and analysis in the digital economy determines, in turn, the need to formulate a new concept of accounting and finance system. This concept is aimed at establishing the goal and development path of financial accounting, financial reporting and financial analysis. The authors solve the problem of developing theoretical principles and methodological approaches to the conceptual provisions of the accounting and finance system in the digital economy. This enables us to present accounting and analysis in the new digital space, as well as confirm their self-sufficiency as types of economic and managerial practices. The authors used systems analysis, anthropocentric, integrated and process approaches to develop the conceptual provisions of the accounting and finance system. A new concept of the accounting and finance system will ensure the proper functioning of the system features. The most important features are interaction, rationality, emergence, continuity of functioning and development, dimension, synergy, and adaptability. In conclusion, it should be noted that the creation of a new conceptual model of an accounting and finance system requires a large structural and methodological adjustment of the entire analytical accounting sphere of business management.

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**Keywords:** Accounting and finance system, digital economy.



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## 1. Introduction

We live in an era when digitalization penetrates all spheres of life. Interaction technologies in the modern world undergo significant changes. Digitization of information requires additional research, especially in the field of accounting information and management control systems. The reason for this is the insufficient study of the potential capabilities, advantages and disadvantages of digital technology (Mancini, Lamboglia, Castellano, & Corsi, 2017). As a result, the development of financial accounting, financial reporting and financial analysis in the digital economy are the subject of an active scientific discussion by T.P. Karpova, T.M. Odintsova and others. Researchers recognize the need for transformations that involve changes in the content, qualitative characteristics and presentation of accounting and analytical information, as well as the development of principles and methodology of accounting and analysis (Arnold, 2018). The accounting and finance system is designed to support managerial decision making using accounting and analysis data as primary sources of information (Mancini, Lamboglia, Castellano, & Corsi, 2017). The goal of the accounting and finance system in the digital economy is to create knowledge (information resource) in relation to both economic entities and their groups. A key resource in the digital economy is information. An information resource is of great importance and acts as an intangible asset. We gain knowledge about the object when we accumulate specific information. In this regard, the idea of the digital economy is not to present the finished product or service to the consumer, but to create tools that enable you to customize the product by changing it based on a specific request. The consumer becomes a producer, since she/he takes an active part in the process of creating a consumed product.

The problems of developing the accounting and finance system in the digital economy are due to the specific nature of activities of quaternary industries. The results of this activity represent the creation and use of databases, information resources and include:

- New approaches to business operations (business mobility in all aspects, including attracting temporary staff, independence from tangible assets, using third-party assets, crowdsourcing, crowdfunding, crowdinvesting, outsourcing).
- Shift between assets (decrease in fixed assets, increase in intangible assets, and dominance of digital capital).
- Change in the pattern of expenditure (decrease in material costs, increase in payment for IT services, permanent consumption growth, increase in the degree of operational leverage and price volatility).
- Continuous updating of the business as a result of investments in its development and the high speed of changes in technology, consumer preferences, and business models.

Taking the above mentioned into consideration, we will deal with the key problems that necessitate the creation of a new concept of accounting and finance system in the digital economy.

## 2. Problem Statement

In this section we consider the impact of the digital economy on the development of an accounting and finance system. Nowadays, firms work in a digital world and must take into account digital technologies for their strategic and competitive purposes. It is also important to assess the impact of digital technologies

on accounting and analytical information and management control systems (Mancini, Lamboglia, Castellano, & Corsi, 2017). Financial accounting and financial reporting are the main sources of information for further knowledge on the basis of its analysis. In this regard, financial analysis is at the top of the accounting and finance system. The knowledge gained as a result of financial analysis is necessary not only for the development of economic entities and the economy as a whole, but it should contribute to the further development of financial accounting and financial reporting and financial analysis. In the digital economy, the process of harmonization of accounting and analysis should speed up and be more efficient. Financial data reporting and financial analysis (knowledge of the financial condition of an organization) should be available to users on-line.

It is also necessary to set up virtual organizations. These are organizations of a new type that require changes in accounting practices. In the digital economy, the traditional form of an organization activity has been virtualized in the organizational aspect and management. It is obvious that methodological approaches to accounting and analytics in virtual organizations are much different from traditional organizations. The range of objects of virtual organizations is expanding due to the emergence of new hybrid and modifiable forms of assets, liabilities and capital (smart assets and contracts, mixed investment tools, new forms of financial transactions, electronic flows of funds, etc.). To reflect them in financial statements, it is necessary to develop and formalize in legislation new identification criteria and methods for evaluating such accounting and analysis objects.

In summary, we single out a group of key factors that determine setting a problem of the creation of a new concept of accounting and finance system in the digital economy.

- Presenting information as a key resource of the digital economy.
- The changing role of digital technologies: from a simple infrastructure resource to a key factor in modern business (Riera & Ijima, 2019; Rozanova, 2019).
- Development of hybrid and intangible forms of capital (Al-Htaybat, Hutaibat, & von Alberti-Alhtaybat, 2019; Bryan, Rafferty, & Wigan, 2017).
- Virtualization of monetary and non-monetary units of value, assets, liabilities and related transactions based on digital identification and block chain technologies (Carlin, 2019).
- Supplementing the main characteristics of the economic entity activities with non-financial, social and environmental indicators.

Thus, as a result of economy digitalization there are new types of accounting: virtual accounting, fractal accounting, forecast accounting, multidimensional accounting, and network accounting. None of the listed types of accounting has an official status in Russian practice. Nevertheless, they are quite popular in the professional environment, since they reflect the growing interest of scientific and business communities in non-standard approaches in accounting and analytics and expand their conceptual provisions. We should note that the development of theoretical principles and methodological approaches to the conceptual provisions of the accounting and finance system in the digital economy in terms of importance and implications is one of the main scientific problems of our time.

### 3. Research Questions

Digitalization completely changes the technology of the accounting and finance system. Currently, the following digital technologies are actively used in financial accounting.

- Block chain is a multifunctional and multi-level information technology that is designed for reliable accounting of various decentralized assets (Popov, 2019). This technology allows you to store any information. The data inside it cannot be changed and is available to all registered users (Islam, Fujiwara, Kawata, & Yoon, 2019). The advantage of the technology is a high level of data security. The development of block chain technology in the accounting and finance system helps to ensure global changes. This method is as revolutionary as a double entry method (Carlin, 2019).
- Big data is a technology for collecting, processing, storing large volumes of various data in a digitalized format. The specified technology is also characterized by a wide variety of processed information and processing speed. This is due to the fact that not only internal company data (structured data) are used for analysis, but also external sources such as websites, texts, videos, IoT, RFID and other sources (semi-structured and unstructured data) (Perkhofer, Hofer, Walchshofer, Plank, & Jetter, 2019). Such data are characterized by a significant amount, variety and speed of updating, which ensure greater reliability of information (Perkhofer, Hofer, Walchshofer, Plank, & Jetter, 2019).
- Cloud computing is a technology for placing own data in the external information space (Popov, 2019). This is a set of technologies and systems that provide various types of resources (computing, storage, software, etc.) on demand over the Internet (Asmaa, El Abbassia, Hassan, & Djilali, 2019). Currently, cloud computing technologies are used by both government agencies and private companies to manage their own services. This saves money and computing resources using remote servers hosted on the Internet (Bernal, Cambronero, Valero, Núñez, & Cañizares, 2019).
- Digital platform is a set of digital data, standards, models, methods and tools that are informationally and technologically integrated into a single automated functional system for managing the target sphere and its entities (Constantinides, Henfridsson, & Parker, 2018).

These technological innovations can change the ways of managing and processing information in companies. This, in turn, provides reliable support for decision-making. It enables us to take into account the data warehousing framework for the development of business analytics or the relevance of multimedia technologies for a new form of economic and financial communication (Mancini, Lamboglia, Castellano, & Corsi, 2017). However, we need research that will help us to understand new types of accounting for managing a firm in the digital economy. These studies are designed to identify new skills and competencies that accountants must possess to maintain the relevance and value of the profession (Moll & Yigitbasioglu, 2019).

The information environment of the digital economy has an impact on the development of the basic elements of the financial accounting method. Currently, experts in the field of financial accounting proposed to include forward financial statements, differential and controlling accounts, accounts for non-financial information into the accounting framework. The possibilities of using other systems as an alternative to double entry bookkeeping are being discussed. Changes in other elements of the accounting

method are also possible under the influence of progress in data processing technologies, as well as due to significant changes in accounting items. There are good reasons to develop the methodological base of financial accounting, which covers both elements of the accounting method and related types of management and ensures that the information product meets the tasks of the digital economy. The objects of financial accounting in the digital economy undergo significant changes. This is primarily due to the fact that there are indicators that characterize not only economic effectiveness, but also environmental safety, corporate social responsibility, strategic orientation, consistency and quality of corporate governance, the availability of organizational, innovative, intellectual, reputation capital as well as other non-financial facilities that provide the basis for value creation (Al-Htaybat, Hutaibat, & von Alberti-Alhtaybat, 2019; Hariyati, Tjahjadi, & Soewarno, 2019; Lentjushenkova, Zarina, & Titko, 2019). The range of objects is expanding due to new, hybrid and modifiable forms of assets, liabilities and capital (crypto currency, smart assets, smart contracts, mixed investment instruments, new forms of financial transactions, electronic funds flows, virtual monetary and non-monetary value units, etc.). These specific indicators of an economic activity are platforms for creating value (different types of capital), time and competitive characteristics of business processes, parameters of the external and internal environment, risks, institutional and reputational resources, human and image-based capital. Many of these objects cannot be measured by cash. The reflection of such objects in financial accounting requires creation of new principles for the systematization and taxonomy of financial items, the definition of criteria for their recognition and principles of reflection in the system of economic information.

It must be recognized that in accounting practice the issues of identification and accounting for a digital asset have not yet been completely solved. Some authors believe that digital assets can be considered as a certain type of intangible asset, which includes so-called “marketing assets”. They are market knowledge, customer lists, franchises, relationships with customers or suppliers, customer loyalty, market share, sales rights and others, that can be considered as a part and a kind of digital assets. In real-world context, such assets are not accounting items in Russia.

In the digital economy, the importance of non-financial indicators of the asset value and performance of an organization is growing. These indicators show the social and environmental responsibility of a company, the quality and strategies of corporate governance, the presence and volume of non-financial assets such as the company's intellectual capital, which includes human, social and institutional capital. In particular, human capital includes knowledge, skills and attitudes that allow a person to create income and get benefits. It is good for an employer and society as a whole, because aggregate income exceeds initial investment and current costs. The method of accounting for human capital consists of a set of methods of financial accounting and financial statements in accordance with the results of such operations that can be used for human resources in general. At the same time, there are some difficulties when we compare human resources to the assets of an economic entity such as fixed assets, intangible assets and materials. For example, they don't have a characteristic physical composition (fixed assets). They are not written off in one production cycle (current assets), and do not belong to patents or know-how without separation from an individual (intangible assets). Nevertheless, these assets are closer to the group of intangible assets, since it is impossible to separate the rights to use intellectual knowledge that generate income from a person.

The effectiveness of modern innovations based on human knowledge leads to the need to expand and typify financial accounting and evaluate the results of attracting human capital and its holder to the activities of economic entities. This is confirmed by many international and Russian studies in the field of theory and practice of intellectual capital management. Such studies are primarily associated with the desire to develop an accounting and analytical concept for these categories (Brosnan, O'Donnell, & O'Regan, 2019; Kuzminov, Sorokin, & Froumin, 2019; Lentjushenkova, Zarina, & Titko, 2019). In the digital economy, it is difficult to achieve the goals of financial analysis. This is manifested in the use of such traditional financial bases as non-current assets, own current assets, total assets, equity and invested capital. The reason for the difficulties lies in the fact that the valuation of these objects is extremely volatile. As a result, traditional indicators of financial analysis (indicators of financial stability, liquidity, turnover, profitability) lose their importance for the economy. Cash flows and indicators that are calculated on their basis become more reliable indicators for financial analysis. Thus, the following areas can be distinguished as the most relevant areas for the development of an accounting and finance system in the digital economy. Firstly, it is necessary to define new objects of financial accounting and develop innovative methods for their assessment. Secondly, we should use modern digital technologies in the development of theoretical, methodological and applied aspects of the development of financial accounting, financial reporting and financial analysis.

#### **4. Purpose of the Study**

In a digital economy, the content of accounting and analytical information is determined by user requests. They should be provided with data that are of real interest to them, relevant, actual and form a complete information environment for managing socio-economic processes. The digital economy affects all aspects of the drawing up and use of financial statements. Qualitative characteristics of these statements are very important. Financial statements are generated based on financial accounting data. In turn, financial reporting indicators are a key information resource for financial analysis. The digital economy influences the following qualitative characteristics of financial statements: relevance, usefulness, predictive value, completeness, absence of errors, verifiability and timeliness. As previously stated, for the further development of the accounting and finance system in the digital economy, it is necessary to create its new concept, which allows us to set the goal and development path of financial accounting, financial reporting and financial analysis. In this case, the conceptual model of the accounting and finance system in the digital economy should include the following key components: the goal, tasks, subject, objects, methods, functions, principles, quality characteristics, and technology.

To develop the concept of the accounting and finance system in the digital economy, it is necessary.

1. To present financial accounting, financial reporting and financial analysis for the digital economy.
2. To evaluate the possibilities of financial accounting, financial reporting and financial analysis in solving new problems.
3. To assess the impact of the digital economy on the methodology, objects and organization of accounting and analysis.
4. Develop basic legislative documents that define the methodological foundations of accounting and analysis.

5. To determine the direction of reforming the basic infrastructure components that provide the conditions for the development of financial accounting, financial reporting and financial analysis: personnel and educational programs, automated platforms for generating, sharing, using socio-economic information and information security.

The creation of a conceptual model of the accounting and finance system is based on the use of the following scientific approaches:

- A systematic approach means that the accounting and finance system represents certain integrity, consisting of interconnected components that contribute to the functioning of the whole system. This system is a part of the management system of an economic entity.
- An integrated approach implies that the accounting and finance system is a part of financial and production activities with the integrated use of all types of information by management segments.
- The process approach assumes that functioning of the accounting and finance system is a process of continuous interconnected actions for the collection, processing and provision of information for management decisions.
- The anthropocentric approach means that the human factor plays an important part in functioning of the accounting and finance system.

The authors believe that the new concept of the accounting and finance system in the digital economy will provide it with the following properties:

- Interaction is when every component is considered in connection with other key components of the accounting and finance system. At the same time, functioning of the accounting and finance system cannot be reduced to the functioning of its individual components. As a result, the combined functioning of the system leads to the creation of new functional properties.
- Rationality means that the effectiveness of the accounting and finance system is achieved by the optimization of its parameters and is implemented on the basis of optimization models. In addition, the operating costs of the accounting and finance system should be significantly lower than the benefits of its results.
- Emergence implies that the goal of the accounting and finance system is much wider than the functioning objectives of its key components. But each component of the accounting and finance system performs certain functions leading to the achievement of their goals.
- Continuity of functioning and development denotes that information processes in the accounting and finance system are continuous and interdependent. The accounting and finance system as an integral structure, determines the direction of functioning of its key components. Thus, the accounting and finance system exists while it is in operation. Moreover, the ability to self-development ensures the continuity of its functioning.
- Dimension is the number of components of the accounting and finance system and the relationships between them. On the one hand, the number of components should be minimal to ensure their mobility, and on the other hand, they sufficient to achieve their goals.
- Synergy means that when we organize the accounting and finance system, it should be borne in mind that its effectiveness is not equal to the sum of the functioning efficiencies of its key components. The result of the interaction of the system components can be a positive or negative

effect of synergy. Therefore, to achieve a positive synergy effect, it is necessary to have a well-organized system.

- Adaptability is when the accounting and finance system is easily adjusted to the changing conditions of the external and internal environment. This is ensured by a combination of many factors in its organizational structure.

The process of creating a new conceptual model of the accounting and finance system is not just a change of certain terms, but a complex scientific and real-world problem. The solution to this problem requires a large organizational and methodological restructuring of the entire accounting and analytical area of the organization management.

## 5. Research Methods

In order to identify the development path of the accounting and finance system in the digital economy, a theoretical analysis of Russian and foreign studies was carried out. To present accounting and analysis in a new digital space, the problem of creating a new concept of the accounting and finance system has been defined. It allows us to establish the goal of the development of financial accounting, financial reporting and financial analysis as types of economic and managerial practices in the digital economy. This ensured the implementation of scientific and applied interpretation of the results.

## 6. Findings

In the context of the digital economy, it is necessary to develop a new conceptual model of the accounting and finance system. The authors analysed the theoretical provisions and methodological approaches to the conceptual provisions of the accounting and finance system in the digital economy. The analysis results allow us to conclude on the multifaceted aspects of the problem under consideration.

## 7. Conclusion

The development of the accounting and finance system is of great importance in the context of the digital economy. This allows us to present financial accounting, financial reporting and financial analysis in a new digital space, to determine their boundaries, the conceptual scope and confirmation of the self-sufficiency of accounting and analysis as types of socio-economic and managerial practices. The accounting and finance system as a component of the system for receiving, processing and transmitting digital information in a digital economy coexists with a large number of dynamically expanding technological and multifunctional digital technologies. For further development of the accounting and finance system in the digital economy, the authors determined the necessity to develop its new conceptual model, which enables us to set the goal and development path of financial accounting, financial reporting and financial analysis.

## References

- Al-Htaybat, K., Hutaibat, K., & von Alberti-Alhtaybat, L. (2019). Global brain-reflective accounting practices Forms of intellectual capital contributing to value creation and sustainable development. *Journal Of Intellectual Capital*, 20(6), 733-762.

- Arnold, V. (2018). The changing technological environment and the future of behavioural research in accounting. *Accounting & Finance*, 58(2), 315–339.
- Asmaa, A., El Abbassia, D., Hassan, B. A., & Djilali, B. (2019). Model-Based Application Deployment on Cloud Computing. *International Journal of Distribution System and Technology (IJDST)*, 10(2), 110–127.
- Bernal, A., Cambronero, M. E., Valero, V., Núñez, A., & Cañizares, P. C. (2019). A Framework for Modeling Cloud Infrastructures and User Interactions. *IEEE Access*, 7, 43269–43285.
- Brosnan, S., O'Donnell, D., & O'Regan, P. (2019). A performative exploration of the lifeworlds of human capital and financial capital: an intellectual capital case vignette. *Journal of Management and Government*, 23(2), 321–344.
- Bryan, D., Rafferty, M., & Wigan, D. (2017). Capital unchained: finance, intangible assets and the double life of capital in the offshore world. *Review of International Political Economy*, 24(1), 56–86.
- Carlin, T. (2019). Blockchain and the Journey Beyond Double Entry. *Australia. Accounting Review*, 29(2), 305–311.
- Constantinides, P., Henfridsson, O., & Parker, G. G. (2018). *Introduction – Platforms and infrastructures in the digital age*. Retrieved from: <http://ide.mit.edu/sites/default/files/publications/ISR%202018%20Constantinides%20Henfridsson%20Parker%20Editorial.pdf>
- Hariyati, H., Tjahjadi, B., & Soewarno, N. (2019). The mediating effect of intellectual capital, management accounting information systems, internal process performance, and customer performance. *International Journal of Productivity and Performing Management*, 68(7), 1250–1271.
- Islam, R., Fujiwara, Y., Kawata, S., & Yoon, H. (2019). Analyzing outliers activity from the time-series transaction pattern of bitcoin blockchain. *Evolution. and Institutional Economy Review*, 16, 239–257.
- Kuzminov, Y., Sorokin, P., & Froumin, I. (2019). Generic and specific skills as components of human capital: New challenges for education theory and practice. *Foresight and STI Governance*, 13(2), 19–41.
- Lentjushenkova, O., Zarina, V., & Titko, J. (2019). Disclosure of intellectual capital in financial reports: case of Latvia. *Oeconomia Copernicana*, 10(2), 341–357.
- Mancini, D., Lamboglia, R., Castellano, N. G., & Corsi, K. (2017). *Trends of Digital Innovation Applied to Accounting Information and Management Control Systems*. Retrieved from: [https://link.springer.com/chapter/10.1007%2F978-3-319-49538-5\\_1](https://link.springer.com/chapter/10.1007%2F978-3-319-49538-5_1)
- Moll, J., & Yigitbasioglu, O. (2019). *The role of internet-related technologies in shaping the work of accountants: New directions for accounting research*. Retrieved from: <https://www.researchgate.net/publication/332638227>
- Perkhofer, L. M., Hofer, P., Walchshofer, C., Plank, T., & Jetter, H. C. (2019). Interactive visualization of big data in the field of accounting. *Journal of Applied Accounting Research*, 20(4), 497–525.
- Popov, E. V. (2019). *Business institutions of economic activity digitalization*. Retrieved from: <http://pravlenets.usue.ru/en/issues-2019/562>
- Riera, C., & Iijima, J. (2019). The Role of IT and Organizational Capabilities on Digital Business Value. *Pacific Asia Journal of the Association for Information Systems*, 11(2), 4.
- Rozanova, N. M. (2019). Evolution of a Firm in a Digital Economy. *Mirovaia ekonomika i mezhdunarodnye otnosheniia*, 63(8), 21–28.