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COST ANALYSIS AND AUDIT: TASKS AND CHALLENGES IN THE DIGITAL ECONOMY

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АНАЛІЗ ТА АУДИТ ВИТРАТ: ЗАВДАННЯ ТА ВИКЛИКИ В УМОВАХ ЦИФРОВОЇ ЕКОНОМІКИ

The conditions of the digital economy impose new requirements on the process of cost management, as the main factor influencing the profitability of an enterprise, and change traditional approaches to analytical procedures in auditing. Modern digital tools significantly expand the possibilities of auditing and modify the technology of its conduct, which requires improvement of methodological support. The purpose of the article is to summarize theoretical approaches and practical developments in the field of analysis and auditing of enterprise costs in the digital economy.

The paper reveals the theoretical foundations and practical aspects of organizing the cost management process and determines their impact on the financial stability of the enterprise and its competitiveness in the market. The role of automation tools, big data analytics, and artificial intelligence in increasing the transparency of financial information, reducing risks, and ensuring the effectiveness of management decisions is substantiated. Particular attention is paid to the challenges of digitalization, which require auditors and financial analysts to implement innovative data processing tools, process automation, and the use of big data analytics. The key tasks facing cost auditing are highlighted: ensuring the reliability of information, timely identification of inefficient costs, and increasing the transparency of management decisions. A digitally-oriented classification of costs has been developed, which creates a basis for more accurate identification of cost sources, assessment of their strategic impact, and informed management decision-making. The proposed cost classification allows for the consideration of not only financial components, but also technological and operational aspects, particularly those related to cloud services, IT infrastructure, cybersecurity, and analytical platforms. The article argues that in the context of digital transformation, companies need to adapt their control methods, strengthen internal audit, and apply artificial intelligence technologies to reduce risks and optimize costs. It has been proven that the transformation of traditional auditing based on a digitally-oriented approach changes the paradigm of cost control and analysis, making it an integral part of strategic enterprise management.

Умови цифрової економіки висувають нові вимоги до процесу управління витратами, як головного фактору впливу на прибутковість діяльності підприємства, та змінюють традиційні підходи до проведення аналітичних процедур в аудиті. Сучасні цифрові інструменти суттєво розширюють можливості аудиту та видозмінюють технологію його проведення, що потребує удосконалення методологічного супроводження. Метою статті є узагальнення теоретичних підходів та практичних напрацювань у сфері аналізу й аудиту витрат підприємств в умовах цифрової економіки.

У роботі розкрито теоретичні засади та практичні аспекти організації процесу управління витратами, визначено їхній вплив на фінансову стійкість підприємства та конкурентоспроможність на ринку. Обгрунтовано роль інструментів автоматизації, аналітики великих даних та штучного інтелекту у підвищенні прозорості фінансової інформації, зниженні ризиків і забезпеченні ефективності прийняття управлінських рішень. Особлива увага приділена викликам цифровізації, які вимагають від аудиторів та фінансових аналітиків впровадження інноваційних інструментів обробки даних, автоматизації процесів та використання аналітики великих даних. Виокремлено ключові завдання, що постають перед аудитом витрат: забезпечення достовірності інформації, своєчасне виявлення неефективних витрат, підвищення прозорості управлінських рішень. Розроблено цифрово-орієнтовану класифікацію витрат, яка створює основу для більш точного визначення джерел витрат, оцінки їхнього стратегічного впливу та обгрунтованого прийняття управлінських рішень. Запропонована класифікація витрат дає змогу враховувати не лише фінансову складову, а й технологічні й операційні аспекти, зокрема ті, що пов'язані з хмарними сервісами, IT-інфраструктурою, кібербезпекою та аналітичними платформами. У статті обгрунтовано, що в умовах цифрової трансформації підприємствам необхідно адаптувати методи контролю, посилювати внутрішній аудит і застосовувати технології штучного інтелекту для зниження ризиків та оптимізації витрат. Доведено, що трансформація традиційного аудиту на основі цифрово-орієнтованого підходу змінює парадигму контролю та аналізу витрат, роблячи його невід'ємною частиною стратегічного управління підприємством.

Key words: cost analysis, cost audit, digital economy, cost optimization, internal control, digitalization, efficiency, strategic analysis.

Ключові слова: аналіз витрат, аудит витрат, цифрова економіка, оптимізація витрат, внутрішній контроль, цифровізація, ефективність, стратегічний аналіз.

GENERAL DESCRIPTION OF THE PROBLEM AND ITS CONNECTION WITH IMPORTANT SCIENTIFIC OR PRACTICAL TASKS

The modern digital economy is transforming traditional approaches to accounting, analysis, and auditing of expenses. The growth in data volumes, the integration of digital platforms, and the introduction of automated systems require a review of methods for assessing cost efficiency and the development of new control tools. The problem is particularly relevant because the transparency and reliability of audits determine not only the financial stability of an enterprise but also the trust of investors, partners, and consumers. The scientific significance lies in the formation of new approaches to cost analysis using digital technologies, and the practical significance lies in creating opportunities to improve management efficiency and reduce risks in business processes.

ANALYSIS OF RECENT STUDIES AND PUBLICATIONS

Issues of accounting, analysis, and auditing of expenses in the current conditions of digital transformation are increasingly being studied in the works of domestic and foreign scientists. The study by Ryabchuk O. and Nimchuk A. [7] focuses on the specifics of auditing and analyzing the income and expenses of an enterprise, which allows assessing the effectiveness of economic activity and identifying reserves for its improvement. The authors emphasize the need to improve control methods focused on digital data processing tools.

The materials of the international scientific and practical conference [2; 4; 6] reflect current trends in the development of accounting, auditing, and control, among which the integration of digital technologies into cost management processes plays an important role. In particular, Kropyvnytskyi M. [4] emphasizes the importance of analyzing operating costs in ensuring the efficiency of production activities, while Lebed K. [6] proposes methodological approaches to improving the accounting and analytical support of income and expenses.

The research of Vasilyuk M., Kuzmina T., Gnatyuk T., and Verbyanska R. [1] focuses on the specifics of internal auditing of budgetary institutions' expenses in the context of the digitalization of economic processes. The authors

Table 1. Traditional and digitally-oriented approaches to cost auditing

Criterion	Traditional Audit	Audit in the Digital Economy
Sources of information	Primary documents, accounting records	Big Data, ERP systems, real-time data analytics
Methods of evidence collection	Selective checks, questionnaires, confirmation	Automated analysis, intelligent audit, AI models
Objects of focus	Traditional expense items (materials, salaries, depreciation)	Digital expenses (cloud services, cybersecurity, analytics, AI)
Main risks	Errors in recording business transactions	Cyberattacks, IT system failures, digital data distortion
Control tools	Accounting policy, internal control	BI systems, predictive modeling, automated risk indicators
Result	Confirmation of reporting accuracy	Data verification + forecasting of expense and risk trends

Source: compiled based on [3; 4, 7].

argue that the transparency and reliability of financial information largely depend on the level of automation of accounting procedures. A similar position is shared by Kotelnikova Yu., Chumak G., and Voroshilova O. [3], who consider modern models and tools for optimizing expenditures in the digital economy, focusing on the use of innovative methods of forecasting and control.

It is worth noting the contribution of Kryukova I., Rudenko S., and Nakiska O. [5], who study digitalization as a tool for ensuring sustainable accounting and emphasize the need to integrate intelligent technologies into the enterprise management system, which creates the prerequisites for the formation of qualitatively new approaches to cost analysis and auditing that go beyond traditional methods.

FORMULATION OF THE ARTICLE'S OBJECTIVES (STATEMENT OF THE TASK)

The purpose of the article is to summarize theoretical approaches and practical developments in the field of analysis and audit of enterprise costs in the digital economy. The research tasks are to reveal the essence of the category "cost analysis and audit," identify the key challenges of digital transformation for the cost management system, and justify the need to introduce modern digital technologies into the processes of accounting, control, and optimization. Particular attention is paid to researching the role of automation tools, big data analytics, and artificial intelligence in increasing the transparency of financial information, reducing risks, and ensuring the effectiveness of management decisions.

PRESENTATION OF THE MAIN RESEARCH MATERIAL

Cost analysis and auditing in the modern digital economy are taking on a whole new meaning, as costs are becoming not only a financial indicator but also a strategic management resource. Traditional approaches based on manual data processing and classic control methods are gradually becoming insufficient to ensure the transparency and efficiency of business processes. Modern enterprises operate in conditions of growing data volumes, rapid technological change, and the need to respond flexibly to market challenges.

In such a situation, cost analysis performs not only a diagnostic but also a predictive function. It allows identifying trends, forecasting financial resource needs, and assessing the feasibility of their use. Cost auditing, in turn, guarantees data reliability, prevents financial risks, and ensures that the enterprise's activities comply with the requirements of legislation and corporate governance standards.

In the context of digital transformation, the following cost analysis and audit tasks are of particular importance:

— ensuring the accuracy and completeness of information generated in digital environments;

— identifying inefficient costs in real time through the use of automated monitoring systems;

— increasing the transparency of management decisions through the implementation of intelligent analytical platforms;

— reducing the risk of financial abuse through the use of artificial intelligence technologies and machine learning algorithms.

Modern digital tools significantly expand the possibilities of auditing. For example, the use of big data allows analyzing large amounts of financial information, identifying hidden patterns in expenses, and predicting their dynamics. The integration of cloud services, which provide rapid access to data and increase management flexibility, is also important. Artificial intelligence technologies and the robotization of audit procedures create the basis for the automatic detection of anomalies, which significantly reduces the likelihood of errors and abuse.

In the digital economy, traditional approaches to cost analysis and auditing are gradually losing their effectiveness because they do not take into account the specifics of digital processes that generate new types of costs. Recent studies emphasize the need to transform cost classification approaches to take into account the digital component. In particular, Kotelnikova Yu., Chumak G., and Voroshilova O. [3] propose a digitally-oriented classification of costs, which allows for a more complete reflection of their nature and role in the functioning of enterprises in a digital environment.

Within this concept, it is proposed to group expenses:

— by degree of integration into digital processes (digital expenses, traditional expenses, infrastructure digital expenses, operational digital expenses, intellectual expenses, cybersecurity expenses);

— by nature of change (flexible costs, structural digital costs, innovation costs);

— by purpose (costs of business process transformation, digital customer engagement, analytical decision support).

The use of this classification opens up new opportunities for cost auditing, as it allows for more accurate identification of digital cost sources, assessment of their impact on the strategic development of the enterprise, and the formation of comprehensive recommendations for cost optimization in the context of digital transformation. For cost analysis and auditing, it is important not only to determine their size and structure, but also to assess the effectiveness of the use of digital resources, in particular cloud services, IT infrastructure, artificial intelligence systems, and big data analytics tools. In this context, it is useful to compare traditional and digitally-oriented approaches to cost auditing, as presented in tab. 1.

In the context of digital transformation, companies are facing a significant complication in their cost structure due to the emergence of new categories of costs associated with the use of IT platforms, big data analytics, cloud services, and artificial intelligence. Traditional accounting and auditing methods, which focused on classic cost items, are becoming insufficient for assessing the effectiveness of management decisions and forecasting financial risks.

In this context, the author proposes an approach to integrated cost analysis that involves:

1. Systematic cost assessment — analysis of not only financial indicators, but also the technological and strategic components of costs. For example, cybersecurity or analytical platform costs are assessed in terms of their contribution to improving the security and efficiency of business processes.

2. A predictive audit function — cost auditing ceases to be merely retrospective control and takes on a predictive function. The use of machine learning models allows potential inefficiencies to be identified before they manifest themselves in financial results.

3. Comprehensive integration of digital tools — combining big data analytics, cloud services, robotic processes, and artificial intelligence algorithms to automatically detect anomalies in costs and improve reporting accuracy.

4. Strategic cost assessment — determining the role of each cost category in shaping competitive advantages and long-term financial stability of the enterprise.

A key aspect of the author's approach is a digitally-oriented classification of costs, which expands on traditional approaches and allows costs to be broken down according to three criteria:

— Degree of integration into digital processes;

— Nature of changes (flexible, structural, innovative);

— Intended purpose (business process transformation, digital customer engagement, analytical decision support).

Using this approach not only increases the transparency of management decisions, but also creates a basis for further cost optimization, taking into account the specifics of digital processes, forming a unique set of analysis and audit tools that integrates financial, technological, and strategic indicators.

Thus, modern cost auditing in the digital economy goes beyond traditional audits and increasingly integrates intelligent analysis tools. While classic auditing focused primarily on retrospective control of reporting accuracy, the digitally-oriented approach provides a comprehensive study of costs with a view to risk forecasting, resource optimization, and management efficiency improvement. This indicates that digital transformation is changing not only the structure of costs but also the very paradigm of analysis and auditing, making them an integral part of strategic enterprise management.

The digitally-oriented classification of expenses proposed in the article is useful in terms of improving the system of expense analysis and auditing. It allows for the detailing of control objects, the assessment of not only the financial but also the technological component of costs, as well as the consideration of the strategic effect of innovative investments, which creates the basis for the formation of more informed management decisions aimed at optimizing costs and increasing the competitiveness of enterprises.

Thus, in the process of cost analysis and auditing in the digital economy, it is not only the accounting and control of their size that is of key importance, but also the determination of the role of each cost category in ensuring the long-term sustainability of the business. The use of digitally-oriented classification approaches opens up opportunities for integrating big data analytics, predictive models, and artificial intelligence systems into auditing, which allows not only to state the existing results, but also to predict trends in the development of financial flows.

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH IN THIS AREA

The study demonstrated that cost analysis and audit in the modern digital economy acquire strategic significance, going beyond traditional financial reporting control. The use of digital tools-such as big data analytics, artificial intelligence, and automated monitoring systems-enhances transparency, ensures the accuracy of information, detects inefficiencies in real time, and optimizes resource allocation.

The proposed digitally-oriented cost classification provides a foundation for more precise identification of cost sources, assessment of their strategic impact, and well-grounded managerial decision-making. It allows consideration not only of the financial aspect but also of technological and operational components of costs, including those related to cloud services, IT infrastructure, cybersecurity, and analytical platforms.

The results indicate that the transformation from traditional auditing to a digitally-oriented approach changes the very paradigm of cost control, making it an integral part of strategic enterprise management. Companies that actively implement digital tools are capable of achieving sustainable development, increasing competitiveness, and effectively forecasting financial risks.

Future research prospects may include the development of more advanced predictive models of cost dynamics, integration of AI-based automated auditing platforms, and the study of industry-specific practices in digital cost management. Another important direction is the assessment of hybrid approaches that combine traditional accounting methods with modern digital technologies to create a resilient and adaptive system for cost control and optimization.

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