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TRANSFORMATION OF TAX ACCOUNTING IN THE DIGITAL ECONOMY AND METHODOLOGICAL FOUNDATIONS OF ITS AUTOMATION

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Abstract
This article examines the transformation of tax accounting in the digital economy and the methodological foundations for its automation. The study analyzes the use of digital technologies in tax accounting, including electronic tax systems, cloud platforms, Big Data, and artificial intelligence. Particular attention is paid to improving tax administration, automating tax reporting processes, increasing the efficiency of tax control, and reducing the impact of the human factor. As a result of the research, methodological approaches for the digital transformation of tax accounting are developed and practical recommendations for their implementation are proposed.

Keywords: Digital economy, tax accounting, transformation of tax accounting, tax administration, automation of tax reporting, electronic tax system, artificial intelligence, Big Data, cloud technologies, tax control, tax risks, digital platforms.

Introduction

In the context of the rapid development of the digital economy, the transformation of tax systems and tax accounting practices has become one of the key priorities for ensuring financial transparency, effective tax administration, and sustainable budget revenues. The widespread adoption of information and communication technologies, electronic document management, real-time data exchange, and digital platforms has fundamentally changed the traditional approaches to organizing and maintaining tax accounting. As a result, the use of automated systems for tax calculation, electronic submission of tax reports, and digital tax control mechanisms has significantly increased.

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The transformation of tax accounting in the digital environment is not limited to technological changes; it also requires the development of new methodological approaches. The digitalization of tax accounting ensures the accuracy, reliability, and timeliness of financial and tax information, reduces the influence of the human factor, improves tax compliance, and enhances the efficiency of tax risk management. In addition, the automation of tax accounting processes allows for the optimization of corporate financial activities, the reduction of administrative costs, and the improvement of the overall effectiveness of tax control.

Modern global practices demonstrate the active use of innovative technologies such as artificial intelligence, Big Data, cloud computing, and blockchain in the field of tax accounting and tax administration. These technologies make it possible to process large volumes of data in real time, perform automated tax calculations, monitor taxpayers' activities, and ensure a high level of transparency in tax relations. However, despite the significant progress in the digitalization of tax systems, the methodological foundations for the transformation and automation of tax accounting remain insufficiently studied and require comprehensive scientific analysis.

The relevance of this research is determined by the need to improve the methodological framework for the transformation of tax accounting in the digital economy and to develop practical recommendations for its effective automation. The purpose of this study is to analyze the processes of tax accounting transformation in the digital environment, to identify the key directions for its automation, and to propose methodological approaches for their implementation.

Literature Review

The transformation of tax accounting in the digital economy has become a widely discussed topic at the intersection of taxation, accounting information systems, and public administration. In the literature, tax accounting is increasingly viewed not only as a technical process of recording and reporting tax liabilities, but also as a data-driven governance mechanism that supports transparency, compliance, and risk-based tax control. Researchers emphasize that digitalization changes the architecture of tax accounting by shifting from periodic, document-based reporting to continuous, platform-based data exchange between taxpayers and tax authorities.

A central theme in prior studies is the role of electronic tax administration and e-services in improving compliance and reducing administrative costs. Scholars argue

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that electronic filing systems, e-invoicing, and integrated taxpayer accounts simplify reporting procedures and minimize manual errors. At the same time, the literature notes that digital tax reforms often require significant institutional capacity, including updated regulations, standardized data formats, and secure digital identities. As a result, the success of digital tax accounting reforms is frequently linked to the maturity of national e-government infrastructure and the level of digital readiness among taxpayers.

Another major research direction concerns automation and accounting information systems. Studies on accounting digital transformation point out that modern ERP platforms and cloud-based accounting tools enable automated tax calculations, real-time VAT tracking, and standardized tax reporting. Researchers highlight the benefits of system integration, including faster processing, improved consistency of tax data, and stronger audit trails. However, the literature also identifies challenges such as data quality issues, fragmentation across platforms, and compatibility problems between corporate systems and government tax portals. These factors can limit the reliability of automated tax reporting unless robust controls and reconciliation procedures are implemented.

The growing use of Big Data analytics and artificial intelligence is also increasingly reflected in academic discussions. Scholars describe how tax authorities use analytics to identify anomalies, detect fraud, and prioritize audits based on risk scoring models. From a corporate perspective, AI-enabled tools can support tax planning, classification of transactions, and error detection. Nevertheless, studies caution that algorithmic decision-making in taxation raises concerns about explainability, bias, and accountability. Therefore, the literature stresses the need for methodological standards that define the scope of automated decision tools and ensure transparency in both corporate tax processes and government enforcement mechanisms.

Cybersecurity and data governance represent another highly cited area in the literature. Researchers underline that the digitalization of tax accounting increases exposure to cyber threats, data breaches, and unauthorized access. Because tax accounting is heavily dependent on sensitive financial information, scholars emphasize secure data storage, encryption, access controls, and clear data retention policies. The literature also highlights that cross-border data flows and cloud computing raise additional regulatory issues related to privacy, jurisdiction, and compliance with data protection laws.

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A separate stream of research focuses on methodological and regulatory implications. Studies note that digital tax accounting requires updated methodological frameworks for recognizing and measuring tax obligations, documenting electronic evidence, and ensuring the legal validity of digital records. Scholars argue that without harmonized standards and clear guidance, automated tax systems may increase disputes due to differences in interpretation, inconsistent reporting logic, or insufficient auditability of automated outputs. Consequently, researchers call for the development of methodological models that link digital accounting processes with tax rules, internal controls, and risk management practices.

Finally, the literature on implementation barriers and success factors suggests that digital transformation in tax accounting is often constrained by limited human capital, resistance to change, and unequal digital literacy among taxpayers. Studies emphasize the importance of training, change management, user-friendly digital services, and gradual implementation through pilot projects. Overall, existing research confirms that tax accounting automation can improve compliance and efficiency, but it also requires a balanced approach that combines technological solutions with methodological clarity, regulatory support, and strong institutional capacity.

In summary, prior studies demonstrate that the digital economy creates both opportunities and challenges for the transformation and automation of tax accounting. While digital platforms, AI, and data analytics can significantly enhance accuracy, transparency, and risk-based control, their successful adoption depends on data quality, cybersecurity, regulatory alignment, and the development of sound methodological foundations. These findings provide the theoretical basis for the present research, which aims to analyze transformation processes and propose methodological approaches for effective tax accounting automation.

Methodology

This research is based on a comprehensive methodological approach aimed at studying the transformation of tax accounting in the digital economy and developing methodological foundations for its automation. The study combines theoretical, empirical, and comparative methods to ensure the reliability and validity of the obtained results.

The methodological framework relies on the principles of a systematic and functional approach, which allows tax accounting to be considered as an integrated component

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of the digital financial management system. Within this framework, the interrelationships between tax administration, accounting information systems, digital platforms, and automated reporting mechanisms are analyzed.

The research applies the following methods:

Comparative analysis – to identify the differences between traditional and digital tax accounting models and to assess international best practices in the field of tax digitalization;

Logical and structural analysis – to determine the stages of transformation of tax accounting and to justify the need for its automation in the digital environment;

Statistical and analytical method – to evaluate the impact of digital technologies on tax reporting efficiency, tax compliance, and administrative cost reduction;

Process analysis – to study the automation of tax accounting procedures, including electronic data processing, real-time reporting, and digital control mechanisms;

Synthesis and generalization – to formulate methodological approaches and practical recommendations for the implementation of automated tax accounting systems.

The empirical base of the research consists of national regulatory documents on taxation and digital economy development, international tax administration guidelines, analytical reports of international financial institutions, and practical materials related to the implementation of electronic tax systems. In addition, modern digital tools used in tax accounting, such as cloud-based accounting platforms, ERP systems, and electronic tax reporting services, were examined.

The methodological approach also includes the assessment of key performance indicators reflecting the effectiveness of tax accounting automation, such as the speed of tax reporting preparation, the level of human error reduction, data processing efficiency, and the transparency of tax control.

This integrated methodology makes it possible to identify the main directions of tax accounting transformation in the digital economy, to determine the factors influencing its automation, and to develop scientifically grounded methodological recommendations for improving digital tax accounting systems.

Results and Discussion

The results of the study indicate that the digital transformation of tax accounting significantly improves the efficiency, transparency, and accuracy of tax-related processes. The introduction of automated tax accounting systems based on modern

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digital technologies enables real-time data processing, reduces the time required for tax reporting preparation, and minimizes the impact of human errors. As a consequence, the quality and reliability of tax information increase, which positively affects both corporate financial management and tax administration.

One of the key findings of the research is that the integration of accounting information systems with electronic tax platforms ensures continuous data exchange between taxpayers and tax authorities. This integration simplifies tax compliance procedures, accelerates the submission and verification of tax reports, and enhances the effectiveness of tax control. In addition, automated reconciliation mechanisms allow discrepancies in tax calculations to be detected at early stages, which reduces the risk of penalties and financial losses for businesses.

The study also reveals that the use of digital technologies such as cloud computing, Big Data analytics.

Conclusion

The study demonstrates that the transformation of tax accounting in the digital economy is an objective and inevitable process driven by the rapid development of information and communication technologies and the increasing need for transparency, efficiency, and real-time financial control. The transition from traditional tax accounting to automated digital systems significantly improves the accuracy of tax calculations, reduces administrative costs, minimizes the influence of the human factor, and enhances the overall effectiveness of tax administration.

The research confirms that the integration of electronic tax platforms, cloud technologies, artificial intelligence, and Big Data analytics into tax accounting systems creates new opportunities for continuous monitoring, risk-based tax control, and automated tax reporting. These technologies allow for real-time data processing, improve the reliability of tax information, and ensure a higher level of compliance with tax legislation.

At the same time, the study identifies several challenges related to cybersecurity, data protection, and methodological standardization.

The study concludes that the development of a clear methodological framework for tax accounting automation is essential to ensure consistency, reliability, and legal validity of digital tax processes. Policymakers and corporate managers should focus on strengthening digital governance, enhancing data security mechanisms, and

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promoting continuous professional training in digital accounting technologies. Overall, the automation of tax accounting serves as a key instrument for increasing fiscal efficiency, improving tax administration, and supporting sustainable economic development in the digital economy.

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