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DIGITALIZATION OF ACCOUNTING: THEORY, PRACTICE, AND IMPACT ON AUDITING

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Abstract. This paper reviews theory and practice of accounting digitalization, focusing on how digital technologies reshape accounting functions and information quality, while treating auditing implications as an extension. The purpose of this article is to analyze the impact of digitalization on accounting and auditing, identify key digital technologies and stages of their implementation, and formulate practical recommendations for improving the quality of accounting information in the context of digital transformation. During the scientific research, methods were used to analyze and systematization of scientific literature, comparative study of Kazakhstani and foreign sources, theoretical generalization, analysis of regulatory documents, and bibliometric analysis of publications using VOSviewer software. Using literature analysis, comparative review and regulation/case examination (domestic and international sources), we map key technological pathways (ERP/cloud, RPA, AI/ML, blockchain, XBRL) and a three-stage evolution: digitization, process intelligence, and data assetization. Evidence shows digitalization can improve timeliness, accuracy, comparability and predictive power of accounting information and strengthen management accounting. For auditing, opportunities include continuous auditing, full-population testing and AI-assisted analytics. We recommend phased implementation, stronger data governance and model-validation procedures, and targeted capacity building for accountants and auditors—points particularly relevant to Kazakhstan’s ongoing regulatory reforms. The paper offers a concise synthesis and practical guidance for enterprises and audit firms navigating

digital transformation. It also emphasizes the need for targeted capacity building to ensure that both accountants and auditors can adapt to the digital environment. These recommendations are of particular relevance to Kazakhstan, where regulatory reforms and digital transformation programs are actively reshaping the accounting and auditing landscape.

Keywords: Accounting digitalization, digital economy, data assets, management accounting transformation, financial information quality, continuous auditing

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БУХГАЛТЕРЛІК ЕСЕПТІ ЦИФРЛАНДЫРУ: ТЕОРИЯСЫ, ТӘЖІРИБЕСІ ЖӘНЕ АУДИТКЕ ӘСЕРІ

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Аннотация: Бұл мақалада бухгалтерлік есепті цифрландырудың теориясы мен практикасы қарастырылып, цифрлық технологиялардың бухгалтерлік функцияларды және қаржылық ақпараттың сапасын қалай өзгертетініне назар аударылады, ал аудит саласындағы салдарлар қосымша бағыт ретінде қарастырылады. Мақаланың мақсаты – цифрландырудың бухгалтерлік есеп пен аудитке әсерін талдау, негізгі цифрлық технологияларды және оларды енгізу кезеңдерін анықтау, сондай-ақ цифрлық трансформация жағдайында бухгалтерлік ақпараттың сапасын жақсарту бойынша практикалық ұсыныстарды тұжырымдау. Зерттеу барысында VOSviewer бағдарламалық жасақтамасын пайдалана отырып, ғылыми әдебиеттерді талдау және жүйелеу, қазақстандық және шетелдік дереккөздерді салыстырмалы зерттеу, теориялық жалпылау, нормативтік құжаттарды талдау және басылымдарды библиометриялық талдау әдістері қолданылды. Зерттеу барысында әдебиеттерді талдау, салыстырмалы шолу және нормативтік құжаттар мен тәжірибелік кейстерді (отандық және халықаралық көздерден) зерттеу әдістері қолданылды. Нәтижесінде негізгі технологиялық бағыттар анықталды: ERP/бұлттық жүйелер, роботтандырылған автоматтандыру (RPA) процесі, жасанды интеллект пен машиналық оқыту (AI/ML), блокчейн және XBRL есептілігі. Сондай-ақ үш кезеңдік даму траекториясы ұсынылды: бастапқы цифрландыру, үдерістерді интеллектуализациялау және деректерді активке

айналдыру. Зерттеу нәтижелері көрсеткендей, цифрландыру бухгалтерлік ақпараттың жеделдігін, дәлдігін, салыстырмалылығын және болжамдық құндылығын арттырады, сонымен бірге басқарушылық есептің стратегиялық шешім қабылдаудағы рөлін күшейтеді. Аудит саласында мүмкіндіктерге үздіксіз аудит, толық көлемді деректерді тестілеу және жасанды интеллектке негізделген талдау жатады. Мақалада кезең-кезеңмен енгізу, деректерді басқару құрылымдарын нығайту, модельді тексеру рәсімдерін енгізу және бухгалтерлер мен аудиторлардың цифрлық ортаға бейімделуі үшін мақсатты әлеуетті дамыту ұсынылады. Бұл ұсынымдар Қазақстандағы нормативтік реформалар мен цифрлық трансформация бағдарламалары жағдайында ерекше өзектілікке ие.

Түйін сөздер: бухгалтерлік есепті цифрландыру, цифрлық экономика, цифрлық активтер, басқарушылық есептің трансформациясы, қаржылық ақпараттың сапасы, үздіксіз аудит

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ЦИФРОВИЗАЦИЯ БУХГАЛТЕРСКОГО УЧЕТА: ТЕОРИЯ, ПРАКТИКА И ВЛИЯНИЕ НА АУДИТ

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Аннотация: В данной статье рассматриваются теория и практика цифровизации бухгалтерского учета, с акцентом на то, как цифровые технологии трансформируют функции учета и качество предоставляемой информации. Дополнительно анализируются последствия цифровизации для аудита. Цель исследования - проанализировать влияние цифровой трансформации на бухгалтерский учет и аудит, определить ключевые цифровые технологии и этапы их внедрения, а также сформулировать практические рекомендации по повышению качества учетной информации в условиях цифровизации. В работе использованы методы анализа и систематизации научной литературы, сравнительного исследования казахстанских и зарубежных источников, теоретического обобщения, анализа нормативных документов, а также библиометрического анализа публикаций с применением программного

обеспечения VOSviewer. На основе литературного обзора, сравнительного анализа и изучения нормативно-практических материалов (как отечественных, так и международных) выделены ключевые технологические направления: ERP- и облачные системы, роботизированная автоматизация процессов (RPA), искусственный интеллект и машинное обучение, блокчейн и XBRL. Предложена трехэтапная модель цифровой эволюции учета: начальная цифровизация, интеллектуализация процессов и превращение данных в стратегический актив. Результаты исследования показывают, что цифровизация повышает оперативность, точность, сопоставимость и прогностическую ценность бухгалтерской информации, а также усиливает роль управленческого учета в стратегическом принятии решений. Для аудита цифровая трансформация открывает новые возможности: непрерывный аудит, проверки на основе полной совокупности данных и применение аналитики искусственного интеллекта. В статье предлагается поэтапное внедрение цифровых решений, укрепление систем управления данными, введение процедур валидации моделей, а также целевая подготовка бухгалтеров и аудиторов к работе в цифровой среде. Эти рекомендации особенно актуальны для Казахстана, где текущие нормативные реформы и программы цифровой трансформации активно меняют практику бухгалтерского учета и аудита.

Ключевые слова: цифровизация бухгалтерского учета, цифровая экономика, цифровые активы, трансформация управленческого учета, качество финансовой информации, непрерывный аудит

Introduction. In recent years, the expansion of the digital economy has deeply influenced how organizations conduct their activities. The growing adoption of cloud technologies, big data, artificial intelligence, and similar tools in finance and accounting has considerably accelerated the pace of digital transformation. This shift cannot be reduced to the replacement of paper documents with electronic versions; it signals a much broader transition from labor-intensive procedures toward automation and the use of intelligent systems.

As a consequence, the function of accounting itself has undergone visible changes. In the traditional setting, accounting was primarily identified with recording transactions and maintaining ledgers. Today, however, expectations have expanded: accounting units are increasingly tasked with producing analytical information and supporting decision-making at the managerial level. Digital platforms allow financial data to be collected and processed faster and with greater precision, thereby giving company leaders a more solid basis for planning and evaluation.

Nevertheless, the ongoing digital transformation also exposes firms to new types of challenges. Among the most pressing are the establishment of effective data governance frameworks, the safeguarding of confidential information, and the preparation of specialists capable of combining financial expertise with technical and analytical skills. These issues demonstrate that digitalization is not only a matter of technological improvement but also of institutional and professional adaptation.

Moreover, the digital transformation of accounting also extends to the auditing profession, where practices such as continuous auditing, full-population testing, and the use of artificial intelligence tools are becoming increasingly relevant.

Therefore, the purpose of this article is to provide a systematic review of the theoretical and practical progress of accounting digitalization, to summarize its main pathways and impact mechanisms, and to assess its influence on the quality of accounting information and the transformation of management accounting.

In addition, the paper aims to identify the extended implications of accounting digitalization for auditing practices. By doing so, the article contributes to clarifying the role of digitalization in reshaping accounting functions, and offers insights for both academic research and practical application.

Materials and methods. This study applies the methods of literature analysis and comparative research. First, relevant academic publications on accounting digitalization were retrieved from CNKI, Elsevier, and Kazakhstani academic journals, including empirical studies, reviews, and case analyses. Second, twelve representative works were selected according to their relevance and contribution to the topic. These cover both Kazakhstani studies on accounting and auditing digitalization, and foreign contributions—including those by Chinese and international scholars—focusing on data assets, continuous auditing, and artificial intelligence. Finally, through systematic analysis and theoretical generalization, the study summarizes the main pathways and mechanisms of accounting digitalization and compares them with recent regulatory documents (such as the “Provisional Regulations on Accounting Treatment of Enterprise Data Resources”), thereby ensuring both theoretical and practical significance.

In addition to a traditional review of academic literature, bibliometric analysis was employed to provide a more systematic perspective. To this end, the VOSviewer software was used to conduct a keyword co-occurrence analysis based on publications retrieved from CNKI. This tool enables the visualization of research hotspots and conceptual linkages related to the digitalization of accounting. By mapping frequently used keywords and their connections, the method helps to identify clusters of research themes, such as technological drivers, financial reporting, management accounting, and auditing. The resulting visualization complements the literature review by offering an integrated overview of the field.

Results. In recent years, extensive research on accounting digitalization has addressed not only information quality and functional transformation, but also the role of data assets and auditing. It has been emphasized that the digitalization of accounting and auditing serves as a crucial factor in improving the efficiency of national resource management, with particular attention given to the implementation of IC software, XBRL, and blockchain technologies in Kazakhstan (Yerdavletova et al., 2024). Subsequent studies (Granlund & Malmi, 2002; Scapens & Jazayeri, 2003; Popp et al., 2023) confirm that the widespread use of information technology in accounting contributes to the achievement of the main goal of accounting – the effective collection, recording, and processing of accounting information.

Furthermore, digital technologies significantly enhance the audit process by enabling continuous auditing, improving data reliability, and increasing the transparency of financial reporting (Warren et al., 2015; Vasarhelyi et al., 2004).

Among Chinese researchers, Zhang and Bu (Zhang et al., 2023), based on empirical evidence from A-share firms, found that digital transformation enhances the comparability of accounting information by reducing managerial discretion. Liu (Liu, 2022) argued from a macro perspective that accounting digitalization should align with the broader development of the digital economy, integrating finance with business operations. Awyong et al. (Awyong et al., 2022) highlighted that digitalization is a key driving force in the transition from financial to management accounting. Tang (Tang, 2022), through a case study, illustrated how intelligent management accounting platforms can be designed and optimized in the course of corporate digital transformation. Zhu (Zhu, 2022) analyzed the application of robotic process automation (RPA) in accounting processes, noting efficiency gains but also new requirements for personnel skills.

Chen (Chen, 2021) explored the role of blockchain in financial accounting digitalization, stressing its potential in ensuring the reliability of vouchers and enabling smart contracts. Internationally, Alles, Kogan & Vasarhelyi (Alles et al., 2008) introduced and piloted the concept of continuous auditing, which has shifted audit practices from periodic to real-time monitoring. Kokina and Davenport (Kokina et al., 2017) analyzed the implications of artificial intelligence for auditing, showing that automation improves efficiency while raising concerns about governance and transparency.

More recent studies have expanded this discussion. Fotoh and Lorentzon (Fotoh & Lorentzon 2021) examined how digitalization affects the future of audits, pointing to opportunities for continuous monitoring but also risks of over-reliance on digital platforms. Jackson and Allen (Jackson & Allen, 2024) highlighted the importance of organizational context and staff perceptions in adopting accounting technologies, showing that technical progress depends on human factors. Pargmann et al. (Pargmann et al., 2023) provided a systematic review of digitalization in accounting, linking digital tools to new competence requirements for professionals.

In sum, Kazakhstani studies focus on the role of accounting and auditing digitalization in governance and resource management, while foreign contributions - both Chinese and international—analyze its impacts on information quality, functional transformation, data assets, and technology applications. Together, these perspectives demonstrate that accounting digitalization not only improves the quality and efficiency of information but also brings new opportunities and challenges for enterprises and auditing institutions.

To provide a more systematic overview of how scholars define and apply the concept of accounting digitalization, a keyword co-occurrence analysis was conducted using the VOSviewer software. The visualization clearly demonstrates the clustering of research themes, including the technological dimension (blockchain, big data, artificial intelligence), the implications for financial reporting and management accounting, and the extended influence on auditing (Figure 1).

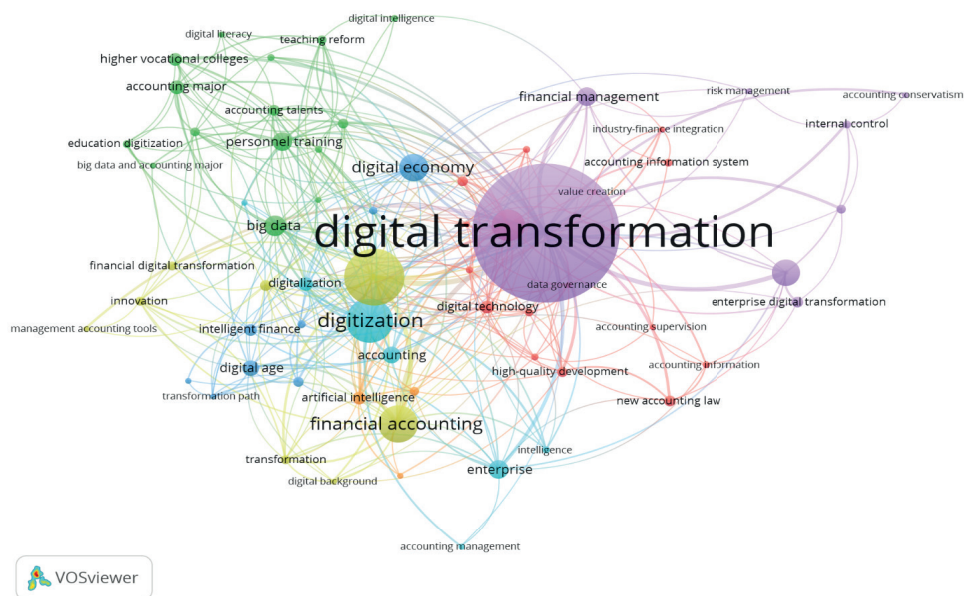


Figure 1 - Keyword co-occurrence network of research on accounting digitalization.

Note: generated using VOSviewer

As shown in Figure 1, the analysis results clearly reveal several major research clusters, such as a technology-driven cluster centered on “blockchain,” “big data,” and “artificial intelligence,” and an application-impact cluster related to “financial reporting,” “management accounting,” and “auditing.” This visualization corroborates the findings of the literature review, indicating that research on accounting digitalization is a multidimensional and interconnected field. The analysis provides a conceptual framework for the following in-depth discussion of digital pathways and their impacts.

Discussion. Digitalization has gradually become the mainstream direction of accounting development. With the application of cloud computing, big data, artificial intelligence, and blockchain, the way accounting information is processed has undergone profound changes. Accounting today extends far beyond traditional bookkeeping and transaction processing. Its role has gradually shifted toward providing analytical insights, supporting strategic choices, and even contributing to value creation within organizations. Under the influence of digital transformation, accounting has turned into a data-oriented hub of decision-making that exerts a direct influence on corporate governance and risk management. This process represents not only a technological modernization but also a redefinition of accountants’ professional identity, as they are increasingly regarded as both interpreters of information and active business partners.

This new understanding of the profession is accompanied by rising expectations

from organizations themselves. Instead of viewing accounting departments as passive record-keepers, firms now expect them to participate actively in shaping business strategies. Digital dashboards, real-time reporting tools, and predictive models allow accountants to join scenario analysis and planning exercises, activities that were once the domain of managers or financial analysts. In many global companies, accountants already cooperate closely with marketing, logistics, and IT units, reflecting the interdisciplinary character of digitalization. Such cross-functional cooperation indicates that the changes are not limited to technology but extend to institutional and cultural aspects of the profession.

The progression of accounting digitalization can be outlined in three overlapping stages. The first is the foundational stage, marked by ERP platforms, cloud-based systems, and electronic documentation, aimed at ensuring consistency and standardization of data. The second stage focuses on process intelligence, where robotic process automation, automated reconciliations, and smart reporting replace routine manual work and enable continuous monitoring. The third stage is oriented toward value creation, in which some enterprises experiment with treating data as a corporate asset. At this point, information becomes not only a management instrument but also a strategic resource subject to accounting recognition and disclosure. In reality, however, these phases rarely occur sequentially; firms often operate at multiple stages simultaneously, for example running ERP systems while also piloting predictive analytics or exploring early disclosures of data assets.

The progression of these three stages is summarized in the following figure (Figure 2).

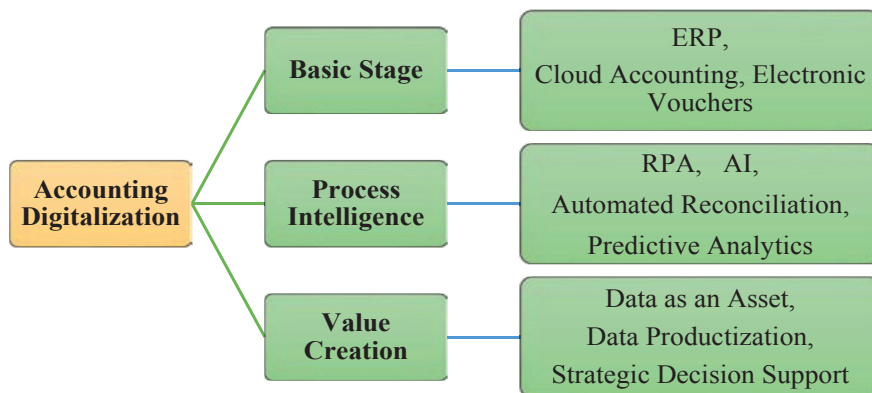


Figure 2 - Stages of Accounting Digitalization

Note: compiled based on sources. (Kupenova et al., 2023; Yasinska, 2021)

Empirical evidence shows that companies frequently move back and forth across these stages rather than following a strict linear order. A business may begin with ERP implementation to standardize processes, but difficulties with system integration can require returning to preliminary tasks such as data cleansing before progressing toward advanced analytics. Likewise, uncertainty about how to classify and value

data as an intangible resource often slows the transition to asset recognition. These uneven trajectories illustrate the need for flexible strategies that adapt to technological and regulatory conditions. Smaller firms in particular face specific barriers: while large corporations may test blockchain-based systems or deploy sophisticated AI, small and medium-sized enterprises typically struggle with funding, workforce training, and IT infrastructure. This creates a dual-speed pattern of digitalization, which in the long run may shape competitiveness and increase disparities between firms (Figure 2).

Digital transformation has not only improved efficiency but also reshaped the quality of accounting information. Research shows that standardized interfaces and automated processes reduce the space for discretionary accounting choices, thereby enhancing comparability. Real-time collection and automated disclosure improve timeliness, allowing the financial position of a company to be reflected in a much shorter cycle. With the support of artificial intelligence and big data, the predictive power of information is strengthened, offering tools for budgeting, performance evaluation, and risk identification. Accuracy has also benefited: automation reduces clerical errors, while anomaly detection systems expand the coverage of control tests beyond what was possible under traditional manual approaches. This has not only improved efficiency but also reshaped the quality of accounting information (Table 1).

Table 1. Mechanisms of Accounting Digitalization Affecting Information Quality

Dimension	Technologies and Measures	Mechanism of Impact
Comparability	ERP, standardized data interfaces	Reduce discretionary accounting choices
Timeliness	Real-time collection, monitoring	Near real-time financial reporting
Accuracy	Automated reconciliation, anomaly detection	Reduce human error, broader coverage
Predictability	Big data modeling, predictive analytics	Enhance forecasting and early warning
Note: compiled from sources (Zhang & Bu, 2023; Awyong, et al., 2022)		

As summarized in Table 1, digitalization enhances information quality across multiple dimensions through various technologies.

However, at the same time, the qualitative improvements in accounting information must be balanced against risks of over-reliance on automated outputs. Several studies have shown that while comparability improves, excessive standardization may reduce the flexibility of reporting and hinder firm-specific disclosures. Similarly, real-time reporting increases timeliness but may expose companies to market volatility if preliminary figures are misinterpreted by investors. In predictive analytics, the risk of algorithmic bias or data overfitting poses challenges to decision reliability. Thus, while digitalization elevates quality in measurable dimensions, it simultaneously introduces new forms of uncertainty that require careful governance.

In the field of management accounting, digitalization has brought even more visible changes. Traditional management accounting was primarily focused on analyzing results after activities had taken place. With the introduction of digital platforms, however, managers are now able to observe operations almost in real time. Budgets can be revised dynamically in response to shifts in the external environment or internal performance indicators, while continuous monitoring strengthens cost control and variance analysis. Visualization tools further simplify performance evaluation, turning management accounting into an active component of strategic planning rather than a purely supportive function.

This shift is most evident in industries where demand and supply change rapidly, such as retail, transport, and energy. Retailers using digital management accounting systems can adjust procurement strategies or pricing decisions within hours based on live sales data. Energy companies, confronted with volatile commodity prices, rely on AI-driven forecasting to strengthen both budgeting and risk management. These examples suggest that management accounting is moving from a reactive to a proactive role, increasingly acting as an early-warning system within corporate governance. In addition, digital platforms support the integration of non-financial indicators, particularly environmental, social, and governance (ESG) metrics, which allows businesses to align accounting practices with sustainability objectives.

Despite these advantages, the path toward digital accounting is far from smooth. Data governance continues to be a critical issue, since information is often scattered across different systems and lacks uniformity. For multinational companies, integrating data from subsidiaries that use diverse IT infrastructures is particularly challenging, complicating consolidation and increasing the risk of inconsistency. Cybersecurity also remains a pressing concern. As firms adopt cloud services and rely more on third-party providers, the risks of data breaches grow, making robust access control and protection policies indispensable. At the same time, talent shortages are evident. Modern accountants need to combine traditional knowledge of financial reporting with skills in data analytics and information systems. Although universities and professional associations have begun updating their programs, educational offerings often lag behind technological developments. Regulation has also failed to keep pace: questions remain regarding the recognition of data as an asset, the legal standing of blockchain-based vouchers, and liability for decisions assisted by artificial intelligence.

Organizational culture adds another layer of difficulty. Even when technical solutions are available, employees may resist adoption out of fear of redundancy or lack of confidence in their digital skills. Such resistance slows implementation and reduces the expected benefits. Dependence on external software vendors creates further risks, including long-term licensing costs, loss of data ownership, and difficulties in switching platforms. For international companies, inconsistent regulatory requirements across jurisdictions complicate compliance and reporting. Overcoming these challenges requires coordinated action among businesses, educators, regulators, and technology providers, ensuring that digital accounting is not just a technological shift but a sustainable transformation.

The influence of digitalization naturally extends into auditing. Sample-based testing is gradually giving way to full-population analysis, and the concept of continuous auditing is moving from theory into practice. Auditors can now extract entire datasets through system interfaces and employ algorithms for anomaly detection and risk monitoring. While these methods improve efficiency and broaden coverage, they also create new problems: verifying the integrity of digital data, validating algorithmic models, and preserving professional judgment in automated environments. A particular concern is the so-called “black box” effect, where AI identifies anomalies without providing a clear explanation of the underlying logic. Without transparency, the evidential value of such results may be questioned by regulators and stakeholders.

The key differences between traditional and digital audit approaches at each stage, along with the associated core challenges, are systematically compared in Table 2 below.

Table 2. Impact of Accounting Digitalization on Auditing Processes.

Audit Stage	Traditional Approach	Digital Approach	Key Challenges
Evidence Collection	Sampling and manual checks	Full data extraction via interfaces	Data integrity, interface stability
Substantive Tests	Manual recalculation	Automated scripts, risk scoring	Algorithm validation, transparency
Internal Control	Walkthroughs and interviews	System logs, real-time monitoring	Reliability of systems, access control
Reporting	Periodic static reports	Dynamic visualization, real-time output	Disclosure standards, consistency
Note: compiled from sources (Fotoh & Lorentzon, 2021; Kokina, & Davenport, 2017)			

Recent experimental initiatives undertaken by large international audit firms demonstrate both the advantages and the shortcomings of digital technologies in auditing. Continuous auditing platforms, for example, have been able to identify unusual revenue recognition patterns almost instantly, thereby reducing the likelihood of material misstatements. At the same time, these systems frequently generate false alerts, which can overwhelm auditors and require significant manual verification. This experience highlights the importance of developing hybrid approaches that combine automated testing tools with the professional judgment of auditors. Blockchain-based applications have likewise attracted attention: while they guarantee immutability of records, they complicate the correction of legitimate mistakes, illustrating the trade-offs between reliability and flexibility. Consequently, the auditing profession is confronted with the dual challenge of adopting new technologies while safeguarding its credibility and the trust of stakeholders.

Taken as a whole, the digitalization of accounting has not only transformed the production and transmission of financial information but also redefined the professional role of accountants. Management accounting has moved closer to the core of strategic planning by embedding real-time data into decision-making processes,

while auditing has adjusted to a setting dominated by automation and large-scale data monitoring. For businesses, the digital shift is not limited to replacing human effort with machines; it is primarily about creating resilient and transparent information infrastructures. A well-designed system can enable managers to assess profitability across product lines in near real time, monitor liquidity across subsidiaries, and forecast the potential outcomes of strategic choices before they are implemented. Organizations that invest in such tools are better positioned to allocate resources efficiently, manage risks proactively, and maintain accountability to stakeholders. In contrast, those that postpone or resist adoption may face declining operational control, inefficiencies, and reputational challenges in the eyes of investors and regulators.

Beyond the level of individual enterprises, digital accounting is exerting a broader influence on financial markets and regulatory systems. Investors increasingly expect timely and reliable disclosures, while regulatory agencies are experimenting with reporting mechanisms such as XBRL and integrated digital platforms for tax and compliance purposes. These initiatives have the potential to increase transparency and improve market efficiency but simultaneously raise concerns regarding privacy protection, data ownership, and excessive regulatory intervention. For emerging economies, including Kazakhstan, digital accounting may accelerate the harmonization of domestic practices with international standards, enhancing competitiveness in global markets. However, disparities in infrastructure and expertise may widen the divide between technologically advanced firms and those lagging behind, suggesting that the effects of digitalization differ substantially across contexts.

At the industry level, the transition to digital accounting has intensified competition among various service providers. Technology developers, consulting firms, and auditing organizations increasingly offer integrated digital solutions, often blurring the boundary between software services and traditional accounting work. While this dynamic creates opportunities for innovation, it also fosters dependency on external providers and generates uncertainty regarding long-term sustainability and control over sensitive data.

The profession as a whole is therefore evolving toward a mixed model in which long-established accounting principles - prudence, consistency, and professional skepticism - must coexist with advanced technological capabilities. The critical task for the coming years is to strike a balance between automation and human oversight, ensuring that efficiency improvements do not come at the cost of ethical responsibility, professional judgment, or public confidence. Achieving this equilibrium will be essential for the sustainable advancement of accounting and auditing in the digital era.

Conclusion. Accounting digitalization is changing the way finance works in organizations. Modern digital tools and platforms make financial data faster, more reliable, and easier to understand. This shift allows accounting to move beyond traditional bookkeeping, providing insights that help create real business value. By linking financial information closely with day-to-day operations, managers can

respond more quickly to changes and improve their competitive edge.

At the same time, the role of accountants is evolving. They are no longer just handling routine tasks - they now interpret data, advise on strategy, and contribute to decision-making. This new role requires a mix of technical skills and business knowledge. Continuous learning and digital literacy have become essential for professionals to stay relevant. For universities and professional organizations, this means updating courses, certification programs, and training to prepare graduates and practitioners for a digital workplace.

Audit firms are also benefiting from these changes. Automation and direct data access reduce the effort needed to collect evidence, freeing auditors to focus on assessing risk and exercising professional judgment. Access to larger datasets improves efficiency, expands coverage, and strengthens fraud detection. As a result, auditing is moving from looking backward at past records to providing more real-time assurance, opening new opportunities for firms to broaden their services.

However, these advantages come with responsibilities. Audit firms must keep algorithms transparent, protect client data, and remain independent from technology providers. Regulators face the challenge of encouraging innovation while safeguarding investors, updating standards on data assets, AI-based decisions, and digital audit evidence. For organizations, adopting digital auditing means embracing both new technology and a culture that values professional skepticism and ethical responsibility.

To make the most of these opportunities, more action is needed. Companies must improve data governance to ensure accuracy and security. Audit institutions should develop professionals skilled in both accounting and data analytics. Regulators, meanwhile, should refine rules on data recognition, AI applications, and the reliability of automated processes. Collaboration among all parties is key to ensuring that accounting digitalization develops in a sustainable and standardized way.

In short, accounting digitalization is a structural shift, not a passing trend. It affects everything from corporate strategy to auditing practices, from information systems to regulatory rules. The long-term challenge is balancing efficiency with accountability, automation with judgment, and innovation with trust. For Kazakhstan and other emerging economies, embracing digitalization can bring modernization and integration into the global financial system - if investments in infrastructure, education, and regulation keep up. By tackling these challenges together, stakeholders can ensure that digitalization strengthens, rather than undermines, the credibility and sustainability of accounting in the digital age.

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