



## **DIGITAL TRANSFORMATION IN ACCOUNTING: FROM DECENTRALISED REGISTRIES TO INTELLIGENT SYSTEMS**

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### **ABSTRACT**

**Purpose:** The article examines the impact of digital technologies on modern accounting in the period 2020–2025. It evaluates the potential of artificial intelligence, automated financial platforms, blockchain solutions, and big data analytics.

**Design/Methodology/Approach:** The study was based on a systematic analysis of reports from international audit firms, statistical data on investments in digital accounting technologies and secondary analysis of data from global surveys of accountants. The information was processed using content and comparative analysis to assess the impact of technologies on financial accounting productivity.

**Findings:** It demonstrates that, predominantly, economic agents consider digital technology applications in accounting as a factor in financial stability. Moreover, sound shifts are observed in the global structure of the accounting services market. The study found that 98% of accountants already use artificial intelligence to analyse financial indicators, and the average annual investment in automation technologies is \$24,000 per company.

**Research Limitation:** The use of secondary analysis from global surveys of accountants constrains the research to the original survey design. The varying methodologies across different surveys may limit comparability and introduce inconsistencies in how key constructs were measured and operationalised.

**Practical Implication:** The article emphasises the importance of accounting companies adapting to digital challenges by modernising financial processes, expanding the use of big data analytics, and strengthening cybersecurity in financial accounting.

**Social Implication:** The growth in the share of cloud platforms and blockchain accounting indicates an increase in the security and transparency of financial transactions, a determining factor in the industry's further evolution.



**Originality/Value:** This outcome reaffirms that digital technologies represent the cornerstone of change in accounting, as they facilitate automation in accounting processes, minimise financial risks, and enhance company productivity.

**Keywords:** *Accounting. automation. blockchain. cybersecurity. digital transformation*

## INTRODUCTION

Remarkably, the rapid evolution of digital technologies and their integration into management processes have significantly changed the way commercial activities, including accounting, are performed. Presently, in this condition, efficient financial management pivots on automating financial transactions, leveraging analytical platforms, and harnessing artificial intelligence. In particular, integrating modern digital solutions into accountants' curricula is an essential step toward preparing professionals capable of operating in the new realities of the financial market (Hettiarachchi et al., 2023). This is because technological innovations optimise accounting processes, reduce manual work, and increase the accuracy of accounting operations.

The globalisation of businesses and the expansion of the business-to-business (B2B) arena necessitate new models of financial control, reporting, and analytics. With the help of digital platforms, companies can operate in the international arena, handling multi-currency settlements and cross-border financial transactions. For accounting purposes, managing cryptocurrency transactions requires a different approach, and audit mechanisms need to be refined (Boateng et al., 2025; Makurin et al., 2023). Furthermore, cryptocurrencies and blockchain are key elements of financial reporting, thereby requiring adjustments to accounting methods and introducing new standards of financial openness.

The constant advancement of technological solutions and the rapid deployment of artificial intelligence will shape the main trends in accounting development in the years to come. AI automates financial documentation analysis, improves cash flow forecasting, and enables early detection of fraudulent schemes. Further development of AI in auditing and financial reporting will be a key factor in increasing accountants' efficiency (Kindzeka, 2023). In modern conditions, accounting firms are investing significantly in implementing AI algorithms to reduce the risk of financial errors and accelerate the processing of large volumes of data. However, a lack of systemic vision is observed, and digital solutions are often implemented without aligning with the overall company's processes landscape. The roots of this situation lie, in particular, in the 'dispersed' nature of scholarly research in this field.

The article examines current trends in the digitalisation of accounting and determines the impact of technological innovations on the effectiveness of financial management, auditing, and reporting. The main task is to identify key changes in the industry driven by automation, artificial intelligence, blockchain technologies, and cloud computing, and to assess their impact on the globalisation of accounting services. The study aims to analyse the main challenges arising in the integration of digital technologies, including cybersecurity, data standardisation, regulatory constraints, and business model adaptation. Special attention is paid to the analysis



of cooperation between the EU and the Asia-Pacific countries, which contributes to the international integration of digital accounting platforms.

## **LITERATURE REVIEW**

The development of digital technologies and their impact on accounting are key topics in modern research. The integration of artificial intelligence, blockchain, financial process automation and cloud solutions is significantly changing approaches to accounting and auditing. Scientific works analyse both the benefits of new technologies and the potential risks of their implementation. One can emphasise that there are global trends that shape the future of accounting - the interaction between technological innovations, regulatory standards and the globalisation of the financial market.

Blockchain solutions play an important role in modern accounting, providing increased transparency and reliability of financial information. Akoh Atadoga et al. (2024) analyse in detail the prospects for using blockchain in accounting and the main challenges of its implementation. Ivanchenkova et al. (2023) examine the risks associated with the use of this technology in the financial sector, particularly in enterprises of the fuel and energy complex. In turn, Bunda (2022) emphasises the potential of blockchain technologies to increase audit accuracy and reduce the risk of financial fraud. Shepel (2023) considers the development of information systems in accounting, emphasising the importance of integrating blockchain into modern financial systems.

Artificial intelligence (AI) is becoming a central tool in modernising accounting. Zhang et al. (2023) analyse the ethical aspects of implementing AI in management accounting and the risks associated with algorithmic autonomy. Collins Kindzeka (2023) examines the impact of AI on auditing and financial reporting, emphasising its ability to minimise errors when processing large amounts of data. Wang (2023) examines the use of modern computer technologies for automated financial information management. Amar Jyoti Borah (2023) indicates that AI in accounting enables rapid transaction analysis and improved strategic financial planning. Coman et al. (2022) studied digitalisation trends in the field of professional accounting.

Automation of accounting processes significantly changes the structure of financial management. Japee and Thakker (2023) analyse the impact of cloud technologies on financial management, demonstrating how automated accounting systems optimise enterprise costs. Vagner et al. (2023) examine the development of cloud solutions and their integration into the financial sector. Korolyuk et al. (2023) consider the digitalisation of accounting in the new economic reality and the need to change approaches to managing financial flows. Shah (2023) emphasises the importance of financial accounting for management in the context of digital transformation, emphasising the role of technology in ensuring the effectiveness of management decisions.



Changes in financial technology also affect the regional characteristics of accounting and auditing. Omar (2023) examines the impact of technological innovations on the efficiency of accounting practices in Kenya, highlighting the role of digital platforms in accelerating financial transactions. Nykyforak et al. (2024) analyse modern innovations in accounting in Ukraine, in particular, the growing role of automated systems in small and medium-sized businesses. Shengelia et al. (2022) assess the impact of financial technology on the digital transformation of accounting, auditing and financial reporting, focusing on regulatory policy challenges. Kumar et al. (2023) examine the processes of digitalisation of accounting in global business, analysing the advantages and limitations of digital financial solutions.

Thus, the current scientific literature confirms that automation, artificial intelligence, blockchain and cloud technologies are the main drivers of accounting transformation. Research emphasises that the use of these solutions ensures transparency of financial information, reduces operational risks and increases the efficiency of the accounting process. Global trends indicate a further increase in the digitalisation of accounting, requiring accounting firms to adapt to new technological standards.

Contemporary theories of digital transformation in accounting include resource-based theory, which emphasizes how digital assets like technology and skills can become a source of competitive advantage; agency theory, which contends that digital transformation reduces agency costs by enhancing internal controls and transparency; and the theory of technological adoption, which investigates the variables affecting the uptake and spread of new accounting technologies like artificial intelligence and cloud computing (Amanamah, 2025; Alassuli et al., 2025; Argento et al., 2025). However, scientists mainly devote their efforts to researching a narrow set of issues, plans, and concerns, while a systemic perspective is lacking.

## **MATERIALS AND METHODS**

In writing the article, a methodology was used that relies on current theoretical narratives, statistical data, trends, and expert assessments. At the first stage, information was collected on trends in the digital transformation of accounting. At the second stage, the level of implementation of artificial intelligence, automated platforms, and blockchain solutions in the financial sector was assessed. Then, the dynamics of the industry's development were determined, taking into account investments, international cooperation, automation of financial processes, and globalisation of accounting services. At the final stage, the strategies of leading companies and changes in financial analysis approaches were examined. Secondary statistical data obtained from international analytical studies were used to verify the relevance of the information. The sample of sources consisted of 34 sources from ScienceDirect, MDPI, ResearchGate, and the IEEE library.

The range of technologies includes cloud accounting platforms, artificial intelligence, process automation, blockchain solutions, big data analytics, cybersecurity, and IoT. Cloud accounting software streamlines processes and enables multi-user access by providing centralised, remote



storage and access to financial data. Routine tasks are automated, financial reporting and forecasts are improved, compliance is increased, and fraud detection is aided by artificial intelligence. Robotic Process Automation (RPA) automates repetitive, rule-based accounting operations, such as data entry and reconciliation, using software “bots”. Large datasets can be analysed using automated tools to improve strategic decision-making and provide real-time insights into financial performance.

Geographically, the study covers North America, the European Union and the Asia-Pacific region. The selection of technologies is based on their key role in the financial sector, helping companies optimise costs, increase productivity and minimise risks. The analysis of regions was conducted due to the USA's dominant role in the development of accounting solutions, the EU's active adaptation to digital innovations, and the dynamic growth of the accounting services market in Asian countries.

The analysis was carried out by selecting, comparing, and summarising statistical data from market reports and research on companies that develop accounting automation software. Emphasis was placed on the analysis of market dynamics, the volume of investments in digital technologies, the market share of major service providers, and the speed of new technology adoption across countries. A content analysis approach was used to evaluate emerging trends in accounting technology. Another analytical approach applied was comparative analysis, which compared the state of innovation implementation across different regions and highlighted key factors shaping the industry's evolution.

In summation, the research methodology applied a systematic approach in analysing modern accounting technologies and their impacts upon the efficiency, security, and global integration of financial processes. Qualitative methods were employed to provide an objective account of changes in accounting and forecast its future development over the next several years. All outcomes support the claim that implementing digital solutions leads to greater productivity in accounting firms, cost optimisation, and enhanced financial control. The future stages of the research can be extended to include analyses of real cases of companies applying innovations in the field of accounting, as well as a thorough examination of legislative aspects of the regulation of accounting FinTech solutions across different countries.

## **RESULTS AND DISCUSSION**

With the digital revolution impacting all aspects of financial accounting and auditing, the global accounting industry is undergoing a massive reform. In recent years, automation, AI, and blockchain have become major catalysts of change, enabling businesses to reduce costs, mitigate risks, and improve the efficiency of their accounting operations. The key developments are international collaboration seeping into and out of different countries, where the European Union is simultaneously collaborating with the Asian region. Still, the United States remains the prominent technological leader in accounting solution development. The globalisation of accounting services and continuous cross-border interaction contribute to rapid



changes in the industry and a wide array of possibilities for international cooperation and technological innovation in the finance sector.

Digital technologies are actively changing accounting, including automation, analysis, and the security of financial transactions. The adoption of AI, blockchain, and cloud platforms optimises financial processes, minimises risks, and increases the productivity of accounting firms. Table 1 below outlines the major technologies that are changing the future of accounting.

*Table 1: Digital technologies in accounting*

<b>Technology</b>	<b>Characteristic</b>	<b>Technical parameters</b>
Cloud accounting platforms	Accounting via web interface	QuickBooks Online, Xero, Zoho Books
Artificial Intelligence (AI)	Automation of routine operations, analytics	Vic.ai, Botkeeper
Financial Process Automation (RPA)	Robotic processing of payments, reporting	UIPath, Blue Prism
Blockchain	Secure financial record-keeping	Hyperledger, IBM Blockchain
Big Data Analytics	Financial data analysis and forecasting	Google BigQuery, IBM Watson Analytics
Cybersecurity in accounting	Data and financial transaction protection	McAfee, Cisco Umbrella
Internet of Things (IoT)	Real-time control of financial flows	SAP Leonardo, Microsoft Azure IoT

*Source: developed by the authors*

The use of modern technologies in accounting increases the efficiency of processes, reduces costs, automates routine tasks, and improves financial analysis. Innovative solutions such as cloud services, AI, blockchain and big data analytics have already become the basis of the digital transformation of accounting. The success of companies in the future will largely depend on their ability to integrate these technologies into their operations.

The globalisation of accounting services is gaining momentum as digital solutions simplify cross-border financial transactions. The main regions that set the pace for industry development are the United States, the European Union, and the Asia-Pacific region. In recent years, there has been a noticeable increase in outsourcing: European companies are increasingly



outsourcing accounting and auditing to India, the Philippines, and China, where operating costs are low and financial infrastructure is well developed.

In 2024, about 98% of accountants outsourced, increasing accounting efficiency and reducing the cost of processing financial documents (Intuit QuickBooks, 2024). The EU is intensifying cooperation with Asian countries, particularly Singapore and Hong Kong, as these jurisdictions offer modern FinTech solutions and reliable regulatory frameworks for international accounting.

Despite the global growth of the accounting services market, the USA remains the leading developer of accounting software, setting global industry trends. American companies are investing billions of dollars in developing automated financial solutions (FinancesOnline, 2024). In 2024, the average investment by companies in accounting technologies was \$24,000, which contributed to the mass adoption of AI, accounting automation, and cybersecurity (Intuit QuickBooks, 2024). Forecasts for 2025–2026 indicate the active spread of artificial intelligence in accounting, where 98% of accountants are already using AI to analyse financial data and detect fraud. The development of advanced analytical tools to build more accurate economic forecasts and improve clients' business strategies is intensifying in the USA. Table 2 represents key aspects of the impact of technology on accounting.

*Table 2: Key aspects of the impact of technology on accounting*

No.	Category	Description of changes and impact
1	Automation of accounting processes	AI and other digital tools reduce document processing time and improve efficiency.
2	Using AI in accounting	98% of accountants use AI to analyse data, predict risks, and detect fraud.
3	Outsourcing of accounting services	98% of accountants outsource some of their work to outsourcing companies, which improves efficiency.
4	Investment in technology	On average, companies spend \$24,000 per year on new accounting technologies.
5	Economic sustainability through technology	93% of accountants believe that companies that actively implement technology are more resilient to inflation.
6	Expanding the functions of an accountant	81% of accountants have expanded their client list in the last 12 months because they are now consulting.
7	Technologies in financial analysis	AI provides more accurate analysis of financial indicators and helps build a company development strategy.



No.	Category	Description of changes and impact
8	Customers expect technological support	69% of customers need help managing technology alongside financial services.
9	Developing accounting skills	95% of accountants believe that mastering new technologies is as important as traditional accounting skills.
10	Impact on the labour market	The use of digital solutions helps compensate for the shortage of personnel in the accounting sector.

*Source: Compiled from Intuit QuickBooks (2024)*

According to the analysis of the Intuit QuickBooks Accountant Technology Survey (2024), accounting firms that actively implement technological innovations significantly improve the efficiency of work and financial sustainability of clients. Process automation, the use of artificial intelligence and outsourcing can not only reduce costs, but also improve the quality of customer service. The impact of digital technologies on accounting is undeniable, and the industry's further development depends on companies' level of technological adaptation.

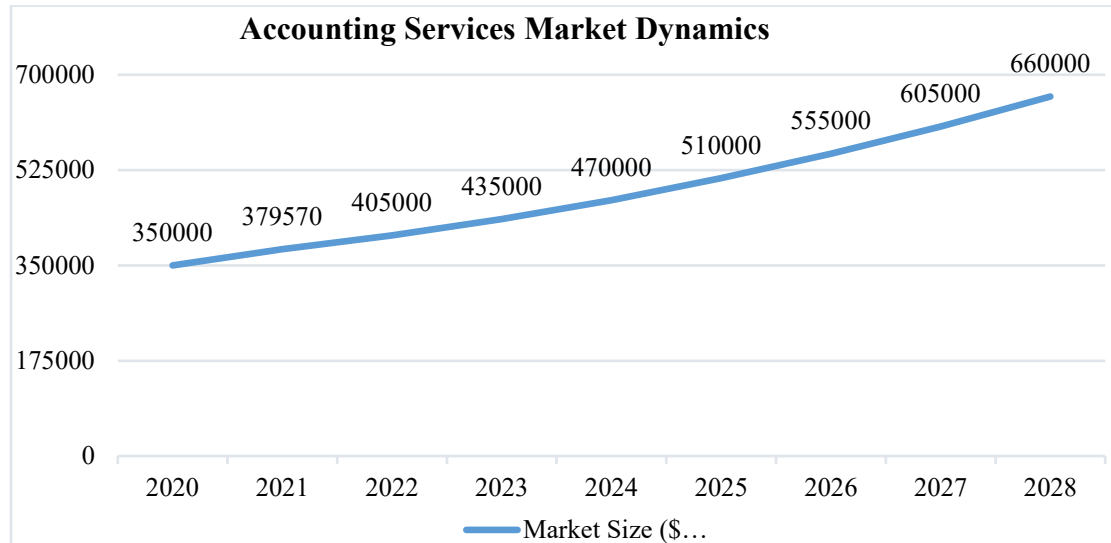
The accounting sector is set to undergo a massive transformation over the next two years, driven by the expansion of automation, digital platforms and AI analytics. 93% of accountants believe that technology will help companies become more resilient during global financial crises. 81% of accounting firms are also expanding their services and moving into consulting, which provides new sources of revenue. One of the key aspects of the changes will be a shift in clients' approach to technology support: 69% of clients already demand that accounting firms integrate financial technologies into their business model.

The global accounting services market is showing steady growth, driven by active digitalisation and business adaptation to modern financial technologies. In 2020, the market volume was estimated at \$350 billion, and in 2021 it reached \$379.57 billion. The main drivers of this growth are accounting automation, the introduction of artificial intelligence, the use of cloud platforms and blockchain solutions. Digital accounting services are actively developing in North America and Europe. In the USA, where the accounting services market share in 2021 was \$119.47 billion, growth is forecast at 6.42% annually due to active investments in digital financial technologies (Verified Market Research, 2024). Asia-Pacific countries are showing the highest growth rate, 8.46% CAGR, 2023–2030, as businesses shift massively to outsourcing accounting services.

Investment in financial technology continues to grow as companies seek to improve the transparency and security of financial transactions. By 2028, the accounting services market will reach \$660 billion, indicating high adoption of digital solutions in the financial sector. The most significant accounting firms: Deloitte, PwC, Ernst & Young and KPMG, are actively



implementing blockchain and automated data management systems to minimise errors in auditing and financial control. In the UK, where the accounting services market is estimated at \$40 billion, companies have been actively implementing AI analytics systems for financial forecasting since 2024. In China and India, governments are encouraging the use of digital financial platforms, which are driving growth in the accounting services sector and creating new opportunities for international cooperation among companies.



*Figure 1. Accounting Services Market Dynamics*  
Source: Compiled based on Verified Market Research (2024)

The trends in the accounting services market also reflect the globalisation of the financial sector. In the EU and the US, demand for outsourcing accounting companies is increasing as international corporations need to optimise their financial operations. In Germany, investments in cloud accounting services are expected to increase by 20% in 2025, helping improve accounting efficiency for small and medium-sized businesses.

Verified Market Research analysts believe that by 2028, more than 75% of accounting firms worldwide will switch to automated accounting platforms with integrated artificial intelligence and big data analytics. Accordingly, it will lead to a 25% reduction in financial management costs and increased reporting efficiency for international corporations. In Asian countries (particularly China and Singapore), FinTech solutions are rapidly developing, enabling accounting firms to process global financial transactions without geographical restrictions. The USA and the UK remain leaders in the development of accounting technologies, since 60% of the worldwide accounting software market is concentrated here. Ultimately, further digitisation of accounting and the integration of automated financial platforms will elevate international business competition to an entirely different level.



This study finds that the digital transformation of accounting alters an entity's entire financial process landscape, making it more efficient, secure, and accessible. This is supported by the author's contribution, together with others' investigations (Khoruzhy et al., 2023), as their primary research theme addresses the application of cloud technologies in inter-organisational cooperation, with a focus on the speed and accuracy of accounting operations. In the same vein, Polenova et al. (2019) note that their research examines changes in the accounting system driven by contemporary information technologies, involving greater automation and lower accounting expenditures. This is further attested by Levytska et al. (2022), who note that digital technologies now play a crucial role in internal audit and financial monitoring systems, reducing the risk of misuse of funds. Manachynska (2023) emphasised the importance of digitising solutions in an accounting security system, in line with the trends identified in our study.

Shevchenko et al. (2023) highlight the impact of the digital economy on accounting, focusing on international experience with digitalisation, consistent with our findings regarding the globalisation of accounting services. Saleh et al. (2023) examine the quality of management accounting systems in manufacturing companies and indicate that the digital solutions implemented should optimise the effectiveness of cost control across organisations. Similar conclusions have also been reached by Talha et al. (2022), who examined the role of information technology in accounting and financial management in medical institutions. On the other hand, Bielialov et al. (2023) examined international experience with the digitisation of economic processes to confirm the critical relevance of the technological novelty introduced toward the automation of accounting functions.

Blockchain technology has had a significant impact on accounting processes, as evidenced by the study by Zhang & Shah (2023), which examines the role of blockchain in the internal audit of the financial sector, highlighting benefits in data security and transparency. This aligns with the work of Akoh Atadoga et al. (2024), who examined the challenges of implementing blockchain solutions in accounting and auditing. Furthermore, Ivanchenkova et al. (2023) detailed the risks of using blockchain in a financial company and the need to develop new security standards. In addition, Nykyforak et al. (2024) provided similar evidence on the efficiency of digital solutions in accounting, particularly in implementation related to FinTech tools.

The automation of accounting processes is enabled by artificial intelligence and robotic platforms, which aligns with Collins Kindzeka's (2023) findings on the role and implications of AI in financial reporting and auditing. Zhang et al. (2023) then provide a closer view of the other dimension of ethical issues concerning AI use in accounting, which aligns with our findings on legal oversights. The work of Hettiarachchi et al. (2023) discusses the impacts of digital solutions on accounting education, insisting that financial programs must be redesigned to address new dimensions. Makurin et al. (2023) emphasise another critical direction of development in the industry: blockchain accounting, which analyses the management of cryptocurrency transactions in accounting.



The research findings substantiate that the digitalisation of accounting is indeed an irreversible phenomenon that dramatically transforms the ways of doing accounting, financial data analysis, and risk management. However, it also presents some challenges, including cybersecurity, regulatory hurdles, and a shift as businesses adopt new business models, all of which align with the findings of Onatuyeh et al. (2025), Manachynska (2023) and Bielialov et al. (2023). Further investigations should focus on developing the most effective mechanisms to regulate digital accounting platforms and to standardise data internationally.

## CONCLUSION

This outcome reaffirms that digital technologies represent the cornerstone of change in accounting, as they facilitate automation in accounting processes, minimise financial risks, and enhance company productivity. The integration of artificial intelligence, blockchain solutions, big data analytics, and cybersecurity enables optimising the management of financial flows and improving forecasting accuracy. It was found that 98% of accountants already use AI to analyse economic indicators, demonstrating a high level of adoption of automated solutions in the industry. The widespread outsourcing of accounting services increases the efficiency of business processes, allowing companies to reduce accounting costs and focus on strategic financial matters. The analysis also shows that 93% of accounting companies consider the use of technology a key factor in maintaining financial stability amid economic instability.

Significant changes are also observed in the global structure of the accounting services market. The United States retains its leading position in the development of accounting software. At the same time, the European Union and the Asia-Pacific region demonstrate active growth in the implementation of innovative solutions. The study showed that investments in digital accounting technologies average \$24,000 per company per year, indicating a high level of adoption of new technologies in the business environment. The impact of digital transformation is also reflected in changes to the accountant's role, as 81% of professionals have expanded their service offerings, including in financial consulting. Digital transformation of accounting has become not just a trend, but a necessary condition for the effective functioning of business in modern market conditions.

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