Original Research Article

Research on the mechanism of digital economy development's impact on audit quality

Jia Yao

Nantong Institute of Technology, Nantong City, Jiangsu Province, 226000, China

Abstract: The digital economy is transforming economic and social systems while significantly impacting audit quality. This paper explores how the digital economy affects audit quality through the application of digital technologies, data-driven improvements in efficiency and accuracy, and new skill requirements for auditors. It proposes five strategies to integrate the digital economy with audit quality: technological innovation, auditor skill development, regulatory enhancement, collaborative innovation, and digital transformation of audit standards. The findings show that the digital economy drives improvements in audit quality while necessitating industry transformation, making digital auditing a key pathway for high-quality development.

Keywords: Digital economy; Audit quality; Digital technology; Big data

1. Introduction

The rapid advancement of digital technologies has made the digital economy a key driver of global growth. Leveraging big data, cloud computing, AI, and blockchain, it is transforming business models and market environments while challenging traditional auditing methods reliant on sampling and manual operations, which struggle with increasing enterprise complexity. Innovations like big data analytics, AI, and real-time monitoring offer opportunities to enhance audit efficiency and quality. However, issues such as data privacy, system risks, and auditors' skill gaps demand stronger regulation and standardization. This paper examines how the digital economy impacts audit quality and proposes strategies for its integration into the auditing profession.

2. Overview of digital economy development

2.1. The definition and characteristics of the digital economy

The digital economy is an economic model driven by digital technologies, with data as a key production factor. It leverages big data, cloud computing, AI, and blockchain to optimize resource allocation and economic structures. Its key characteristics include being technology-driven, relying on rapid ICT advancements; platform-based, emphasizing resource integration; low marginal costs due to data replication; and decentralized, allowing faster and more accurate responses to market demands. These traits drive economic transformation while introducing new demands for auditing.

2.2. Current status and trends in digital economy development

The digital economy has rapidly expanded, becoming a major growth engine. By 2023, its global size exceeded $50 trillion, with its share of GDP rising. Key trends include the deep integration of consumer and industrial internet, the commercialization of data resources, and the digitalization of traditional enterprises. Future growth will focus on smart manufacturing and digital finance. However, challenges such as data privacy and regulatory enhancements require attention, creating new research areas for auditing.

2.3. The profound impact of the digital economy on traditional industries

The digital economy has transformed traditional industries by digitalizing production processes through industrial internet platforms, enhancing efficiency. It has reshaped business models, introducing platform and sharing economies, and improving consumer engagement through precise, responsive digital services. While offering opportunities, it also demands compliance in data security, privacy, and information disclosure, posing challenges and raising standards for auditing practices.

3. The concept and influencing factors of audit quality

3.1. Definition and evaluation standards of audit quality

Audit quality refers to the effectiveness of audits in identifying and reporting material misstatements or fraudulent activities in financial statements. It encompasses audit independence, professionalism, and credibility, which collectively influence the reliability of financial information and the stability of capital markets. International Standards on Auditing (ISA) and domestic guidelines define audit quality through factors such as independence, completeness of procedures, sufficiency of evidence, and auditors' competence. High-quality audits produce clear and accurate reports that support stakeholder decision-making, making the improvement of audit quality vital for market stability and investor protection.

3.2. Analysis of key factors affecting audit quality

Audit quality depends on several interrelated factors. Independence is foundational but can be compromised by economic interests or relationships with audited entities. Auditors' competence, including their experience, technical skills, and professional judgment, directly impacts the depth and scope of their work. The scientific nature of procedures, such as evidence collection and risk assessment, also plays a crucial role. Additionally, the broader audit environment, including legal frameworks, regulatory oversight, and market competition, significantly influences overall quality. These factors interact to shape the effectiveness and credibility of audits.

3.3. Challenges faced by traditional audit models

Traditional auditing methods, primarily reliant on manual processes, face significant limitations in the digital age. Low efficiency and limited coverage hinder their ability to address the growing complexity and scale of modern enterprises. Sampling techniques are inadequate for analyzing large, unstructured datasets, increasing the risk of oversight. Time and resource constraints further impede auditors' capacity to adapt to dynamic business environments. Moreover, stricter requirements for data privacy, compliance, and real-time risk monitoring highlight the deficiencies of traditional models. Without real-time capabilities, traditional audits fall short of meeting the demands of the digital economy, underscoring the urgent need for digital transformation to enhance efficiency and quality.

4. Analysis of the impact of the digital economy on audit quality

4.1. Application of digital technology in the audit process

The rise of the digital economy has integrated advanced technologies into auditing, transforming traditional practices. Big data enables full-sample analysis, improving audit coverage and accuracy. Artificial intelligence (AI) performs data filtering and pattern recognition, reducing manual errors. Blockchain,

with its decentralized and immutable nature, ensures reliable audit evidence, enhancing data transparency and traceability. Additionally, digital technologies facilitate real-time auditing by connecting to enterprise management systems, enabling continuous monitoring and analysis. These advancements significantly boost audit efficiency and quality.

4.2. Data-Driven enhancements to audit efficiency and accuracy

Data-driven approaches are central to improving audit quality in the digital economy. Unlike traditional models reliant on limited samples, digital technologies provide real-time access to comprehensive financial and non-financial data, enhancing audit scope and precision. Data analytics identifies anomalies and risks, offering targeted guidance for audits, while machine learning detects patterns and correlations, deepening audit insights. Real-time tools dynamically monitor enterprise operations, addressing risks promptly and overcoming the limitations of traditional methods, thereby strengthening audit efficiency and quality.

4.3. Changes in skill requirements for auditors in the digital economy

The digital economy demands auditors to go beyond traditional expertise, acquiring technical and data analytics skills. Proficiency in big data platforms, analytical tools, and algorithms is essential for handling vast data sets. Auditors must also understand information systems to assess related risks. Emerging technologies like blockchain and AI require auditors to continuously learn and apply these tools effectively. Furthermore, enhanced professional judgment is needed to navigate complex digital scenarios. In this context, auditors must evolve into multi-disciplinary professionals with expertise spanning various domains.

5. Mechanisms for enhancing audit quality in the digital economy

5.1. Integration and application of big data and artificial intelligence in auditing

Big data and AI have become key drivers of improved audit quality in the digital economy. Big data enables full-scale analysis, replacing traditional sampling methods and allowing precise risk identification. AI, through machine learning, automates data filtering, pattern recognition, and anomaly detection, offering critical decision support. For instance, AI can analyze transactions, detect irregularities, and generate risk warnings. The integration of these technologies automates audit reporting, transforming auditing from “experience-driven” to “technology-driven,” significantly enhancing efficiency and accuracy.

5.2. Construction of real-time monitoring and risk early warning mechanisms

Real-time monitoring and risk early warning mechanisms offer new avenues for improving audit quality. Unlike traditional post-event audits, real-time systems use digital technologies to continuously track financial and operational activities. Leveraging big data and IoT, these systems collect real-time information on cash flows, transactions, and inventories, enabling timely identification of risks. Early warning systems analyze historical and real-time data to predict future risks, allowing proactive responses. These mechanisms enhance the timeliness of audits and reduce operational risks, offering innovative approaches to audit practices.

5.3. Blockchain technology ensuring transparency and traceability of audit information

Blockchain technology, with its decentralization and immutability, provides a solid foundation for improving audit quality. It ensures data authenticity and integrity by recording every transaction, offering reliable evidence. Blockchain’s distributed storage allows auditors to trace data, identify risk points, and

prevent fraud. For example, it can document revenue recognition and cost allocation, enhancing transparency. Smart contracts further automate audit processes, boosting efficiency. Blockchain strengthens the transparency and credibility of audit activities through its secure and reliable infrastructure.

5.4. The Role of digital audit tools in optimizing audit processes

Digital audit tools enhance audit quality by automating tasks and optimizing processes through intelligent algorithms. Audit management software streamlines workflows from planning to reporting, ensuring standardization and efficiency. Data analysis tools process large datasets, helping auditors identify risks and anomalies with precision. Integration with enterprise systems enables real-time data updates, improving accuracy and timeliness. As digital audit tools evolve, their expanded applications will play a crucial role in sustaining improvements in audit efficiency and quality.

6. Recommendations for promoting the integration of the digital economy and audit quality

6.1. Enhancing the development and promotion of digital audit technologies

To integrate the digital economy and audit quality, the development and adoption of advanced digital audit technologies must be prioritized. Current tools often lack data processing capacity and intelligence, limiting their effectiveness. Governments, enterprises, and academia should collaborate to invest in research on AI, big data, and blockchain applications in auditing. Standardizing and modularizing audit tools can simplify their adoption. Policies such as subsidies and tax incentives are needed to encourage adoption, while industry associations and regulators should organize technology exchanges and pilot projects to share practical use cases, building a robust foundation for improving audit quality.

6.2. Strengthening digital skills training for auditors

The digital economy requires auditors to acquire new technical skills. Audit institutions should create targeted training programs on big data tools, blockchain applications, and AI integration in auditing. Auditors must also learn to assess and manage information system risks. Governments and industry associations should establish certification systems for digital audit competencies, providing authoritative credentials. Online platforms can reduce training costs and improve accessibility. Continuous skill development will enable auditors to adapt to technological changes and improve audit quality effectively.

6.3. Improving the audit regulatory system in the digital economy context

A strong regulatory system is essential for ensuring audit quality in the digital economy. Regulatory frameworks must adopt advanced technology to monitor audit workflows and quality in real time. Tailored guidelines for digital auditing should define operational requirements and risk controls for technologies like big data and blockchain. Enhanced oversight of corporate data disclosures will ensure transparency and standardization. Interdepartmental collaboration between tax, financial, and regulatory agencies can create a comprehensive oversight system. A well-developed framework will standardize digital audit practices and elevate audit quality.

6.4. Building collaborative innovation mechanisms between enterprises and audit institutions

The digital economy requires closer collaboration between enterprises and audit institutions. Enterprises

should share necessary data and optimize systems for more efficient audits, while audit institutions can explore best practices and promote technology applications through pilot projects and joint research. Long-term mechanisms, such as regular exchange meetings, can enhance cooperation, improving both enterprise systems and audit quality. These collaborative efforts also provide replicable models for digital auditing, fostering standardization and efficiency across the industry.

6.5. Advancing the digital transformation of audit standards and practices

Digital transformation of audit standards is key to improving quality. Traditional standards must be updated to reflect the demands of emerging technologies and complex business models. Elements like big data analytics, blockchain auditing, and real-time monitoring should be integrated into new frameworks. Standards must emphasize technological compliance and data security, clearly defining requirements for digital tools. Audit institutions need technical guidelines and best-practice examples to implement these standards effectively. This transformation ensures audits are scientifically guided and systematically improved, meeting the demands of the digital economy.

7. Conclusion

The digital economy presents both opportunities and challenges for enhancing audit quality. Technologies like big data, AI, and blockchain improve audit coverage, accuracy, and timeliness while enabling intelligent, real-time auditing. However, these advancements require enhanced auditor skills, updated standards, and stronger regulatory systems. This paper recommends five strategies: promoting digital audit technologies, improving auditor skills, enhancing regulatory frameworks, fostering enterprise-audit collaboration, and advancing audit standard transformation. By leveraging digital technologies and coordinating progress in technology, institutions, and talent, the audit industry can improve quality, ensure market transparency, and support economic growth.

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