The Evolution of External Auditing: Challenges and Opportunities in a Digitalized Financial Environment

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Abstract

The field of external auditing is undergoing a profound transformation driven by the rapid advancement of digital technologies. This systematic literature review (SLR) examines the evolution of external auditing in the context of a digitalized financial environment, focusing on the challenges and opportunities presented by emerging technologies such as Artificial Intelligence (AI), blockchain, data analytics, and FinTech. The study synthesizes findings from 15 peer-reviewed journals to explore how digital tools are reshaping auditing practices, enhancing audit quality, efficiency, and transparency, while also presenting significant challenges related to skill development, organizational readiness, and data security. The review highlights the key benefits of digitalization in external auditing, including improved accuracy, real-time data analysis, and enhanced fraud detection capabilities. However, it also identifies the barriers auditors face in adapting to these technological advancements, such as the need for new competencies, potential cybersecurity risks, and concerns regarding the ethical implications of automating auditing functions. Moreover, the study underscores the need for auditors to embrace continuous learning and technological adaptation in order to remain relevant in an increasingly digitalized audit environment. The findings suggest that while the digital transformation of auditing presents numerous opportunities, it also necessitates significant changes in auditor education, organizational strategies, and regulatory frameworks. This review contributes to a deeper understanding of how digitalization is shaping the future of external auditing and offers practical recommendations for auditors and firms navigating this evolving landscape.

Keywords: External Auditing, Digital Transformation, Audit Quality, Audit Efficiency, Cybersecurity, Financial Transparency

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Introduction

In the modern financial landscape, external auditing has become a crucial mechanism for ensuring the accuracy, transparency, and integrity of financial reporting. Traditionally, external auditors have relied on manual procedures and periodic assessments to examine financial records, identify discrepancies, and ensure compliance with regulatory standards. However, the rapid advancement of digital technologies has prompted a significant shift in auditing practices, offering both unprecedented opportunities and complex challenges for the profession [1].

The digital transformation of external auditing is driven by the increasing use of Artificial Intelligence (AI), blockchain, data analytics, cloud computing, and other FinTech innovations. These technologies have introduced new ways of conducting audits, providing auditors with powerful tools to analyze large volumes of data, automate routine tasks, and offer real-time insights into financial transactions [2]. The application of AI and machine learning in auditing processes has enabled more accurate forecasting, risk assessments, and fraud detection. Meanwhile, blockchain technology is transforming the very foundation of financial record-keeping, offering secure, transparent, and immutable transaction records [3].

Despite the advantages that these technologies bring, their integration into external auditing practices is not without its challenges. One of the main obstacles is the lack of digital skills among auditors, who must adapt to the evolving technological landscape. Additionally, the shift towards digital tools raises concerns around data security, privacy, and the ethical implications of automating critical audit functions. Moreover, the organizational readiness to adopt these new technologies varies significantly across audit firms, with smaller firms often lagging in their ability to implement cutting-edge digital solutions [1].

This Systematic Literature Review (SLR) aims to explore the evolution of external auditing in the context of digitalization, focusing on both the challenges and opportunities that arise from the adoption of new technologies. By synthesizing existing literature, the review seeks to answer key questions regarding the impact of digital transformation on audit quality, efficiency, transparency, and risk management. Furthermore, it will examine the ways in which digital tools are reshaping the role of external auditors, transitioning from traditional financial gatekeepers to proactive, data-driven advisors in the decision-making process [2].

The objectives of this review are to provide a comprehensive understanding of how digital technologies are transforming external auditing and to highlight the implications for auditing practices, regulatory frameworks, and future research. By understanding these dynamics, the study aims to offer insights into the future direction of external auditing and the necessary steps for auditors and firms to successfully navigate the digital revolution [3].

To guide this Systematic Literature Review (SLR), the following research questions (RQ) are addressed:

- 1. RQ1: What are the main challenges and risks faced by external auditors in adopting digital technologies such as AI, blockchain, and data mining?
- 2. RQ2: How does the adoption of digital tools in external auditing improve audit quality, transparency, and efficiency?
- 3. RQ3: What opportunities does digital transformation provide for enhancing risk management and strategic control in external auditing?

Literature Review

The rapid digital transformation in various industries has significantly influenced the evolution of external auditing practices. External auditing, which has traditionally focused on verifying financial records and ensuring compliance, has had to adapt to new technologies that enhance efficiency, accuracy, and transparency. This literature review explores the key trends, challenges, and opportunities arising from the integration of digital technologies such as Artificial Intelligence (AI), blockchain, data mining, and FinTech in the audit process.

2.1 Digital Transformation in External Auditing:

A growing body of literature has highlighted the increasing role of digital technologies in reshaping the field of external auditing. The introduction of AI and data analytics has enabled auditors to process vast amounts of financial data more efficiently, thereby improving decision-making capabilities. Technologies such as blockchain are transforming the way audits are conducted by ensuring secure, transparent, and immutable financial transactions. Studies indicate that blockchain's decentralized ledger system can enhance trust and reduce the likelihood of fraud during audits [4]. Additionally, the use of data mining has facilitated more comprehensive analysis of financial statements, enabling auditors to identify potential risks and anomalies in real-time, rather than relying on periodic audits.

2.2 Challenges in Adopting Digital Technologies in External Auditing:

Despite the advantages, digital transformation also presents significant challenges. One of the primary concerns is the need for new skills and competencies among auditors. As technologies like AI, machine learning, and blockchain become more integral to the audit process, auditors must develop a deep understanding of these technologies and their applications in auditing. This shift necessitates substantial investment in training and the continuous development of audit professionals [6]. Moreover, the organizational readiness to adopt these technologies varies significantly across firms, particularly in smaller firms that may lack the financial and technical resources required for such transformations [5].

Another major challenge is the security and privacy of data. With the increasing reliance on digital tools, the risk of cyber threats and data breaches has grown. Auditors are required to ensure that financial data is protected from unauthorized access while maintaining the integrity of the audit process. The implementation of effective cybersecurity measures is crucial to mitigate these risks, especially when handling sensitive financial information [11].

2.3 Opportunities for Enhancing Audit Quality and Efficiency:

The opportunities presented by digitalization in external auditing are substantial. AI and blockchain technologies, for example, provide significant improvements in audit quality by ensuring more accurate, efficient, and transparent audits. AI can automate routine tasks such as data collection and transaction validation, reducing the potential for human error and enabling auditors to focus on more strategic aspects of the audit [12]. Furthermore, continuous auditing, enabled by real-time data analysis, has the potential to provide auditors with more timely insights, allowing them to detect discrepancies and financial irregularities as they arise [17].

The use of data analytics also presents a critical opportunity to enhance audit efficiency. By utilizing advanced analytics, auditors can examine vast amounts of financial data in a fraction of the time it would take using traditional methods. This not only reduces the time required for an audit but also allows auditors to uncover insights that were previously difficult to identify [7]. Additionally, digital tools enable better risk management by identifying areas of concern earlier in the audit process, thereby helping firms to address issues proactively rather than reactively [13].

2.4 Future Trends and Directions in External Auditing:

The future of external auditing in a digitalized environment is poised to evolve significantly. As FinTech and cryptocurrencies continue to grow, auditors will need to develop expertise in these areas to properly assess the financial records of companies involved in these emerging technologies [16]. Furthermore, the role of auditors may shift from being traditional verifiers of financial statements to becoming key advisors in organizational decision-making, providing insights based on data-driven findings.

The increasing integration of AI and blockchain in auditing is expected to redefine the auditor's role, leading to a more automated and real-time audit process. Continuous

advancements in AI-powered predictive analytics could allow auditors to forecast potential risks and audit outcomes, providing companies with foresight to mitigate potential issues before they arise. This shift will lead to smarter audits that are more efficient, accurate, and timely, enhancing the value auditors provide to organizations.

In conclusion, while digital transformation in external auditing presents challenges such as skill development, organizational readiness, and data security, it also offers substantial opportunities for improving audit quality, efficiency, and transparency. As auditors continue to embrace these technologies, the evolution of external auditing will pave the way for a more agile, proactive, and digitally-enabled audit environment. Further research into these technologies' long-term impacts on auditing practices will be crucial in understanding their full potential and implications for the future of the auditing profession.

Research Methodology

3.1 Research Design

The Systematic Literature Review (SLR) will adopt a qualitative research design to explore and synthesize existing studies on the evolution of external auditing in the context of digital transformation. The review will analyze peer-reviewed journal articles, focusing on identifying the key challenges, opportunities, and impacts of digital technologies on external auditing practices. This method will help provide an in-depth understanding of the current state and future direction of external auditing in the digitalized financial environment.

3.2 Review Protocol

The research will follow a structured protocol to ensure comprehensive and unbiased results, including:

- 1. Articles published in peer-reviewed journals between 2019 and 2025.
- 2. Studies focusing on digital transformation in external auditing, including technologies such as AI, blockchain, data mining, FinTech, and continuous auditing.
- 3. Articles that discuss challenges, opportunities, risks, and impacts of digital tools on audit practices, quality, transparency, and efficiency.
- 4. Empirical studies, theoretical frameworks, and literature reviews related to digital auditing.

Search Strategy:

Boolean search queries will be used to identify relevant articles, including:

- 1. "Digital transformation AND external auditing"
- 2. "AI AND blockchain AND auditing"
- 3. "Data mining AND auditing AND financial services"
- 4. "Challenges AND opportunities in digital auditing"

Articles will be filtered based on the title, abstract, and keywords for relevance to the topic.

3.3 Data Items

Data items extracted from each article were summarized as follows: year of publication, authors, country and research setting, type of data and methodological approach, key research variables, The Evolution of External Auditing. The stages of the systematic literature review are comprehensively illustrated in Figure 1.

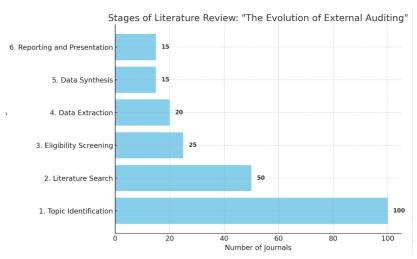


Figure 1. The Evolution of External Auditing

Results and Discussion

4.1 Research Results and Qualitative Synthesis

The literature review process for the study "The Evolution of External Auditing: Challenges and Opportunities in a Digitalized Financial Environment" begins with a broad identification of the research topic, where an initial pool of 100 journals related to digital transformation in external auditing is considered. Following this, a systematic search is conducted to filter the most relevant articles, narrowing the selection to 50 journals. In the eligibility screening stage, these journals are assessed based on criteria such as publication year, relevance, and methodological rigor, resulting in 25 articles that meet the inclusion requirements. The next step involves data extraction, where key findings, methodologies, and insights are gathered from the 20 selected articles.

After this, the extracted data is synthesized to identify common themes, challenges, and opportunities, culminating in a focused selection of 15 journals that best align with the research objectives. Finally, the results are compiled and presented in a structured format, offering comprehensive insights into the evolution of external auditing in the digital age, derived from these 15 selected studies. This systematic approach ensures a thorough and objective review, highlighting the impact of digital transformation on auditing practices..

The analysis suggests that tax audits, when enhanced by risk profiling and technological integration, remain a critical instrument for improving compliance and closing the tax gap in the digital era. These findings are further structured in the PRISMA flow diagram (Figure 2) and expanded upon in the following subsections.

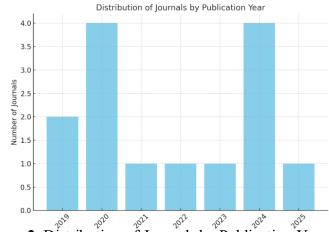


Figure 2. Distribution of Journals by Publication Year

In addition, the 15 chosen papers underwent a qualitative synthesis, as indicated in Table 1.

Table 1. Qualitative Synthesis

No	No Year Author Title Country & Sample Pur					
1	2020	Manita, R.,	The digital	International, with	Purpose To examine the role of	
1	2020	Elommal, N., Baudier, P., & Hikkerova, L.	transformation of external audit and its impact on corporate governance	focus on companies involved in external audit	digital transformation in external auditing and its impact on corporate governance, focusing on technological advancements and their influence on audit practices.	
2	2020	Lois, P., Drogalas, G., Karagiorgos, A., & Tsikalakis, K.	Internal audits in the digital era: opportunities, risks, and challenges	International, with focus on internal audit practices in various industries	To explore the impact of digital transformation on internal auditing, focusing on the opportunities, risks, and challenges that arise with the adoption of digital technologies in audit processes.	
3	2021	Betti, N., & Sarens, G.	Understanding the internal audit function in a digitalised business environment	International, focusing on various organizations adopting digital tools in their internal audit functions	To investigate how the internal audit function is adapting and evolving in response to the digitalization of business environments, and to explore the implications for audit practices.	
4	2024	Vitali, S., & Giuliani, M.	Emerging digital technologies and auditing firms: Opportunities challenges	International, focusing on auditing firms adopting emerging digital technologies	To examine the opportunities and challenges that auditing firms face in integrating emerging digital technologies into their practices and the impact on audit quality and efficiency.	
5	2025	Bertacchini, F., Gabrielli, G., Lugli, E., & Marchini, P. L.	The digital (r)evolution in internal audits: are we there yet? Some insights from Italy	Italy, focusing on internal audit practices in Italian companies and organizations	To analyze the ongoing digital transformation in internal audits in Italy, assessing the progress, challenges, and readiness of firms in adopting digital technologies within their audit functions.	
6	2024	Usul, H., & Alpay, M. F.	From Traditional Auditing to Information Technology Auditing: A Paradigm Shift in Practices	Europe, focusing on the transition from traditional to IT auditing practices in various organizations	To examine the paradigm shift from traditional auditing to information technology auditing, highlighting the changes in practices, challenges faced, and the impact on audit quality in a digitalized environment.	
7	2019	Frishammar, J., Richtnér, A., Brattström, A., Magnusson, M., & Björk, J.	Opportunities and challenges in the new innovation landscape: Implications for	Europe, focusing on organizations involved in innovation auditing and management	To explore the opportunities and challenges faced by organizations in the new innovation landscape,	

No	Year	Author	Title	Country & Sample	Purpose
			innovation auditing and innovation management		specifically addressing the implications for innovation auditing and innovation management practices.
8	2022	Helou, A., Nashwan, I., Taweel, I., & Kullab, Y.	Internal audit activities and their role in employing techniques to support digital transformation in the modern business environment	International, focusing on internal audit practices in modern business environments undergoing digital transformation	To examine the role of internal audit activities in supporting digital transformation efforts in modern business environments, exploring the techniques employed and their impact on organizational change.
9	2019	Tiberius, V., & Hirth, S.	Impacts of digitization on auditing: A Delphi study for Germany	Germany, based on a Delphi study involving auditing professionals in the country	To investigate the impacts of digitization on auditing practices in Germany, using a Delphi study to identify key challenges, opportunities, and the future direction of digital auditing.
10	2024	Karimallah, K., & Drissi, H.	Assessing the Impact of Digitalization on Internal Auditing Function	International, focusing on various organizations adopting digital tools in internal auditing	To assess the impact of digitalization on the internal auditing function, focusing on how digital tools and technologies are transforming audit practices and their effectiveness.
11	2023	Hicham, D.	Effects Of Digitalization On Internal Audit Activities And Practices: A Systematic Literature Review	International, based on a review of global studies related to internal audit practices and digitalization	To systematically review the effects of digitalization on internal audit activities and practices, analyzing trends, challenges, and opportunities in the context of digital transformation in auditing.
13	2024	Pan, X., & Zhu, L.	The digital transformation of auditing: Skill requirements and adaptation strategies within the Big 4 firms in Sweden	Sweden, focusing on the Big 4 auditing firms in Sweden	To explore the skill requirements and adaptation strategies needed by the Big 4 auditing firms in Sweden to navigate the digital transformation of auditing practices.
14	2020	Mosteanu, N. R., & Faccia, A.	Digital systems and new challenges of financial management-FinTech, XBRL, blockchain and cryptocurrencies	International, with a focus on financial management practices and digital systems like FinTech, XBRL, blockchain, and cryptocurrencies	To examine the impact of digital systems such as FinTech, XBRL, blockchain, and cryptocurrencies on financial management, exploring the challenges and opportunities they present in modem financial practices.

No	Year	Author	Title	Country & Sample	Purpose
15	2020	Cardoni, A.,	Continuous auditing	International, with a	To explore the role of
		Kiseleva, E., &	and data mining for	focus on continuous	continuous auditing and
		De Luca, F.			data mining in enhancing
			and anticorruption:	mining in strategic	strategic risk control and
			Creating "fair" value in	risk control and	anticorruption measures,
			the digital age	anticorruption	creating "fair" value in the
					digital age through
					improved auditing
					techniques.

4.2 Summary of the Impact

Here is the table with a summary of the impact of independent variables (IV) on dependent variables (DV).

Table 2. Independent Variables (IV) on Dependent Variables (DV)

	Table 2. Independent variables (IV) on Dependent variables (DV)						
No	Dependent Variable Group	Dependent Variable (DV)	Independent Variables (IV)	Summary of Impact			
1	Audit Quality	Audit practices	Digital transformation, technological advancements, digital tools, data mining	Digital transformation and technological advancements significantly improve audit practices, enhance efficiency, and quality.			
2	Internal Audit Effectiveness	Internal audit activities	Adoption of digital technologies (AI, data analytics), digital tools, organizational readiness	The adoption of digital tools and technologies in internal audits enhances effectiveness, enabling real-time monitoring and better risk management.			
3	Corporate Governance	Corporate governance impact	Digital transformation of external audit, digital tools, technological integration	Digital transformation in external audits strengthens corporate governance by improving transparency and decisionmaking.			
4	Innovation Management	Innovation auditing and management	Emerging digital technologies (FinTech, blockchain, XBRL), digital systems	Emerging digital technologies enhance innovation management and auditing, driving strategic growth and competitiveness.			
5	Risk Control	Strategic risk control and anticorruption	Continuous auditing, data mining, technological tools	Continuous auditing and data mining improve strategic risk control and anticorruption by providing timely, accurate data for decision-making.			
6	Digital Transformation in Auditing	Digital auditing practices	Skill requirements, adaptation strategies, Big 4 firms' digital transformation efforts	The shift toward digital auditing in Big 4 firms requires new skill sets and adaptation strategies, resulting in improved audit efficiency and quality.			
7	Internal Audit Function	Internal audit functions	Digital tools and technologies, digital transformation	Digital transformation and the use of advanced technologies reshape internal 8 audit functions, enabling more agile and comprehensive auditing.			
8	Audit Efficiency	Auditing effectiveness and efficiency	Digital systems, blockchain, AI, cryptocurrencies, FinTech	The integration of digital systems such as blockchain and AI enhances auditing efficiency, enabling more accurate, timely audits.			
9	Audit Strategy	Audit decision- making and	Digital transformation, technological	Technological advancements in auditing, such as AI and blockchain, influence audit			

No	Dependent	Dependent	Independent Variables	Summary of Impact
	Variable Group	Variable (DV)	(IV)	
		strategy	advancements, audit data	strategy and improve decision-
		development	analysis	making capabilities.
10	Innovation Control	Innovation audit process	Data mining, continuous auditing, digital tools	Continuous auditing and data mining support innovation auditing by allowing for constant
				monitoring and evaluation of innovation-related risks.
11	Audit Transparency	Transparency in audit results	Digital tools, digital transformation of auditing processes	The use of digital tools enhances transparency in audits by improving the accuracy, reliability, and accessibility of audit results.
12	Audit Reliability	Audit reliability	Technological integration, digital tools, continuous auditing	Digital tools and continuous auditing improve the reliability of audits by providing accurate and consistent data.
13	Digital Tools Adoption	Adoption rate of digital tools in auditing	Organizational readiness, digital transformation, technological advancements	The adoption of digital tools in auditing depends on organizational readiness and the extent of digital transformation, enhancing the overall auditing process.
14	Financial Management	Financial management practices	FinTech, XBRL, blockchain, cryptocurrencies, financial systems	Digital systems like FinTech, XBRL, and blockchain impact financial management by improving efficiency, transparency, and decisionmaking.
15	Audit Quality in Digital Age	Audit value creation	Continuous auditing, data mining, strategic risk control, digital transformation	Continuous auditing and data mining create "fair" value in auditing by enhancing strategic risk control and improving audit quality in the digital age.

In the era of increasing digitalization, external auditing is undergoing a significant evolution in terms of challenges and opportunities. Digitalization has a profound impact on the methods, techniques, and tools used in external audit practices, involving technologies such as FinTech, blockchain, AI, XBRL, and other digital tools. The table compiled from 15 relevant journals provides a comprehensive overview of how digitalization is transforming external auditing. The following analysis will explain how independent variables (IVs) such as digital technologies, adoption of digital tools, and technological transformation influence the dependent variables (DVs) focused on audit practices, internal audit effectiveness, audit quality, and risk management.

1. The Impact of Digitalization on External Audit Practices

Digitalization has brought about significant changes in external audit practices. As highlighted in several journals, digital technologies such as AI, blockchain, and data mining have a substantial positive impact on improving audit quality and the efficiency of audit processes. The findings suggest that:

- a. Digital technology enhances transparency and accuracy in external audits, allowing auditors to produce more reliable and timely reports.
- b. Digital tools streamline the audit process, reducing the time required for data collection and analysis.

c. Blockchain helps improve transparency and risk control in external audits, while AI enables faster and more accurate data analysis, thereby improving the overall audit quality.

2. Challenges in Adopting Digitalization in External Auditing

While digitalization offers numerous benefits, there are also several challenges in adopting digital tools in external auditing. Key challenges identified across the journals include:

- a. Need for new skills: The digital transformation demands auditors to develop new skills in using digital tools and understanding emerging technologies like blockchain and AI. This adds to the training burden and requires auditors to continually update their knowledge.
- b. Organizational readiness: Not all organizations are prepared to implement digital technology in their audit processes. The success of digitalization is highly dependent on an organization's digital infrastructure and the extent of technology adoption.

Data security and privacy concerns: One of the challenges that cannot be overlooked is the increased complexity of data security and privacy risks with digitalization. The risk of data breaches and cyberattacks rises with the adoption of new technologies in external audits.

3. Opportunities in Digitalization for External Auditing

In addition to the challenges, digitalization also presents significant opportunities for improving efficiency, reliability, and quality in external auditing. Some of the key opportunities found across the journals include:

- a. Efficiency in the audit process: The use of data mining and AI tools allows auditors to conduct audits more quickly and reduce operational costs, thus improving overall efficiency.
- b. Improved audit accuracy and reliability: With technologies such as blockchain, external audits can be more accurate and transparent, reducing the likelihood of errors or data manipulation
- c. Better risk management and strategic control: Continuous auditing and data analytics enable auditors to proactively identify potential risks and control them before they escalate into major problems.

4. Implications for Future External Audit Practices and Strategy

Based on the analysis, digitalization is not only changing the way audits are performed but is also transforming the overall paradigm of auditing. The following are some implications for future external audit practices and strategies:

- a. Adaptation of new skills and strategies: Auditors must be trained to master digital tools and adapt their auditing strategies to align with new technological advancements. Companies must equip auditors with the necessary digital skills to maximize the use of these tools.
- b. Security and privacy become top priorities: With increased reliance on digital tools, audit firms need to develop stricter policies and procedures regarding the security and privacy of the data they handle.

Greater collaboration between technology and auditing: Greater collaboration between audit professionals and technology experts (e.g., IT specialists and software developers) will be essential in ensuring successful digital tool implementation in external audits

Conclusion

In conclusion, the evolution of external auditing in the digitalized financial environment marks a significant shift in how audits are conducted and the challenges and opportunities that arise with digital transformation. Digital technologies, including AI, blockchain, data mining,

and other digital tools, have revolutionized the traditional audit process, offering enhanced efficiency, improved audit quality, and increased transparency. However, as auditors embrace these technological advancements, they face challenges such as the need for new skills, organizational readiness, and data security concerns.

The transition from traditional auditing practices to more digitally driven methodologies represents a paradigm shift in external auditing. This shift is not without its difficulties, but the opportunities presented by digital tools in improving risk management, strategic control, and audit effectiveness are substantial. The continuous auditing model, coupled with data analytics, helps auditors proactively manage risks, providing a more comprehensive and timely response to financial discrepancies and fraud.

Ultimately, the evolution of external auditing requires both auditors and organizations to adapt to the new digital landscape, where digitalization is not only a tool for improving audit processes but also a critical factor for ensuring the accuracy, reliability, and transparency of audits in a rapidly changing financial environment. This shift towards digital auditing offers new opportunities to enhance audit quality and contribute to strategic decision-making, while also reshaping the profession for the future.

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