



ENHANCING INTERNAL AUDIT QUALITY THROUGH ACCOUNTING INFORMATION SYSTEMS IN THE ERA OF DIGITAL TRANSFORMATION: A CASE STUDY OF RAFIDAIN BANK

Amin Nazemi

Department of Accounting, School of economics, management and social sciences, Shiraz University
anazemi@rose.shirazu.ac.ir

Navid reza namazi

Department of Accounting, School of economics, management and social sciences, Shiraz University
namazi@rose.shirazu.ac.ir

Mohammad Hossein Setayesh

Department of Accounting, School of economics, management and social sciences, Shiraz University
anazemi@rose.shirazu.ac.ir

Abdullah hasan al-khamas

Department of Accounting, School of economics, management and social sciences, Shiraz University
abdazviz@gmail.com

Article history:	Abstract:
Received: 8 th December 2025 Accepted: 7 th February 2026	In recent years, digital transformation has emerged as a fundamental driver of innovation across financial and accounting systems. The present study examined the impact of digital innovations and Accounting Information Systems on the enhancement of internal audit quality and supervisory functions at Rafidain Bank. The research used a qualitative, sequential exploratory design. The statistical population comprised senior executives, board members, and subject-matter experts with substantial domain familiarity, and participants were selected through purposive and snowball sampling. Data were collected through in-depth semi-structured interviews and participant observation, and subsequently analyzed using open, axial, and selective coding procedures. The findings indicated that technological infrastructure development, digital maturity, employee empowerment, supportive leadership, and an innovation-oriented organizational culture were key determinants of improved audit quality and financial information transparency. Moreover, technologies such as blockchain, data analytics, and artificial intelligence played a significant role in enhancing accuracy, reducing errors, and strengthening accountability. The results further demonstrated that digital transformation not only improved internal monitoring and control mechanisms but also contributed to increased trust, operational efficiency, and organizational value creation.

Keywords: Accounting Information Systems, digital transformation, internal audit, Rafidain Bank, blockchain

INTRODUCTION

Emerging technologies, particularly blockchain and other distributed ledger technologies, have emerged as transformative forces in accounting and auditing (Ivanova et al., 2024). The intrinsic characteristics of blockchain—decentralization, immutability, and transparency—have created the potential to fundamentally reshape traditional accounting processes (Kupenova et al., 2022). By providing a secure and tamper-resistant record of transactions, blockchain can substantially mitigate the risks of fraud and error, strengthen interparty trust, and streamline audit procedures (Sharma et al., 2024). Smart contracts, defined as self-executing agreements encoded on blockchain platforms, automate complex financial transactions and ensure compliance with predefined rules, thereby minimizing the need for manual intervention and oversight (Patak et al., 2024). Digital systems, including cloud computing, big data analytics, and artificial intelligence, have further expanded the functional capacity of accounting professionals by enabling advanced data analysis, predictive modeling, and risk assessment (Xin et al., 2024). The integration of these technologies has been associated with enhanced reliability and efficiency of accounting information, thereby facilitating more informed decision-making and strengthening corporate governance frameworks (Almasria et al., 2024). At present, the Bank's internal audit system has remained largely dependent on manual processes—procedures that are not only



time-consuming and costly but also susceptible to human error and inconsistencies in the recording and analysis of information. Exclusive reliance on manual methods for data collection, review, and analysis has constrained both the scope and frequency of audit activities, thereby increasing the likelihood of undetected fraud and managerial inefficiencies (El-Sayed et al., 2023). Furthermore, the absence of real-time monitoring infrastructure has weakened the Bank's capacity to identify and respond promptly to emerging risks and regulatory changes, a limitation that poses a substantive threat to the financial institution's long-term sustainability and competitiveness (Zhang et al., 2024).

In the era of digitalization, companies have been conceptualized as systems dedicated to the continuous and systematic collection, measurement, processing, and dissemination of data (Gierusz, 2018). The performance of the accounting system, functioning as an information system, has been shaped by financial accounting—through the generation of information in the form of financial statements—and by management accounting—through the provision of financial and non-financial information to internal stakeholders in the form of reliable reports and transparent data presentation. These functions have constituted a central component of the Accounting Information System and have facilitated access to economic and financial information. Among the essential qualitative attributes of the accounting system, which is regarded as the international language of business and finance, is the enhancement of the usefulness of generated information and the assurance of its comparability across reporting entities (Balicka, 2023).

One contemporary digital challenge in auditing practices has been the shift to digital delivery. In recent years, digital transformation, through its substantial impact on accounting and auditing, has progressively attracted scholarly and professional attention and underscored the growing need for education and training in this domain (Pourali Laklayeh & Faramarzi Kangarlouei, 2023). In this context, digital technologies have effectively addressed challenges arising from the need to enhance Accounting Information Systems and to align them with the evolving informational requirements of stakeholder groups. In the digitally driven economy, identifying the opportunities offered by these technologies in accounting and auditing has become particularly important (Sledziowska & Włoch, 2020). Digital technologies have played a critical role in improving Accounting Information Systems by enabling efficient data processing and facilitating the extraction of valuable business insights. Furthermore, the application of blockchain technology has provided avenues to strengthen Accounting Information Systems amid increasing information demands and to align reporting practices with the expectations of managers and diverse stakeholder groups (Balicka, 2023).

The present study examined the opportunities afforded by modern digital technologies to enhance the Accounting Information System of Rafidain Bank, one of the largest state-owned commercial banks in Iraq. Rafidain Bank (also known as Al-Rafidain Bank) was established in 1941 in Baghdad. With 146 branches across Iraq and additional branches in several countries, including London, Cairo, Beirut, Abu Dhabi, Bahrain, Oman, and Jabal Amman, the Bank has been recognized as a major financial institution within the Iraqi banking sector. In 2017, Rafidain Bank accounted for approximately 45% of Iraq's total banking assets, making it the largest bank in the country.

Throughout its history, Rafidain Bank has encountered numerous challenges. During the First Gulf War, the Bank sustained substantial losses, and its London branch was closed in 1990 due to international sanctions. Despite these setbacks, Rafidain Bank continued to provide banking services both within Iraq and internationally, ultimately consolidating its position as a central pillar of the Iraqi banking system. Accounting for nearly half of the assets in the Iraqi banking market, the Bank is currently pursuing digital transformation across various operational processes.

The internal audit process at Rafidain Bank currently remains traditional and cumbersome, relying extensively on the examination of paper-based records and documentation. This approach has entailed considerable time and human resource costs and has increased the likelihood of error, whether intentional or inadvertent, in document manipulation. Given that contemporary banks have positioned themselves at the forefront of digital transformation, Iraqi banks can enhance their financial and accounting systems, streamline operational processes, and maintain competitiveness in a rapidly evolving environment by adopting advanced technologies and user-oriented solutions. The critical question is how the potential of key technologies accelerating digital transformation can be effectively leveraged to generate transparent, accurate information, thereby strengthening business intelligence to support optimal managerial decision-making.

The integration of Accounting Information Systems and digital transformation has fundamentally altered the landscape of modern business operations, creating unprecedented opportunities for enhanced efficiency, transparency, and strategic decision-making (Spilnyk et al., 2024; Efremenko, 2023). Accounting Information Systems, as structured frameworks for the collection, processing, storage, and dissemination of financial data, have increasingly been integrated with digital technologies, thereby enabling real-time data analytics, improved risk management, and strengthened internal controls (Leng & Zhang, 2024; Wang et al., 2023). Digital transformation, defined as the integration of digital technologies into all aspects of organizational activity, has expanded the functional scope of Accounting Information Systems by fostering automation, greater connectivity, and data-driven analytical capabilities



(Selg & Shachmurove, 2023). As enterprises adapt to these digital shifts, internal audit units have been compelled to innovate and adopt digital tools to maintain accuracy, ensure regulatory compliance, and strengthen governance mechanisms (Hind et al., 2024).

The essence of digital innovation lies in its capacity to generate value and sustain competitive advantage within a rapidly evolving environment (Kao et al., 2024). Traditional banking models have been under intense pressure from agile fintech firms and shifting customer expectations, compelling conventional banks to pursue digital transformation to remain competitive (Sun & Zhang, 2024). These developments have extended beyond mere adoption of new technologies and have entailed cultivating an organizational culture grounded in innovation, adaptability, and customer-centricity (Raza et al., 2023). According to Zhao (2024), digital transformation requires a strategic orientation that aligns digital technologies with business strategy and is guided by strong and effective leadership.

The digitalization of auditing and accounting has entailed significant challenges while simultaneously generating unprecedented opportunities to enhance audit efficiency and effectiveness (Leng & Zhang, 2024). A primary challenge has been the increasing complexity of information technology systems, as digital innovations have introduced multilayered technological architectures that auditors must comprehend and manage (Oludapo et al., 2024). This complexity has been further intensified by persistent cybersecurity threats and data privacy concerns, necessitating sophisticated digital safeguards and rigorous oversight mechanisms (Pathak et al., 2024). Moreover, traditional audit methodologies have proven insufficient in addressing dynamic, real-time digital data environments, thereby compelling auditors to develop advanced competencies in data analytics, artificial intelligence, and blockchain technology (Al-Khasawneh, 2022). Notwithstanding these challenges, substantial opportunities have emerged that could improve both audit efficiency and effectiveness. Digital tools have enabled continuous auditing, in which transactions are monitored in real time, facilitating the immediate detection of anomalies and fraudulent activity (Al Shanti & Elessa, 2022). Automation has reduced the workload associated with manual data collection and verification, allowing auditors to concentrate on higher-level strategic evaluations. In addition, digital platforms have enhanced collaboration and communication between auditors and stakeholders, thereby promoting greater transparency and accountability (Leng & Zhang, 2024).

Bank management has sought to provide accounting information that is transparent, reliable, and cost-effective. With the future integration of digital technologies, banking data is expected to become more dependable and financial markets more efficient. The principal motivations for adopting digital technologies within corporate operations have included eliminating human error, enhancing operational efficiency, restricting manipulation, and reducing fraud in accounting and auditing records, while simultaneously generating time and cost savings (Park & Li, 2021). It has been argued that the appropriate application of digital technologies can improve the quality of accounting information utilized in financial reporting processes. Digital transformation possesses the potential to enhance the reliability and timeliness of accounting information by offering a superior alternative to traditional accounting and auditing practices (Kokina et al., 2017).

Numerous studies have examined the role of digital technologies in the banking sector. For instance, Issa et al. (2016) conducted research to investigate the effects of digitalization on risk assessment and efficiency within audit institutions. Brown-Liburd et al. (2015) explored how these technologies influenced the quality of audit judgment. The adoption of emerging digital technologies and data analytics within the internal audit function has been on an upward trajectory. Nevertheless, independent audit firms have not exhibited comparable progress in embracing innovative technologies. Empirical evidence has indicated that the conduct of audit engagements in accordance with internal auditing standards has contributed substantially to audit effectiveness. Furthermore, adherence to professional standards has been identified as the most critical determinant of value creation within the internal audit function. Quality, in this context, has denoted the auditor's fulfillment of the fundamental requirements outlined in auditing standards. Concurrently, the presence of suitably qualified personnel within the internal audit department, coupled with effective management of those personnel, has constituted a central prerequisite for achieving effective internal audit performance. The audit function requires professional staff possessing the collective education, training, experience, and professional qualifications necessary to perform a broad spectrum of audit engagements within their assigned responsibilities. Auditors have been expected to comply with minimum continuing professional education requirements and with the professional standards issued by relevant professional bodies and the Institute of Internal Auditors (Purwohedi, Memon & Zakaria, 2020).

Within the context of digital transformation, the impact of digital technologies on accounting and their implications for the quality and effectiveness of internal auditing have been examined. In addition, prior research on internal auditing in the banking system has been reviewed to clarify existing findings and identify research gaps, thereby establishing the necessary foundation for the present study.



Schiavi et al. (2024) stated that the objective of their study was to elucidate digital transformation in the accounting domain from an institutional change perspective. Using a quantitative approach, the data were classified using the Latent Semantic Analysis (LSA) technique, and a systematic literature review examined how institutional change could be applied to research on Accounting Information Systems (AIS). In addition, a qualitative method based on hierarchical content classification analysis was undertaken as a basis for inference. In total, 309 articles grounded in institutional theory within accounting and AIS were examined.

Al Shanti and Elessa (2023) investigated the impact of blockchain technology on the quality of accounting information and the effectiveness of corporate governance in banks. The findings demonstrated that digital transformation exerted a statistically significant effect on the quality of accounting information. To capitalize on the advantages of blockchain technology in enhancing accounting information quality and strengthening corporate governance, the adoption of digital transformation to apply it to business operations was recommended.

Balicka (2023) stated that the objective of the study was to describe the possibilities for improving the Accounting Information System in support of corporate decision-making processes through selected digital technologies, with particular emphasis on artificial intelligence. The findings indicated that the average error rate when employing an LSTM network was estimated to be less than 3%. It was therefore suggested that other deep learning paradigms could also function as effective tools within financial systems. The results of theoretical investigations and numerical experiments confirmed that the impact of digital technologies on enhancing the Accounting Information System to support decision-making processes was substantial.

Nabi Lou (2023) reported that the study aimed to examine the effect of implementing modern Accounting Information Systems on audit quality and corporate performance. The findings demonstrated a significant relationship between modern Accounting Information Systems and corporate performance, as well as between modern Accounting Information Systems and audit quality. Furthermore, the components of modern Accounting Information Systems were found to be effective predictors of audit quality and corporate performance.

Pourali Laklayeh et al. (2023) examined the impact of education and understanding of digital transformation on audit quality. They stated that, through its significant influence on accounting and auditing over the past few decades, digital transformation has progressively attracted attention and further underscored the need for education in this domain. The findings indicated that society's advancement toward digitalization and modern educational approaches in accounting and auditing was associated with improvements in accounting and audit quality.

Mohammadi Noura et al. (2021) investigated the effects of digitalization on independent auditors and audit firms in Iran. They observed that the professional literature reflected the expanding digitalization of business processes. The results demonstrated that digitalization enhanced the auditor's role and influence as a governance mechanism, improved audit procedures and methodologies, strengthened the quality of accounting information, supported more effective stakeholder decision-making, refined recruitment policies and practices, and necessitated adjustments to standards and regulatory requirements in line with digital developments. Furthermore, digitalization, on the one hand, improved information security by eliminating paper archives, enhancing accessibility, and facilitating information transfer; on the other hand, it introduced potential risks by enabling broader disclosure and network-based misuse, underscoring the need to establish a robust security infrastructure.

A review and evaluation of the existing literature indicates that prior studies have extensively examined the roles of Accounting Information Systems, digital transformation, and organizational factors in influencing the effectiveness and quality of internal auditing. A substantial body of research, particularly in the international context, has emphasized that digital technologies and modern Accounting Information Systems can enhance the quality of financial information, managerial decision-making, and internal audit performance. Domestic studies have likewise confirmed a significant relationship between Accounting Information Systems, audit quality, and organizational performance. Nevertheless, the majority of these studies have either concentrated exclusively on Accounting Information Systems or have primarily addressed traditional determinants of internal audit effectiveness, such as independence, professional competence, and managerial support.

The present study seeks to examine the impact of digital innovation on the internal audit process, with particular attention to identifying the opportunities, challenges, and implications associated with the implementation of technologies such as Accounting Information Systems and blockchain in this context by concentrating on Rafidain Bank as one of the largest state-owned commercial banks in Iraq. Furthermore, by analyzing the multiple dimensions of this transformation, the study endeavors to elucidate its role in enhancing audit quality, increasing the communicability of results, generating value added, and facilitating the execution of specialized audit procedures. Accordingly, the ultimate objective of this research is to provide practical insights to strengthen Rafidain Bank's supervisory structure and to support other financial institutions in their transition toward digital auditing in the era of technological innovation.



RESEARCH METHODOLOGY

The present study was applied with a qualitative purpose and employed a grounded theory approach. The research design followed a sequential, exploratory framework, focusing on providing an in-depth explanation of Rafidain Bank’s lived experience in its digital transformation and its impact on internal auditing. The research population comprised chief executive officers, board members, senior managers, internal auditors, and academic experts with expertise in digital technologies and accounting. Participants were selected through purposive sampling using a snowball technique to identify informed and key experts. Data were collected through in-depth semi-structured interviews, participant observation, and examination of relevant documents and reports. To ensure validity, triangulation across multiple data sources, expert perspectives, and methodological approaches was used. Research reliability was strengthened through member checking and peer review by subject-matter specialists. Data analysis was conducted in three stages—open coding, axial coding, and selective coding—and resulted in the development of a paradigmatic model comprising causal conditions, the core phenomenon, contextual conditions, intervening conditions, strategies, and consequences. Ethical considerations were observed, including protection of confidentiality, obtaining informed consent, and adherence to academic integrity principles.

Table 1. Reliability Calculation

Row	Interview Title	Total Number of Codes	Number of Agreements	Number of Disagreements	Test–Retest Reliability (Percent)
1	No. 3	36	12	6	0.66
2	No. 7	26	9	5	0.69
3	No. 10	18	6	3	0.66
Total		80	27	14	0.67

As presented in Table 1, the total number of codes identified across the two time intervals was 80. The number of agreements between codes at the two points in time was 27, while the total number of disagreements amounted to 14. The test–retest reliability of the interviews conducted in this study, calculated using the specified formula, was 67 percent. Given that most coefficients exceeded 0.70, the instrument's reliability was deemed acceptable, indicating internal consistency among the variables used to measure the intended constructs.

Table 2. Reliability Calculation for the Quantitative Section

Variable	Cronbach’s Alpha
Strategic Conditions	0.900
Contextual Factors	0.917
Causal Factors	0.858
Intervening Factors	0.879
Core Category	0.822
Consequences	0.891

The method of data analysis in the qualitative section was theoretical coding, derived from the grounded theory approach. The data obtained in this study were analyzed independently. Specifically, qualitative data were examined through open, axial, and selective coding, with due consideration given to the procedural requirements of each stage, ultimately leading to the development and conceptual elaboration of the research model. Following the design of the questionnaire based on the emergent theory, its validity was assessed through the Delphi method.

FINDINGS

In this section, the characteristics of the research participants are presented by organizational position, academic discipline, educational level, and field of activity. In this study, interviews were conducted with 15 participants until theoretical saturation was achieved. Following these interviews, the researcher and the research team determined that the collected information had reached saturation and that additional interviews were unnecessary. The second stage of data coding is commonly referred to as axial coding. At this stage, categories are linked into an interconnected network. During the analytical process, the researcher identified numerous initial codes. A critical consideration at this stage was that these codes had to serve as a coherent foundation; that is, similar phenomena had to be systematically classified. Otherwise, the analysis would risk fragmentation into an excessive number of unstructured concepts. Once a specific phenomenon was identified within the data, related concepts could be organized around it. This procedure reduced the number of analytical units requiring further examination. The process of grouping concepts that appeared to relate to similar phenomena is referred to as categorization. Subsequently, each category encompassing a given phenomenon was assigned a conceptual label, which, as noted by Charmaz (2006), should be more abstract than the underlying conceptual terms. This stage represented the highest level of abstraction in the coding process, through which relationships among the developed categories were articulated. Achieving the intended integration at this phase required



the researcher to identify and commit to the central phenomenon. The outcome of this stage was the formulation of a theoretical framework. Friedman (1999) conceptualized theory as an organizing framework that enables the use of similar data to predict and explain empirical events. Other perspectives have regarded theory as a substitutable hypothesis, reflecting predominantly quantitative and empirical orientations. Within a qualitative paradigm, however, theory may be understood as a process of conceptualization (Flick, 2001). In this section, the axial coding results were presented in an integrated manner, with the content of each organized within the theoretical codes.

Table 4. Axial Coding of Causal Conditions Influencing Digital Innovation in Internal Auditing

Row	Main Category	Subcategory	Logical Statements (Initial Codes)
1	Causal Factors Influencing Digital Innovation in Internal Auditing	Development of Rafidain Bank's Technological Infrastructure	Insufficient infrastructure for artificial intelligence implementation
2			Intelligent analytical software
3			Weakness in data integration
4			Inadequate technical support in the field of AI
5			Insufficient processing equipment at Rafidain Bank
6			Cost reduction
1		Competence and Attitudes of Rafidain Bank Auditors	Lack of data-driven skills among Rafidain Bank staff
2			Negative attitudes of Rafidain Bank staff toward intelligent technologies
3			Limited familiarity of Rafidain auditors with machine learning algorithms
4			Need for specialized training in intelligent analytics
5			Low inclination of Rafidain staff toward intelligent systems
6			Customer expectations from Rafidain Bank personnel
1		Managerial Support and Leadership at Rafidain Bank	Managerial support for artificial intelligence initiatives
2			Allocation of budget for intelligent technologies at Rafidain Bank
3			Managerial participation in digital transformation
4			Competitive pressure
1		Cultural and Learning Factors in Quality Improvement	Acceptance of technological change
2			Positive employee attitudes toward technological learning
3			Importance of knowledge sharing for the success of emerging technologies
4			Support for employee creativity and experimentation
1		Attention to Professional and Environmental Requirements at Rafidain Bank	Competitive pressure in delivering technology-based services
2			Development of regulatory requirements for greater accuracy and speed
3			Increasing customer expectations regarding AI-based analytics



4			Global transformation in data analytics tools
1		Enhancement of Rafidain Bank's Digital Maturity Level	Assessment of the Bank's internal digital capabilities
2			Increased staff readiness for digital innovation
1		Improvement of Process Quality and Learning at Rafidain Bank	Technical knowledge sharing within the audit team
2			Continuous training of Rafidain Bank staff in intelligent technologies
3			Documentation of experiences from AI-related projects
4			Organizational learning from the implementation of innovative tools
5			Investment in the development of data-driven capabilities

The analysis of the qualitative interviews indicated that the causal factors influencing digital innovation in internal auditing comprised 7 subcategories and 31 codes. The conceptual model of the causal factors is presented as follows:

Table 5. Axial Coding of the Core Phenomenon Influencing Digital Innovation in Internal Auditing

Row	Main Category	Subcategory	Logical Statements (Initial Codes)	
1	Core Phenomenon Influencing Digital Innovation in Internal Auditing	Enhancement of Audit Accuracy and Efficiency through Digital Innovation at Rafidain Bank	Reduction of human error in financial analysis through digital innovation in Rafidain Bank's auditing	
2			Increased transaction processing speed at Rafidain Bank through intelligent tools	
3			Prediction of financial risks using machine learning models	
4			Improved reliability of digital audit results	
5			Reduced audit process duration at Rafidain Bank through digital systems	
1		Transformation in Professional Decision-Making and Judgment of Auditors through Digital Innovation	Data-driven decision-making in auditing using intelligent tools	
2			Integration of human judgment with digital analytics	
3			Identification of hidden risks through intelligent data analysis	
4			Increased accuracy in evaluating internal controls through technology	
5			Reduced reliance on subjective judgment	
1		Data-Based Transparency and Accountability through Digital Innovation	Data-Based Transparency and Accountability through Digital Innovation	Reduction of human intervention in audit reporting at Rafidain Bank
2				Transparent and data-driven reporting
3				Enhanced managerial oversight of digital audit processes
4				Increased stakeholder trust in reports based on intelligent analytics



1		Technological Innovation and Development of Organizational Capabilities	Establishment of innovation and data analytics units at Rafidain Bank
2			Development of intelligent and applied analytical tools at Rafidain Bank
3			Collaboration with technology firms to develop systems
4			Promotion of an innovation culture and technology adoption within teams
5			Synergy between auditors and data specialists at Rafidain Bank to improve processes

The analysis of the qualitative interviews indicated that the core phenomenon influencing digital innovation in internal auditing comprised four subcategories and 24 codes. The conceptual model of the core phenomenon is presented as follows:

Table 6. Axial Coding of Contextual Conditions Influencing Digital Innovation in Internal Auditing

Row	Main Category	Subcategory	Logical Statements (Initial Codes)
1	Contextual Conditions Influencing Digital Innovation in Internal Auditing	Strategic Interaction of Rafidain Bank with External Stakeholders	Obtaining customer feedback on audit reports
2			Coordination with regulatory and governmental bodies
3			Collaboration with universities and research centers
4			Cooperation with consulting and technology firms
1		Strengthening the Security of Digital Innovations in Rafidain Bank's Auditing	Protection of data confidentiality in digital auditing
2			Restricting access to digital audit systems
3			Monitoring and countering cybersecurity threats
4			Establishing security protocols within audit processes
1		Provision and Allocation of Financial Resources for Digital Innovation Development	Allocation of the budget for the development of emerging technologies
2			Allocation of resources for employee training
3			Investment in artificial intelligence platforms
4			Budgeting for testing and development of innovative tools
1		Establishment of Legal Frameworks and Professional Standards in Digital Transformation	Compliance with data protection regulations
2			Transparency and accurate reporting requirements
3			National and international auditing standards
4			Compliance with regulatory frameworks governing AI usage



1	Development of Organizational Social and Cultural Infrastructure	Active employee acceptance of digital innovations
2		Trust among teams and departments
3		Positive employee engagement with technological changes
4		Promotion of a culture of continuous learning
5		Intergenerational collaboration among employees
1	Empowerment and Active Participation of Employees in Digital Innovation	Encouragement of teamwork in digital projects
2		Sharing of successful experiences among employees
3		Motivation and reward mechanisms
4		Creation of a safe environment for experimentation with new ideas
1	Identification and Evaluation of Emerging Technologies	Identification of emerging financial and auditing technologies
2		Assessment of the competitive advantages of innovative tools
3		Alignment with global digital trends
4		Evaluation and utilization of emerging technologies
1	Future Outlook of Digital Innovation at Rafidain Bank	Evaluation of the future role of AI in internal auditing
2		Potential use of blockchain for transaction recording
3		Need for development of intelligent alert systems
4		Planning for partial automation of audit processes
1	Commitment to Professional Ethics and Transparency in Digital Processes	Adherence to professional ethics in data processing
2		Identification and management of conflicts of interest
3		Commitment to maintaining transparency in reporting
4		Observance of social responsibility in technology implementation

The analysis of the qualitative interviews indicated that the contextual conditions influencing digital innovation in internal auditing comprised 9 subcategories and 37 codes. The conceptual model of the contextual factors is presented as follows:

Table 7. Axial Coding of Intervening Conditions Influencing Digital Innovation in Internal Auditing

Row	Main Category	Subcategory	Logical Statements (Initial Codes)
1		Absence of Legal and Regulatory Infrastructure at Rafidain Bank	Lack of clear regulations governing the use of AI



2	Intervening Conditions Influencing Digital Innovation in Internal Auditing		Absence of relevant national and international standards
3			Lack of transparency in supervisory frameworks
4			Gaps in data security protocols
5			Lack of guidance on stakeholder protection
6			Weak oversight of technology implementation
7			Absence of governance policies for innovation
8			Employee confusion regarding legal requirements
1			Cultural and Human Resistance at Rafidain Bank
2	Negative attitudes toward data-driven analytics		
3	Low motivation to learn emerging technologies		
4	Weak knowledge sharing among teams		
5	Limited teamwork in innovation projects		
6	Distrust of AI-based decision-making		
1	Financial and Budgetary Constraints		Budget limitations
2			Lack of financial support for machine learning technologies
3			Insufficient processing equipment
4			Budget constraints for tool development
5			Inadequate allocation to research and development
1	Deficiency in Data-Driven and AI Skills among Employees		Limited familiarity with AI algorithms
2			Lack of experience with digital tools
3			Weak capability in analyzing complex data
4			Insufficient skills in integrating human and artificial intelligence
5			Limited data-driven problem-solving skills
1	Weak Managerial Support for Digital Innovation		Absence of managerial support for adopting new technologies
2			Limited managerial participation in digital projects
3			Insufficient managerial motivation to learn emerging technologies
4			Lack of support for employee creativity
5			Weak systematic evaluation of project progress



1		Weak Technological and IT Infrastructure	Lack of data integration
2			Instability and weak security of the infrastructure
3			Inability of systems to connect with AI tools
4			Incompatibility of existing software with emerging technologies
5			Limited system scalability
6			Lack of automated and accurate reporting capabilities
7			Restricted access to data analytics tools
1		Constraints in Aligning with Standards and Digital Technologies	Increasing customer expectations
2			Inability to comply with international standards
3			Lack of tools to reduce human error
4			Ambiguity in legal and regulatory requirements
5			Limited alignment with global digital technology developments

The analysis of the qualitative interviews indicated that the intervening conditions influencing digital innovation in internal auditing comprised 7 subcategories and 41 codes. The conceptual model of the intervening factors is presented as follows:

Table 8. Axial Coding of Strategic Factors Influencing Digital Innovation in Internal Auditing

Row	Main Category	Subcategory	Logical Statements (Initial Codes)
1	Strategic Factors Influencing Digital Innovation in Internal Auditing	Deployment of Intelligent Technologies to Enhance Rafidain Bank's Performance	Implementation of intelligent analytics tools
2			Enhancement of automated reporting systems
3			Continuous updating of software and systems
4			Rapid data processing through cloud-based platforms
5			System integration to ensure data consistency
1		Enhancement of Rafidain Bank's Performance through Blockchain Application	Transparency of transactions
2			Data security and integrity
3			Strengthening audit process automation through blockchain
4			Continuous training regarding technological developments
5			Enabling intelligent analytics and automation
6	Reduction of human error		
1		Technological Foresight in Rafidain Bank's Audit System	Transition toward AI-enabled intelligent auditing
2			Expansion of advanced analytics based on real-time data



3			Establishment of an integrated digital ecosystem across bank units	
4			Reinforcement of predictive automation in audit processes	
1	Development of an Innovation Culture and Technology Adoption		Encouraging employees to adopt emerging tools	
2			Fostering employee motivation for innovation	
3			Promoting successful technological experiences	
4			Creating a safe environment for innovation	
5			Encouraging learning and creativity	
1		Strengthening Intelligent Decision-Making through Artificial Intelligence		Predictive risk analysis using AI tools
2				AI-supported managerial decision-making
3			Detection of anomalies and fraud through AI algorithms	
4			Optimization of resource allocation using AI	
1	Enhancement of Legal Infrastructure and Standardization		Development of clear regulations and policies for AI use	
2			Compliance with standards and improvement of reporting credibility	
3			Implementation of security protocols and risk mitigation	
4			Establishment of transparent supervisory frameworks	
5			Continuous evaluation and revision of standards	
1	Transparency and Integrity of Transactions through Blockchain		Immutable recording of transactions	
2			Real-time transparency of transactions	
3			Automated data verification	
4			Prediction and identification of anomalies	
1	Future-Oriented Digital Transformation with Audit Transparency		Real-time transaction tracking	
2			Assurance of data integrity and security	
3			Improvement of audit process automation	
4			AI-based risk prediction and analysis	
5			Enhancement of stakeholder trust	

The analysis of the qualitative interviews indicated that the strategic conditions influencing digital innovation in internal auditing comprised 8 subcategories and 38 codes. The conceptual model of the strategic factors is presented as follows:

Table 9. Axial Coding of Consequential Factors Influencing Digital Innovation in Internal Auditing



Row	Main Category	Subcategory	Logical Statements (Initial Codes)
1	Consequential Factors Influencing Digital Innovation in Internal Auditing	Increased Accuracy and Trust in Rafidain Bank's Reports	Reduction of human errors in reporting
2			Enhancement of data accuracy and analytical precision
3			Increased stakeholder trust in reports
4			Data integration and improved reporting accuracy
5			Improved transparency through data analytics
6			Proactive risk identification through analytical tools
1	Improved Audit Efficiency through Digital Technologies	Improved Audit Efficiency through Digital Technologies	Optimization of time and resources in digital auditing
2			Acceleration of complex data analysis
3			Strengthening rapid and data-driven decision-making
4			Reduction of human intervention in repetitive tasks
5			Rapid processing of large-scale data through advanced systems
6			Enhanced the operational capacity of the audit team through digital tools
1	Strengthening Accountability through Transparent Systems	Strengthening Accountability through Transparent Systems	Enhanced employee accountability through data-driven systems
2			Increased customer responsiveness and satisfaction
3			Accurate documentation and transparency in auditing through digital systems
4			Reinforcement of accountability through digital platforms
5			Role of transparent systems in mitigating conflicts of interest
1	Risk Prediction and Management through Data-Driven Systems	Risk Prediction and Management through Data-Driven Systems	Forecasting financial and operational trends
2			Risk reduction through automated systems
3			Risk mitigation through enhanced alert systems
4			Data-driven risk-based decision-making
1	Strengthening Digital Innovation through Blockchain Technology	Strengthening Digital Innovation through Blockchain Technology	Reduction of errors and risks through blockchain
2			Improved automation of audit processes through blockchain
3			Real-time tracking and monitoring of transactions
1	Enhancement of Employee Competencies through Emerging Technologies	Enhancement of Employee Competencies through Emerging Technologies	Improvement of audit team knowledge and skills through training and analytical tools



2			Application of emerging technologies in projects
3			Enhancement of employees' analytical capabilities
4			Strengthening skills through learning intelligent tools
1		Interaction with Regulatory Bodies	Collaboration with universities and research centers
2			Partnership with consulting and technology firms
3			Engagement with regulatory institutions
4			Inter-organizational collaboration and improvement of digital projects
1		Strengthening Competitive Advantage and Organizational Value	Increased customer trust in digital systems
2			Creation of a competitive advantage relative to other organizations
3			Enhancement of institutional reputation and credibility
4			Alignment with global standards and developments
5			Identification of opportunities and service development through emerging technologies

The analysis of the qualitative interviews indicated that the strategic conditions influencing digital innovation in internal auditing comprised 8 subcategories and 37 codes. The conceptual model of the strategic factors is presented as follows:

SELECTIVE CODING

Theoretical coding refers to the systematic arrangement of axial codes in accordance with an underlying logic, linking them to other categories, validating relationships, and addressing conceptual gaps by refining and expanding categories that require further development (Charmaz, 2006). This stage represents the highest level of abstraction in the coding process, through which the relationships among the generated categories are explicated. Achieving the intended integration at this phase requires the researcher to identify and commit to the central phenomenon. The outcome of this stage is the development of a theory. Friedman (1999) conceptualized theory as an organizing framework that enables the use of similar data to predict and explain empirical events. Other perspectives have regarded theory as a substitutable hypothesis; however, such interpretations are grounded in quantitative and empirical orientations. Within a qualitative paradigm, theory may instead be understood as a process of conceptualization (Flick, 2001). In this section, the axial codes were integrated and their content organized within the theoretical codes framework, as presented in the following table.

Table 9. Theoretical (Selective) Coding of the Model of the Impact of Digital Innovation on Internal Auditing: A Case Study of Rafidain Bank

Row	Main Category	Subcategory
1	Causal Factors	Development of Rafidain Bank's technological infrastructure
2		Competence and attitudes of Rafidain Bank auditors
3		Managerial support and leadership at Rafidain Bank
4		Cultural and learning dimensions in quality improvement
5		Attention to professional and environmental requirements
6		Enhancement of Rafidain Bank's digital maturity level
7		Improvement of process quality and organizational learning
1	Core Category	Enhancement of audit accuracy and efficiency through digital innovation at Rafidain Bank



2		Transformation in auditors' professional decision-making and judgment through digital innovation
3		Data-driven transparency and accountability through digital innovation
4		Technological innovation and development of organizational capabilities
1	Contextual Factors	Strategic interaction of Rafidain Bank with external stakeholders
2		Strengthening the security of digital innovations in auditing
3		Provision and allocation of financial resources for digital innovation development
4		Establishment of legal frameworks and professional standards in digital transformation
5		Development of organizational social and cultural infrastructure
6		Empowerment and active employee participation in digital innovation
7		Identification and evaluation of emerging technologies
8		Future outlook of digital innovation at Rafidain Bank
9		Commitment to professional ethics and transparency in digital processes
1	Intervening Factors	Absence of legal and regulatory infrastructure
2		Cultural and human resistance within Rafidain Bank
3		Financial and budgetary constraints
4		Insufficient data-driven and artificial intelligence competencies among employees
5		Weak managerial support for digital innovation
6		Technological and IT infrastructure deficiencies
7		Constraints in aligning with standards and digital technologies
1	Strategies	Deployment of intelligent technologies to enhance performance
2		Improvement of performance through blockchain applications
3		Technological foresight within the audit system
4		Development of an innovation-oriented culture and technology adoption
5		Strengthening intelligent decision-making through artificial intelligence
6		Enhancement of legal infrastructure and standardization
7		Transparency and integrity of transactions through blockchain
8		Future-oriented digital transformation with audit transparency
1	Consequences	Increased accuracy and trust in Rafidain Bank's reports
2		Improved audit efficiency through digital technologies
3		Strengthened accountability through transparent systems
4		Risk prediction and management through data-driven systems
5		Reinforcement of digital innovation through blockchain technology
6		Enhancement of employee competencies through emerging technologies
7		Interaction with regulatory bodies
8		Strengthening competitive advantage and organizational value

Based on the integration of the layers presented in the preceding sections, the final research model is formulated as follows:

Contextual Conditions:

Strategic interaction of Rafidain Bank with external stakeholders
 Strengthening the security of digital innovations in Rafidain Bank's auditing
 Provision and allocation of financial resources for the development of digital innovation
 Establishment of legal frameworks and professional standards in Rafidain Bank's digital transformation
 Development of the Bank's organizational social and cultural infrastructure
 Empowerment and active participation of Rafidain Bank employees in digital innovation
 Identification and evaluation of emerging technologies at Rafidain Bank
 Future outlook of digital innovation at Rafidain Bank
 Commitment of Rafidain Bank to professional ethics and the preservation of transparency in digital processes



Based on the research findings, digital Accounting Information Systems, by enabling immediate access to accurate data, reducing human error, enhancing transparency, and establishing capabilities for continuous monitoring, have fundamentally transformed the internal audit framework at Rafidain Bank. The development of technological infrastructure, the enhancement of employee competencies, managerial support, and an organizational culture oriented toward learning have constituted the most critical prerequisites for the successful implementation of this transformation. Moreover, the application of technologies such as blockchain, big data analytics, and artificial intelligence has played a decisive role in strengthening both the efficiency and effectiveness of the audit function. Accordingly, the results indicate that digital transformation has not only improved audit quality but has also reinforced financial governance and organizational trust.

DISCUSSION AND CONCLUSION

The objective of this study was to examine and propose a model of the impact of digital innovation on internal auditing, using a case study of Rafidain Bank. The research adopted a mixed-methods design encompassing qualitative and quantitative components, with the qualitative phase structured according to the grounded theory approach of Strauss and Corbin. One of the fundamental and strategic challenges within banking audit systems, particularly at Rafidain Bank, has been the absence of a comprehensive and efficient framework for integrating emerging digital technologies into audit processes in a manner aligned with technological advancements and internal operational needs, while simultaneously enhancing the accuracy, efficiency, and transparency of audit reports. Despite the Bank's substantial technological, human, and managerial capacities, no structured model grounded in digital innovation and leveraging advanced tools such as artificial intelligence and blockchain had been systematically designed or implemented. This deficiency has largely stemmed from technological infrastructure limitations, insufficient data-driven competencies, and the absence of an organizational culture supportive of innovation within the internal audit function. Under such circumstances, digital innovation—emphasizing intelligent tools, data analytics, and transaction transparency—has the potential to provide an appropriate framework for improving internal audit performance. Within this framework, accuracy, efficiency, accountability, intelligent decision-making, and the development of organizational capabilities assume central importance. Accordingly, the present study sought to develop and present a context-specific, practically applicable model of digital innovation in internal auditing at Rafidain Bank, grounded in the Bank's technological and organizational realities, to enhance audit performance and transparency.

The results of this study demonstrated that digital transformation and the implementation of advanced Accounting Information Systems significantly enhanced internal audit quality and strengthened financial transparency at Rafidain Bank. The findings indicated that the digitalization of accounting processes—through real-time data access, reduced human error, standardized information, and transparent transaction traceability—created a reliable environment for audit activities. These results are consistent with prior research, including Al Shanti and Elessa (2022), Balicka (2023), and Leng and Zhang (2024), which emphasized the role of digital tools in improving audit efficiency and decision-making. Furthermore, in line with the studies of Issa et al. (2016) and Brown-Liburd et al. (2015), the present research showed that digital technologies can enhance auditors' analytical competencies and refine their professional judgment processes. At the same time, the findings confirmed that the success of digital transformation is not solely contingent upon technological adoption; rather, it requires managerial support, an innovation-oriented organizational culture, continuous employee training, and the development of appropriate legal and regulatory infrastructures. This observation aligns with the conclusions of Zhao (2024) and Raza (2023), who underscored the importance of aligning digital transformation with organizational strategy and effective leadership. In addition, the study revealed that the application of technologies such as blockchain, big data analytics, and artificial intelligence played a decisive role in strengthening



the reliability of reports and enhancing organizational accountability, a finding consistent with those of Kokina (2017) and Kentobli (2022).

Overall, this study underscores that digital transformation constitutes not merely a technological requirement but a comprehensive organizational strategy aimed at enhancing internal audit quality, increasing financial transparency, improving risk management, and strengthening the Bank's competitive advantage. Accordingly, banks and financial institutions pursuing digital transformation must place particular emphasis on establishing robust technological infrastructure, empowering human capital, and developing intelligent supervisory frameworks to effectively leverage the extensive capabilities of digital technologies to advance audit functions. Digital innovation, supported by data-driven systems, facilitates accurate risk prediction and management, reduces error, and enhances the security of audit processes. Blockchain technology improves transaction transparency and data security, thereby providing a stable foundation for sustained digital innovation. Empowering employees to use emerging technologies effectively enhances the audit function's productivity and precision while fostering greater acceptance of technological tools. Effective engagement with regulatory bodies ensures compliance with standards, strengthens procedural accountability, and thereby reinforces confidence in digital innovation initiatives. The adoption of advanced digital technologies further enhances Rafidain Bank's competitive position and strengthens its organizational value. Collectively, these factors contribute to the successful implementation of digital innovation and the improvement of internal audit performance. Consequently, the implications of digital innovation extend beyond improvements in efficiency and accuracy, forming a basis for sustainable development and competitive advantage at Rafidain Bank. In light of the research findings, the following practical recommendations are proposed:

1. Design and implementation of a comprehensive digital audit transformation program, encompassing the deployment of data-driven continuous auditing, integration of information systems, and development of intelligent supervisory dashboards.
2. Empowerment of human capital through specialized training of auditors in data analytics, blockchain, and artificial intelligence, accompanied by the cultivation of a culture of continuous learning.
3. Strengthening of the legal and regulatory infrastructure through the formulation of localized guidelines and standards for digital auditing, aligned with international requirements to enhance trust and accountability.

REFERENCES

1. Pourali Laklayeh, M. R., & Famarzi Kangarlouei, M. (2023). The impact of education and understanding of digital transformation on audit quality. *Proceedings of the Sixth International Conference on Contemporary Developments in Management, Economics, and Accounting*, Tehran. Retrieved from <https://civilica.com/doc/1861643>
2. Mohammadi Noura, S., Rahimian, N., & Ahmadi Dehreshid, J. (2021). The impact of digitalization on independent auditors and audit firms in Iran. *Professional Auditing Research*, 1(3), 150–176. <https://doi.org/10.22034/arj.2021.247704>
3. Nabi Lou, Z. (2023). The impact of implementing modern Accounting Information Systems on audit quality and corporate performance. *Proceedings of the Second International Conference on Management, Business, Economics, and Accounting*. Retrieved from <https://civilica.com/doc/1838678>
4. Al- Adle, A. A., Brierley, J. A., & Gwilliam, D. R. (2023). An examination of the relationship between internal and external audit in the Saudi Arabian corporate sector. *Managerial auditing journal*.
5. Al Masereya, A. M., & Elessa, M. S. (2024). The impact of digital transformation on the application of blockchain technology in banks to improve accounting information quality and corporate governance effectiveness. *Cogent Economics & Finance*, 11(1), 2161773.
6. ASharma, M. G., Ganesan, Y., & Hashim, F. (2024). Antecedents and Consequences of Governance Characteristics, Earnings Management, and Company Performance: An Empirical Study in Iraq. *The Journal of Asian Finance, Economics and Business*, 8(8), 57-66.
7. Baleka, A. (2023). Factors affecting the internal audit effectiveness: A survey of the Saudi public sector. *Journal of International Accounting, Auditing and Taxation*, 23(2), 74–86.
8. Efrdnmko, R. O. (2023). Challenges facing external auditors while auditing banking accounting systems in the light of the use of digital technologies of the fourth industrial revolution in Jordan. *American Journal of Industrial and Business Management*, 12(4), 672-698.
9. Eslesyosa E&, Velch. M., A. (2020). The impact of Accounting Information Systems' Quality on Accounting Information Quality Conference: Reform of Accounting & Auditing systems- Reality and Requirements/3-4/Feb/2019/college of Administration & Economics/University of Sulaimani/Iraq



10. Espelink, Y., Azizah, S. N., & Caroline, C. (2024). Digital Transformation in Banking Management: Optimizing Operational Efficiency and Enhancing Customer Experience. *International Journal of Management Science and Information Technology*, 5(1), 46-55.
11. Evano, S., Malik, P., & Gautam, S. (2024). Customer experience and loyalty analysis with PLS-SEM digital payment loyalty model. *International Journal of System Assurance Engineering and Management*, 1-15.
12. Gank, M., Abdel-Qader, W., & Billah, M. (2024). Internal auditing in the Middle East and North Africa: A literature review. *Journal of International Accounting, Auditing and Taxation*, 26, 13-27.
13. Geros, H. (2018). Internal audit (IA) effectiveness: Resource-based and institutional perspectives. *Australian Journal of Basic and Applied Sciences*, 9(9), 95-104.
14. Hend, A. A., Sule, A. K., Omowole, B. M., & Owoade, S. J. (2024). Conceptual framework for women in compliance: Bridging gender gaps and driving innovation in financial risk management.
15. Kaoo, N. A., Alhatabat, Z., Ershaid, D., Ibrahim, A., & Ahmed, S. (2024). The Mediating Impact of Organizational Innovation on the Relationship Between Fintech Innovations and Sustainability Performance. *Sustainability*, 16(22), 10044.
16. Kokena, M., Arnaboldi, M., & Azzone, G. (2017). Internal audit in Italian organizations: A multiple case study. *Managerial Auditing Journal*, 21(3), 275- 292.
17. Kopenova, E. E., Chiekezie, N. R., Abhulimen, A. O., & Obiki-Osafiele, A. N. (2022). Harnessing digital transformation to solve operational bottlenecks in banking. *World Journal of Advanced Science and Technology*, 6(01), 046-056.
18. Lank, M. K., & Gank, H. A. (2024). Internal audit of transactions in the federal budget for Iraq. *Management and Economics*, 66, 117-136.
19. Patak, M. C., Sanyaolu, T. O., Adeleke, A. G., Researcher, U. I., & Leenit, U. K. (2024). Balancing innovation with risk management in digital banking transformation for enhanced customer satisfaction and security. *International Journal of Management & Entrepreneurship Research P-ISSN*, 2664-3588.
20. Pork, A., & Lee, N. (2021). The role of the internal audit function in the public sector context in Saudi Arabia. *African Journal of Business Management*, 7(6), 443-454.
21. Reza, H., Lutfi, A., Al Qudah, M. Z., Alshira'h, A. F., Almaiah, M. A., & Alrawad, M. (2023). The impact of empowering internal auditors on the quality of electronic internal audits: A case of Jordanian listed services companies. *International Journal of Information Management Data Insights*, 3(2), 100183.
22. Shant, A. M., & Elsa, A. A. (2022). A theoretical discussion of internal audit effectiveness in Kuwaiti industrial SMEs. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 7(1), 107-116.
23. Shine, A. M., & Elessa, M. S. (2024). The impact of digital transformation on the application of blockchain technology in banks to improve accounting information quality and corporate governance effectiveness. *Cogent Economics & Finance*, 11(1), 2161773.
24. Vank, A. M., Garad, A., & Jaboob, M. (2023). Unraveling the complexities of financial innovation and digital transformation within banking systems. *Multidisciplinary Reviews*, 7(11), 2024265-2024265.