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The Impact of Digital Transformation on Internal Auditing and Financial Performance of Iraqi Banks

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Abstract

This study investigates the extent to which regulatory systems for electronic accounting information systems, with conventional controls, are implemented in banks. The research employs a questionnaire divided into two main sections : the first section focuses on the personal characteristics of the study sample, while the second section is divided into eight themes. These themes cover the bank's commitment to deregulation of electronic accounting systems, regulatory controls on access to information, security and protection of files, documentation and development of the electronic accounting system, input and output controls, operations, and the risks associated with electronic accounting information systems.Key recommendations include improving control procedures, protecting software and hardware, and adopting clear regulations for responsibilities and powers within banks. The study underscores the importance of continuous internal audits and the development of efficient electronic accounting information systems to mitigate risks and enhance the overall performance of Iraqi private banks.

Keywords: *Digital Transformation, Internal Auditing, Financial Performance, Iraqi Banks*

Introduction

In light of the rapid technological advancements the world is witnessing today, digital transformation has become an urgent necessity for various economic sectors, including the banking sector. Digital transformation contributes to improving operational efficiency, enhancing transparency, and providing innovative services that meet the increasing needs of customers. In this context, this study aims to investigate the impact of digital transformation on internal auditing processes and the financial performance of Iraqi banks. By analyzing the environments and available information, this study seeks to provide an in-depth understanding of how digital technologies affect internal auditing processes, including the use of electronic systems for data processing, the application of artificial intelligence in detecting non-compliant activities, and assessing the impact of these technologies on the financial performance of banks in terms of improving profitability, reducing costs, and increasing operational efficiency. Additionally, the study aims to identify the challenges faced by Iraqi banks in adopting these technologies, such as cybersecurity issues, lack of technical skills, and the costs associated with updating the technological infrastructure. It will also discuss the available options for banks to enhance the efficiency and effectiveness of internal auditing processes and achieve sustainable financial performance through digital transformation.

It is expected that implementing digital transformation will improve the financial performance of banks by increasing operational efficiency and reducing operational costs. For example, electronic systems and artificial intelligence can enhance the accuracy and speed of internal auditing processes, reducing errors and increasing transparency. Moreover, digital transformation can contribute to improving customer experience by providing innovative and fast banking services.

For successful digital transformation, banks need to take several fundamental steps, including updating technological systems and adopting modern technologies such as cloud computing and artificial intelligence, providing training programs to develop employees' skills in using digital technologies, implementing robust security measures to protect sensitive data and information, collaborating with technology companies to

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develop innovative solutions that meet the bank's needs, and periodically reviewing and evaluating performance to ensure the achievement of the desired goals from digital transformation.

The accounting system is one of the most important information systems that contribute to rationalizing and sustaining administrative and economic decisions that affect the resources and future of communities and, consequently, their welfare. The accounting system is one of the essential tools and foundations that cannot be dispensed with in modern management and is closely related to the administrative process by providing information that helps meet various administrative needs in planning, control, and decision-making to raise performance levels and achieve goals efficiently and effectively, and to adapt to economic changes and developments, regardless of the size of the institution and the nature of its activities and the spread of electronic commerce, especially with the scientific and technological revolution and continuous and accelerating changes in information technology, leading to the expansion of economic activities and organizations in adopting digital transformation and using integrated electronic information systems, benefiting from the advantages these systems offer in operational and regulatory aspects such as accuracy, protection, and speed in task completion, and providing statistical models, among others.

Accounting information systems have been influenced by modern technological developments, increasing their use in various accounting fields (financial accounting, cost accounting, managerial accounting, auditing, and others) to increase the effectiveness of the accounting systems used in producing accounting information and saving time and effort. The use of electronic and automated technologies has also led to the evolution of the accountant's role, which is no longer limited to recording financial processes and transactions but has become actively involved in analyzing, designing, and maintaining accounting information systems to ensure their alignment and compatibility with the regulatory and legal requirements in various fields. The evolution of the concept of control in recent years and the widespread use of electronic information systems have posed new challenges for management, necessitating the establishment of standards, controls, and regulatory procedures for control in accounting information systems in the context of electronic data processing, consistent with the characteristics and nature of these systems. This includes the comprehensive control procedures and access controls to the physical and logical components of the system, and security and confidentiality controls in accounting information systems, including computer operations and documentation and development controls. It also includes control procedures related to the applications of accounting information systems, including control procedures on inputs, processing, and outputs in accounting information systems.

The importance of what technology and information systems offer and their uses in the banking industry in terms of advantages and strengths for banking sector institutions in their various forms involves many risks and challenges and raises in the internal control data and regulatory information in the banking apparatus in sensitive regulation and control issues and poses the major challenges of their information and regulatory aspects in determining the level of their compliance and readiness to address the technical and technological challenges and highlights the need to study regulatory procedures in accounting information systems and their applications in commercial banks in Iraq, given the pivotal role this sector plays in the country's economic support and development.

This study aimed to assess the impact of digital transformation on internal auditing processes and the financial performance of Iraqi banks, through analyzing the concepts of digital transformation, internal auditing, and financial performance. This comes in light of the urgent need to improve the quality of banking services and enhance the effectiveness and efficiency of financial processes in Iraqi banks by adopting digital transformation in Iraqi banks, including a wide range of tools to improve the performance of banking operations. This type of transformation involves using modern technologies and innovations to enhance banking services and improve customer experience. Digital transformation aims to improve the efficiency and effectiveness of banking operations and provide a better experience for customers. As for internal auditing processes, this involves evaluating and monitoring banking operations and ensuring compliance with financial regulations. By analyzing internal auditing processes, it is possible to identify gaps and risks and improve banking operations to ensure financial compliance and reduce risks.

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At the level of financial performance, the implementation of digital transformation is a key driver for improving the financial performance of Iraqi banks. Banks can leverage digital transformation to improve resource planning, increase productivity, and achieve financial savings. Additionally, digital transformation can provide new opportunities for innovation and the development of new financial products and services. In general, it can be said that the implementation of digital transformation in Iraqi banks is a significant development in the banking services sector. Digital transformation can improve customer experience, streamline banking operations, and enhance trust and financial compliance. It is important for specialized bodies in Iraq to support the implementation of digital transformation and ensure that everyone benefits from its potential.

This importance is also of academic significance in sustaining and developing collective research efforts in the framework of understanding and analyzing the tools of the regulatory system for accounting information systems to present the current situation of internal regulatory systems in Iraqi banks.

Literature Review and Hypothesis Development

Importance of Digital Transformation in the Banking Sector

Digital transformation plays a crucial role in improving the efficiency of banking services and enhancing the customer experience. It significantly contributes to enhancing easy access to various banking services, leading to streamlining operations and reducing operational costs. Moreover, digital transformation enhances banks' ability to design and provide innovative products and services that meet the needs of individuals and institutions in the context of the rapid changes of the digital age.

Digital transformation for banks is a fundamental and comprehensive process that relies on a set of theories and basic principles for applying digital technology in the banking and financial sector environment. The theoretical foundations of digital transformation discuss a current change in technical processes and the use of advanced technologies and digital tools to improve performance and provide services more efficiently and effectively. It is a comprehensive and beneficial transformative process based on a detailed study of the theories and basic concepts that support and contribute to the adoption and implementation of digital transformation in banks.

Digital transformation in banks is one of the most important modern trends that banks strive to adopt, as it enables banks to improve the services provided to customers and facilitate daily operations innovatively. Transformative actions include improving effective risk management processes and providing banking services through the internet and banking applications, aiming to attract customers and enhance loyalty between them and the banks. Additionally, it facilitates customers' access to their banking data and improves transparency in financial transactions, aligning with the rapid developments of the digital age.

Implementing digital transformation in banks faces many challenges and risks, including operational challenges related to sensitive security and privacy, which require effective measures to protect customer environments and ensure the confidentiality of financial information. On the other hand, digital technologies offer significant opportunities to improve customer experience and streamline banking operations, enhancing efficiency and increasing customer loyalty and trust in banks.

Security and privacy challenges involve the need to protect customers' personal and financial environments from cyber threats and potential fraud, requiring the implementation of strict regulatory and security policies to address them. Privacy challenges involve the need to balance the collection of personal data with respecting customers' privacy ideally, ensuring that their rights are not violated by any party. Therefore, it is important for banks to support advanced technologies and effective control measures to ensure security and privacy in implementing digital transformation in a sustainable and effective manner under any circumstances.

The technology used in the digital transformation of banks relies on a variety of technical tools and platforms that help improve banking services and facilitate financial transactions smoothly. These

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technologies include advanced cloud computing technologies, innovative mobile applications, precise big data analytics, and innovative blockchain technology. These technologies contribute to providing advanced and innovative banking services at the highest level, improving the continuous customer experience, and developing business opportunities successfully.

Artificial intelligence technologies are among the most important technological innovations used in the digital transformation of banks, as they effectively contribute to improving banking processes and providing highly advanced services to customers with greater intelligence. Banks use artificial intelligence in analyzing financial data and keeping pace with market trends precisely and innovatively meeting customers' personal needs. Additionally, they are used in developing systems for monitoring customer needs and improving user experience through intelligent support and automated interaction, contributing significantly to their success.

Digital transformation in banks has significant economic and social impacts, as this transformation contributes to increasing the efficiency of banking operations and improving customer experience, leading to increased productivity and achieving more profits. From a social perspective, digital transformation can contribute to providing financial access to individuals suffering from financial exclusion and enhancing financial inclusion in society.

Digital transformation in banks leads to significant impacts on personal savings, as digital transformation enables customers to access banking services faster and more easily. Customers can now apply for loans and manage their accounts easily via the internet, saving them significant time and effort. Additionally, financial services can be provided more broadly, better meeting customer needs.

The role of the government in enhancing the digital transformation of banks is crucial to ensure the development of supportive policies and regulations for adopting digital technology in the banking sector. This includes supporting banks and enabling them to invest in modern technologies and developing the digital infrastructure. Additionally, the government is expected to set regulatory and supportive policies for digital transformation, contributing to enhancing innovation and increasing sustainability in banking services.

Supportive governmental regulations and policies are a fundamental tool in enhancing the digital transformation of banks, as they contribute to creating a regulatory environment that supports technical development and encourages investment in digital technology. Governmental supportive policies can include a set of legal measures and regulatory controls that enhance the use of modern technologies and encourage the provision of digital banking services securely and reliably to customers.

Implementing digital transformation in banks is a significant challenge that requires robust strategies and effective actions to ensure its success and achieve the desired goals. Banks need to work on developing comprehensive digital transformation strategies that include strategic alignment and organized implementation for the transformation process. Additionally, it is important to provide the necessary human and financial resources to support these processes, in addition to preparing detailed and comprehensive plans for periodic performance measurement and result analysis to ensure the achievement of the desired goals and sustain success in a rapidly changing environment.

The role of leadership and strategic planning in enhancing the success of banks' transformation towards digitization and how it contributes to achieving the future vision of the financial sector comes from leading the influential factors in the success of banks' transformation towards digitization. Leaders in banks need to define a clear vision for the transformation towards digitization and ensure that all efforts are directed towards achieving this vision. Additionally, strategic planning for digital transformation should focus on integrating modern technologies, changing processes, and regulatory frameworks, while considering potential impacts and managing them effectively.

Digital transformation tools and techniques are a fundamental part of the digital transformation process in internal auditing, as these techniques involve the use of advanced artificial intelligence, complex big data

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analytics, and advanced robotic technologies. These devices and software contribute effectively to improving the efficiency and accuracy of internal auditing processes, reducing the time required for routine processes that previously took a long time. Additionally, they enhance the ability to anticipate potential risks, contributing to making more effective decisions. These tools also play a crucial role in improving the efficient use of integrated resources, thereby maximizing the return on investments. It is essential that these tools are seamlessly integrated with the bank's financial information systems to ensure smooth information and process flow. Additionally, these tools must meet a set of strict security requirements to ensure the confidentiality and protection of information from any potential security threats.

Application of Digital Transformation in Internal Auditing Processes

Applying digital transformation in internal auditing processes improves the efficiency and accuracy of these processes, as modern digital technologies enable more accurate and faster data analysis, helping to identify risks and areas for improvement. Additionally, digital technologies can be used to develop internal control models and improve risk assessment procedures. It is also possible to use digital transformation to develop internal audit systems and monitor compliance more accurately and effectively, contributing to enhancing trust in the bank's operational processes.

Applying digital transformation in internal auditing achieves several important goals, including improving operational efficiency, reducing human errors, increasing data accuracy, and speeding up processes. Additionally, it contributes to improving information accessibility and saving time and effort in auditing processes. Furthermore, it enhances communication and collaboration among internal auditing team members, increasing flexibility in processes. The significant benefit of digital transformation is cost savings and improving the efficient use of financial and human resources in auditing processes.

Digital transformation in internal auditing is subject to several updates and potential risks, including reliance on technology, which may expose data to hacking and theft. Additionally, digital transformation may require high costs in developing the infrastructure and training employees on new technologies. The risk of job loss is also among the potential challenges, as full implementation of digital transformation may eliminate the need for human labor. It is also not possible to ignore the risks of power outages or technical failures that may affect workflow in internal auditing processes.

Successful strategies for applying digital transformation in internal auditing rely on several important factors, including providing training and qualification for internal auditors to effectively deal with new technologies, updating internal auditing procedures and controls to provide the necessary support for applying digital transformation, enhancing communication and interaction among internal auditing team members, and using innovation and creativity in applying digital technologies to improve work quality and achieve goals. The role of internal auditors in supporting the digital transformation process is fundamental, as internal auditors provide support and advice to management during the transformation process. Additionally, internal auditors help management address technical challenges and potential risks that may arise during the digital transformation process. Furthermore, internal auditors help management develop new strategies that consider digital transformation, update it, and fully utilize its capabilities while controlling and mitigating potential risks.

Impact of Digital Transformation on Internal Auditing in Banks

In recent years, digital transformation has become a central topic in internal auditing, especially in the context of banks. In this framework (Boljajl, 2018) addresses the impact of using modern auditing methods on the quality of the controller's report, highlighting how digital transformation improves the effectiveness of internal auditing through the application of analytical methods. Boljajl (2018) explains that digital transformation has enabled auditors to use advanced analytical tools, helping to identify gaps between expectations and reality. Statistical sampling techniques, combined with assessing the quality of the financial plan, contribute to enhancing the performance of the auditing process by analyzing the quality of financial reporting. This analysis not only improves outcomes but also helps narrow the gap between auditors' expectations and actual results, enhancing the overall effectiveness of auditing. Therefore, digital

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transformation is not just a change in methods but a fundamental transformation in how internal auditing is performed, opening new avenues for improving the quality of financial reporting in banks. The article "Impact of Using Modern Auditing Methods on the Quality of the Controller's Report" by Fred Boljajl addresses the impact of digital transformation on internal auditing in banks. Boljajl (2018) notes that applying digital transformation significantly affects the quality and methods of internal auditing, contributing to improving analytical methods and increasing process effectiveness. (Boljajl, 2018) includes among the main points the importance of analytical auditing in reducing expectation gaps, helping to identify unusual patterns in financial reports, which enhances the reliability of the information provided to investors and stakeholders. This point is crucial, as the ability to detect gaps and unusual patterns enhances the effectiveness of auditing overall.

Additionally, Boljajl (2018) refers to how economic developments enhance reliance on modern auditing tools, contributing to raising the level of the process. This reflects the urgent need for banks to adopt modern technologies that keep pace with the rapid developments in the economic environment.The author also explains how the use of modern tools makes the auditing process easier, enhancing management's ability to accurately assess the bank's performance. Using advanced analytical tools can lead to improved operational efficiency and increased ability to make data-driven decisions.

Impact of Digital Transformation on Bank Performance

The article "Impacto dos investimentos em TI na eficiência dos bancos argentinos" by Agustín Argañaraz et al. (2013) addresses the impact of information technology investments on the efficiency of Argentine banks. The authors highlight the importance of information technology in enhancing banks' financial performance, as adopting these investments is linked to achieving significant and efficient use of information.

The article emphasizes that the increasing reliance on technology in the banking sector significantly affects relationships with customers, suppliers, and intermediaries, highlighting the importance of digital transformation in improving financial performance. The reasons for banks' adoption of information technology include developing more advanced products, services, and distribution channels, cost management, and focusing on the customer by understanding their needs and providing products that meet them. Additionally, the article mentions the importance of complying with the standards and requirements set by regulatory bodies, in addition to the trend towards internationalization. The article highlights the intensive use of information technology in commercial banks, including electronic tools related to information availability, storage, processing, and distribution. Understanding investments in information technology and their impact on bank performance is of great importance, especially in the highly competitive environment in which these institutions operate. The article also mentions that the use of ATMs is one of the most prominent innovations widely adopted in the banking industry, contributing to reducing operational and transaction costs significantly and enhancing customer convenience.

The article "The effect of mobile banking applications on the performance of commercial banks in Kenya" by Ijeoma Remulo (2018) addresses the impact of mobile banking applications on the financial performance of commercial banks in Kenya. The study is based on a set of previous studies that indicate a strong positive relationship between the use of mobile banking technology and banks' financial performance.

The article highlights the potential benefits that banks can gain from adopting this technology, as studies such as those by Jayarardena and Foley indicate that mobile banking services lead to efficiency gains and cost reductions. Additionally, Kijen notes that this technology has significantly reduced transaction costs in small financial institutions.

The study examines the relationship between mobile banking applications and the profitability of commercial banks in Kenya, emphasizing the importance of research in this field. By testing the hypotheses used in previous studies, the author aims to provide evidence supporting the idea of a relationship between mobile banking services and financial performance. From a technical perspective, the study contributes to filling research gaps related to the impact of digital transformation on bank performance, especially in the

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context of Kenya. However, the findings may need further exploration of the factors affecting this relationship, such as the economic and competitive environment in the market. Additionally, the results can have implications for policy development, helping regulatory bodies provide guidance to other commercial banks regarding the adoption of technological innovations.

The article "Financial innovations and bank performance in Kenya : Evidence from branchless banking models" by Muthinja (2018) and Chipeta addresses the impact of financial innovations on the financial performance of banks in Kenya, with a specific focus on branchless banking models. The article highlights that new financial innovations have historically emerged after the successful introduction of technological innovations. The article discusses how technological developments in the communications sector have changed products, services, and production processes in commercial banks, reflecting the deep impact of digital transformation on banks' financial performance. The results show that financial innovations, such as branchless banking models, have contributed to enhancing banks' ability to adapt to rapid market changes, leading to improved financial performance.

By using the dynamic panel data model, the researchers were able to reveal the relationship between financial innovations and banks' financial performance. However, the article notes that the relationship between financial innovations and firm performance is complex, necessitating further research to better understand these dynamics. Additionally, the article observes that financial stability has not kept pace with innovations in developing countries, opening the field for further research in this area.

The article "The adoption of mobile banking applications from a dual perspective" by Medina-Molina et al. (2019) discusses the role of digital transformation in improving banks' financial performance through the adoption of mobile banking applications. The article provides a comprehensive view of how the banking sector engages with customers using empowering strategies, contributing to enhancing financial services. The article notes that internet banking has enabled consumers to access a wide range of financial and non-financial services through bank websites. Mobile banking applications, as an extension of internet banking, have made these services more accessible and user-friendly, meeting customers' expectations more effectively.

The article emphasizes that the banking sector is moving towards repeating current banking efforts using mobile and social technologies, leading to the creation of new financial services. To remain competitive in the face of rapid changes in the financial sector, banking institutions that leverage the opportunities offered by these applications will be in a strong competitive position. Additionally, the article discusses the challenges posed by financial technology companies (Fintech), which develop financial products and services that meet customer needs through technology. These companies create innovative business models with technology, redefining banking services.

The article "Exploring trends in electronic banking services as drivers of commercial bank performance in Tanzania: Evidence from CRDB Plc" by Mbegu et al. (2019) addresses the impact of digital transformation on banks' financial performance by analyzing the financial performance of CRDB using various indicators.

The article explains how bank performance was measured by looking at revenues generated from electronic banking services, such as fees and commissions, deposits, and annual profits. The authors highlight the importance of using traditional financial performance indicators such as return on equity and return on assets but note that these indicators may not accurately reflect bank performance, especially in the context of digital transformation. Therefore, they used additional indicators such as fees and commissions generated from electronic banking services as a measure of performance.

The article provides a critical analysis of the bank's financial performance, noting that electronic banking services enhance long-term value, although high investment costs may have negative effects initially. Additionally, internet adoption may negatively impact productivity in the first year of adoption, reflecting the update of digital transformation in the banking sector.

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The article "The impact of financial technology investments on listed banks : Evidence from an Italian sample" by Beltrame et al. (2022) discusses the impact of digital transformation on banks' financial performance, focusing on financial technology investments. The authors suggest that using the market value to book value ratio (PBV) can help assess intangible elements that do not affect overall budget outcomes, such as expected returns from financial technology investment projects. The article provides an in-depth analysis of how banks can effectively reduce operational costs through financial technology investments. The authors note that advancements in banking risk assessment, using artificial intelligence, big data, and automated investments, can lead to improved financial performance. This analysis reflects how digital transformation can enhance the efficiency of banking operations and positively impact financial performance. Additionally, the article points to opportunities for deepening the gap, opening new avenues for banks to increase their revenues through providing innovative financial services. However, further research may be needed to expand this analysis to include other gaps, which could help determine whether banks in different countries respond differently to value dimensions such as financial performance and expected performance.

The article "Ideal Self-Congruence : Neobanking by Traditional Banks and the Impact on Ideal Self-Congruence : Neobanking by Traditional Banks and the Impact on Social Intuition and the Impact on" by Banerjee et al. (2022) addresses the impact of digital transformation on banks' financial performance, focusing on how digital banking services affect market share. The article is based on a case study of private banks, providing a detailed analysis of how traditional banks keep pace with technological changes by providing digital banking services. The article notes that digital transformation not only improves operational efficiency but also enhances customer experience and increases market share.

The research hypotheses are as follows:

H1 *: There is no statistically significant relationship between the application of digital transformation and the quality of internal auditing.*

H2 *: There is no statistically significant relationship between the quality of internal auditing and financial performance.*

H3 *: There is no statistically significant relationship between the application of digital transformation and financial performance.*

H4 *: There is no statistically significant effect of the application of digital transformation on the quality of internal auditing.*

H5 *: There is no statistically significant effect of the quality of internal auditing on financial performance.*

H6 *: There is no statistically significant effect of the application of digital transformation on financial performance (direct effect).*

H7 *: There is no statistically significant effect of the application of digital transformation on financial performance in the presence of the quality of internal auditing (indirect effect).*

The article highlights the importance of risk management in the process of digital transformation, as this transformation requires banks to reassess their risk management strategies to ensure the sustainability of financial performance. Failure to address technology-related risks can lead to negative consequences for financial performance.

Additionally, the article discusses the relationship between digital transformation and financial performance, noting that banks that adopt effective digital strategies have seen significant improvements in their financial performance compared to those that lag in this transformation. The study suggests that digital transformation can lead to increased revenues and cost reductions, contributing to enhanced profitability.

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Methodology

Sample

This study focuses on the community of private banks operating in Iraq, totaling 23 banks according to the annual report of the Central Bank of Iraq for the year 2011. Five banks were selected for this research, including : Middle East Bank, Bank of Baghdad, Gulf Bank, Al-Etihad Bank for Investment and Finance, Ashur International Bank for Investment. The study sample consists of employees from a group of private banks in Iraq that use modern electronic systems to operate banking processes, benefiting from the diversity of banking operations used.

The researcher conducted an applied study involving the IT and information technology managers in the local banks operating in Iraq, as well as their internal auditors, to answer the study's questions. This is due to the role of the IT department (Information Systems Management) in directly supervising banking information and communication systems and their direct responsibility for providing the necessary infrastructure (organizational, technological, and security) to manage accounting applications in the system's operational stages (inputs, processing, outputs). Additionally, the importance of the auditor's role and responsibility in examining and evaluating the effectiveness of internal controls when preparing the audit program and determining the scope of tests and evidence to be used is highlighted.

From Table (1), it is noted that males constitute a percentage exceeding 73%, with a sample size of 106 individuals, compared to 39 females, representing approximately 27%. The highest participating age group in the survey is the 31 to 40 years group, with a percentage exceeding 42%, followed by the group under 30 years with 23.4%, and the third group is the 41 to 50 years group with 20%, and finally, the oldest age group, 50 years and above, with 14.5% (Table 2). From Table (3), it is noted that the highest educational level among the sample categories is the Master's degree, with a percentage close to 46%, with a frequency of 66 individuals, followed by the Bachelor's degree with 34.5%, while the postgraduate Diploma and Doctorate levels have percentages of 15.2% and 4.8%, respectively. Those with less than 5 years of experience constitute the highest percentage, approximately 42%, while the 5 to 10 years group represents the lowest percentage, not exceeding 12% (Table 4).

Exploratory Factor Analysis for the Digital Transformation Application Variable

Table (5) shows the KMO and Bartlett's Test results for the digital transformation application measure. The KMO measure value of 0.829, being greater than 0.5, indicates adequacy, and the significance value of Bartlett's Test being less than 0.05 confirms the suitability. Table (6) shows the variance explained for the digital transformation application measure items. The results indicate that the factor analysis identified only one factor explaining 52.977% of the variance, with a Cronbach's alpha reliability of 0.834. All items of the digital transformation application measure explained a high percentage, with all items having values above 0.5, making all items acceptable.

Table (7) shows the KMO and Bartlett's Test results for the internal audit quality measure. The KMO measure value of 0.845, being greater than 0.5, indicates adequacy, and the significance value of Bartlett's Test being less than 0.05 confirms the suitability. Table (8) shows the variance explained for the internal audit quality measure items. The results indicate that the factor analysis identified only one factor explaining 66.676% of the variance, with a Cronbach's alpha reliability of 0.861. All items of the internal audit quality measure explained a high percentage, with all items having values above 0.5, making all items acceptable.

Table (9) shows the KMO and Bartlett's Test results for the financial performance measure. The KMO measure value of 0.869, being greater than 0.5, indicates adequacy, and the significance value of Bartlett's Test being less than 0.05 confirms the suitability.Table (10) shows the variance explained for the financial performance measure items.

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The results indicate that the factor analysis identified only one factor explaining 67.522% of the variance, with a Cronbach's alpha reliability of 0.898. All items of the financial performance measure explained a high percentage, with all items having values above 0.5, making all items acceptable.

Confirmatory Factor Analysis Results

Confirmatory Factor Analysis (CFA) is used to confirm the validity of the measurement model structure and test the null hypotheses with the overall model. It also checks the validity of the estimated model and its fit with the data derived from the survey, thereby. Multivariate statistical methods are used to select the quality of a set of observed variables against a set of latent variables. Latent variables are those that cannot be measured directly but are inferred from observed variables, which are indicators of the latent variables in the model.

The latent variables in this study are digital transformation application, internal audit quality, and financial performance, while the observed variables are indicators of the latent variables and consist of responses to 36 statements. The study relied on unweighted least squares methods to determine the best sources of measurement quality, where the indicators used were included in many studies to determine the quality of the model measurement and as shown in Table (11) below:

Table (12) shows the goodness-of-fit indices for the confirmatory factor analysis. The results in Table (12) indicate that the model is acceptable as all indicators fall within the acceptable limits in Table (11), confirming the suitability of the data for hypothesis testing. The reliability coefficients for the factors, which should increase with sample size, are shown in Table (13). Table (13) shows the reliability coefficient values based on sample size.

From the results of the reliability coefficients in Table (14), it is noted that all reliability values are above 0.45, confirming the acceptability of all items without excluding any of them. Table (14) shows the standardized and unstandardized reliability coefficients for the study results.

After confirming the fit of the model with the survey data and confirming the validity of the fit indices with scientific standards, and ensuring the fit with scientific and required standards through confirmatory factor analysis (CFA), we can now test the study hypotheses mentioned in the methodology, as follows.

There is no statistically significant relationship between the application of digital transformation and internal audit quality. To confirm the first null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (1), with Table (15) showing the correlation results specific to the model, indicating the rejection of the first null hypothesis.

Figure (1) shows the correlation between the application of digital transformation and internal audit quality. Table (15) shows the analysis of the correlation between the application of digital transformation and internal audit quality. From Table (15), it is noted that there is a positive correlation between the application of digital transformation and internal audit quality, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the first null hypothesis.

There is no statistically significant relationship between internal audit quality and financial performance. To confirm the second null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (2), with Table (16) showing the correlation results specific to the model, indicating the rejection of the second null hypothesis. Figure (2) shows the correlation between internal audit quality and financial performance. Table (16) shows the analysis of the correlation between internal audit quality and financial performance. From Table (16), it is noted that there is a positive correlation between internal audit quality and financial performance, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the second null hypothesis.

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There is no statistically significant relationship between the application of digital transformation and financial performance. To confirm the third null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (3), with Table (17) showing the correlation results specific to the model, indicating the rejection of the third null hypothesis. Figure (3) shows the correlation between the application of digital transformation and financial performance. Table (17) shows the analysis of the correlation between the application of digital transformation and financial performance. From Table (18), it is noted that there is a positive correlation between the application of digital transformation and financial performance, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the third null hypothesis.

There is no statistically significant effect of the application of digital transformation on financial performance. To confirm the fourth null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (4), with Table (17) showing the direct effect results specific to the model, indicating the rejection of the fourth null hypothesis. Figure (10) shows the effect of the application of digital transformation on internal audit quality.

Table (17) shows the analysis of the effect of the application of digital transformation on internal audit quality. From Table (17), it is noted that there is a positive direct effect of the application of digital transformation on internal audit quality, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the fourth null hypothesis.

There is no statistically significant effect of internal audit quality on financial performance. To confirm the fifth null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (4, with Table (24) showing the direct effect results specific to the model, indicating the rejection of the fifth null hypothesis. Figure (11) shows the effect of internal audit quality on financial performance. Table (18) shows the analysis of the effect of internal audit quality on financial performance. From Table (24), it is noted that there is a positive direct effect of internal audit quality on financial performance, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the fifth null hypothesis.

There is no statistically significant effect of the application of digital transformation on financial performance (direct effect). To confirm the sixth null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (12), with Table (25) showing the direct effect results specific to the model, indicating the rejection of the sixth null hypothesis. From Table (25), it is noted that there is a positive direct effect of the application of digital transformation on financial performance, and the estimated probability value for the correlation coefficient is less than the significance level of 0.05, confirming the rejection of the sixth null hypothesis.

There is no statistically significant effect of the application of digital transformation on financial performance with the presence of internal audit quality (indirect effect). To confirm the seventh null hypothesis and verify its validity, a structural equation model was established to test or reject this hypothesis, as shown in Figure (13), with Table (26) showing the direct and indirect effect results specific to the model, indicating the rejection of the seventh null hypothesis. Figure (13) shows the effect of the application of digital transformation on financial performance with internal audit quality as a mediator. Table (26) shows the analysis of the effect of the application of digital transformation on financial performance with internal audit quality as a mediator.

From Table (26), it is noted that there is a positive indirect effect of the application of digital transformation on financial performance with the presence of internal audit quality, and the estimated probability value for the direct and indirect effects is less than the significance level of 0.05, confirming the rejection of the seventh null hypothesis.

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Conclusion

The study demonstrates that digital transformation significantly impacts internal auditing processes and the financial performance of Iraqi private banks. The findings indicate a positive correlation between the implementation of digital transformation and the quality of internal audits, as well as between internal audit quality and financial performance. Additionally, the application of digital transformation directly enhances the financial performance of banks.

To maximize the benefits of digital transformation, banks should invest in advanced banking technologies, develop employee skills through continuous training programs, and implement robust security measures to protect sensitive data. It is also crucial to strengthen internal control and documentation procedures to ensure the accuracy and validity of accounting information.

In conclusion, digital transformation presents a major opportunity for Iraqi private banks to improve operational efficiency, reduce costs, and offer innovative, high-quality banking services. However, this requires a continuous commitment to developing accounting information systems and internal auditing processes to adapt to technological advancements and associated challenges.

Iraqi private banks should continuously develop internal auditing processes to keep pace with the changes in risks faced by Iraqi private banks and to achieve the desired goals of internal auditing processes by ensuring the presence of a qualified internal audit team with the necessary expertise to develop and improve the efficiency and quality of internal auditing processes in Iraqi private banks.

Increase the volume of investment in banking technology to meet technical needs and expand the database to save costs and provide high-quality accounting information systems that meet the needs and potential opportunities to improve the levels of operational performance and regulatory processes.

The objective of appointing the head of the internal audit function should include, at the time of appointment, a set of competencies related to competence, practice, independence, suitability, and efficiency, and these are among the main indicators that represent the basic actions and standards that must be met to raise the level of professional performance.

Work on improving the level of analysis of the means of access to the accounting ledger and using statistical sampling methods to verify and verify the entries and their modification. Additionally, emphasize the importance of control procedures and documentation processes in the accounting information system and activate the use of backup copies by the accounting department and verify their implementation by the internal audit department.

Develop the human resources employed in the banking sector and qualify them through continuous training programs that keep pace with the rapid developments in the banking sector. This is done by holding training courses and workshops that include the latest developments and modern applications in the banking sector, raising the level of technical competence, and developing the skills and abilities of employees to keep pace with the rapid developments in the banking sector. Additionally, emphasize the importance of continuous training and development for employees to enhance their skills and abilities and develop their technical and practical competencies to keep pace with the rapid developments in the banking sector.

It is necessary for the internal audit function in banks to have a set of competencies related to competence, practice, independence, suitability, and efficiency, and these are among the main indicators that represent the basic actions and standards that must be met to raise the level of professional performance.

The risk of unauthorized access to the accounting information system and the theft of information by unauthorized individuals due to lack of experience, training, and supervision, in addition to the absence of clear and enforceable policies and procedures in the bank.

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Ensure the availability of backup copies of the accounting ledger and applications in secure and remote locations to ensure their availability and protection in case of any problems or risks that may affect the bank's accounting information system.

Ensure the availability of control procedures for access to the master files and applications at the necessary level of security and confidentiality to prevent unauthorized access to the accounting information system.

Ensure the development of control procedures at an average level of security and confidentiality with the availability of documentation and verification processes for entries in the accounting information system to ensure their accuracy and validity.

There is a lack of documentation and verification procedures for the processes of modifying the rates and outputs of the accounting information system, as well as a lack of use of statistical sampling methods to verify and verify the entries and their modification. Additionally, emphasize the importance of control procedures and documentation processes in the accounting information system and activate the use of backup copies by the accounting department and verify their implementation by the internal audit department.

The internal audit function does not perform the task of analyzing and verifying the system and program files, and there is no work being done on them, and there is no justification for their existence and operation in the management of the accounting information system.

Increase the use of advanced technologies in accessing the accounting ledger, such as biometric systems, facial recognition, voice recognition, etc., to enhance the level of security and confidentiality in accessing the accounting information system and prevent unauthorized access to it.

The internal auditing processes in banks should be developed and qualified through continuous training programs that keep pace with the rapid developments in the banking sector. This is done by holding training courses and workshops that include the latest developments and modern applications in the banking sector, raising the level of technical competence, and developing the skills and abilities of employees to keep pace with the rapid developments in the banking sector. Additionally, emphasize the importance of continuous training and development for employees to enhance their skills and abilities and develop their technical and practical competencies to keep pace with the rapid developments in the banking sector.

Develop a set of standards and controls related to the processes of modifying the rates and outputs of the accounting information system, as well as documentation and verification processes for the entries and their modification. Additionally, emphasize the importance of control procedures and documentation processes in the accounting information system and activate the use of backup copies by the accounting department and verify their implementation by the internal audit department.

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Appendix

Table 1: Descriptive Statistics- Gender

%	Frequency	Gender
73.1	106	Male
26.9	39	female
100.0	145	Total

Table 2. Descriptive Statistics- Age

%	Frequency	age
23.4	34	<30
42.1	61	31-40
20.0	29	41-50
14.5	21	>50
100.0	145	Total

Table 3. Descriptive statistics- Experience

%	Frequency	Experience
42.1	61	<5
11.7	17	5-10
18.6	27	10-15
14.5	21	15-20
13.1	19	>20
100.0	145	Total

Table 4. Descriptive statistics- Function

%	Frequency	Function

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32.4	*47*	*Internal Auditor*
10.3	*15*	*Financial Analys*
3.4	*5*	*Investment fund worker*
26.2	*38*	*Academic in the fie of accounting and auditingld*
11.7	*17*	*Internal audit managerat the bank*
15.9	*23*	*Employee in digital transformation and information technology*
100.0	*145*	*Total*

Table (5). KMO and Bartlett's Test Results for the Digital Transformation Application Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*0.829*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*503.718*

Table (6). Saturation Ratios for Sections of the Digital Transformation Application Scale

Saturation Ratios / ***First Factor***	***Construct***		
0.657	*X1*	*LA*	*1*
0.614	*X2*		*2*
0.657	*X3*		*3*
0.629	*X4*		*4*
0.610	*X5*		*5*
0.663	*X6*		*6*
0.697	*X7*		*7*
0.624	*X8*		*8*
0.454	*X9*		*9*
0.396	*X10*		*10*
0.575	*X11*		*11*
0.654	*X12*		*12*
0.834	*Cronbach's Alpha*		
62.977	*- Percentage of Variance Explained*		

Table (7). KMO and Bartlett's Test Results for the Internal Audit Quality Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*0.845*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*611.403*
	Df	*66*
	Sig.	*0.000*

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Table (8). Saturation Ratios for Sections of the Internal Audit Quality Scale

Saturation ratio	***construct***		
First factor			
0.470	*Z1*	*Internal Audit Quality*	*1*
0.493	*Z2*		*2*
0.602	*Z3*		*3*
0.698	*Z4*		*4*
0.705	*Z5*		*5*
0.721	*Z6*		*6*
0.730	*Z7*		*7*
0.503	*Z8*		*8*
0.509	*Z9*		*9*
0.674	*Z10*		*10*
0.735	*Z11*		*11*
0.715	*Z12*		*12*
0.861	Cronbach's Alpha		
66.676	- Percentage of Variance Explained		

Table (9). KMO and Bartlett's Test Results for the Financial Performance Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*0.869*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*878.354*
	Df	*66*
	Sig.	*0.000*

Table (10). Saturation Ratios for Sections of the Financial Performance Scale

Saturation ratio			
First factor			
0.691	*Y1*	*Performance*	*1*
0.702	*Y2*		*2*
0.732	*Y3*		*3*
0.640	*Y4*		*4*
0.721	*Y5*		*5*
0.755	*Y6*		*6*
0.584	*Y7*		*7*
0.701	*Y8*		*8*
0.682	*Y9*		*9*
0.785	*Y10*		*10*
0.718	*Y11*		*11*
0.533	*Y12*		*12*
0.898	Cronbach's Alpha		
67.522	- Percentage of Variance Explained		

Table (11). Goodness-of-Fit Indices for Confirmatory Factor Analysis

القيمة المحتسبة	**المؤشر**
0.743	*CMIN/DF*
0.929	*GFI*

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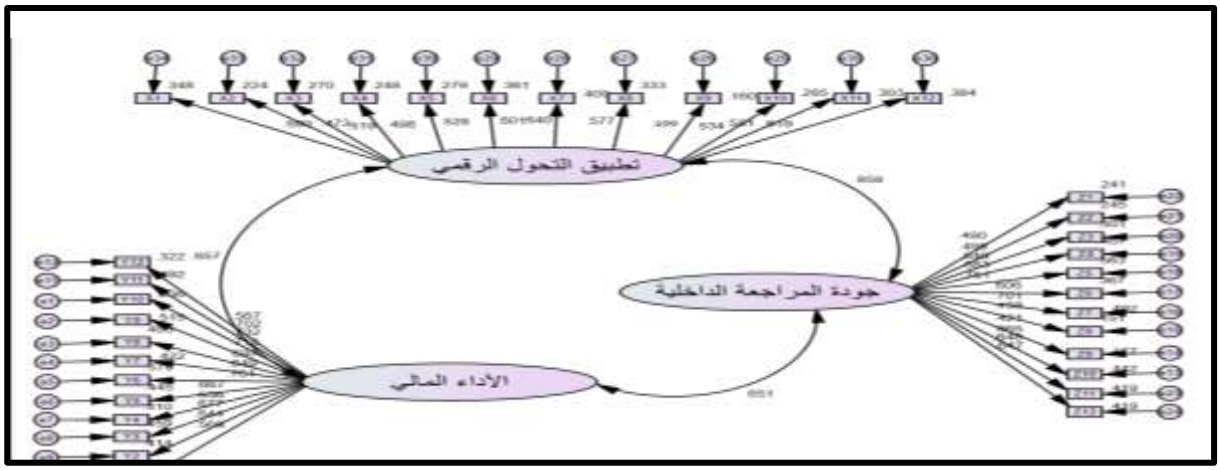
0.920	*AGFI*
0.907	*NFI*
0.825	*PGFI*
0.901	*RFI*
0.068	*RMR*

Figure (1). Confirmatory Factor Analysis of the Dimensions of the Study Variables



جدول (17): قيم التشبعات اعتماداً على حجم العينة

حجم العينة المطلوب لتحقيق المعنوية	تشبع العامل *Factor Loading*
350	*0.30*
250	*0.35*
200	*0.40*
150	***0.45***
120	*0.50*
100	*0.55*
85	*0.60*
70	*0.65*
60	*0.70*
50	*0.75*

جدول (19): قيم معاملات الانحدار الاعتيادية والمعيارية لنتائج التحليل العاملي التوكيدي

معاملات الانحدار المعيارية	معاملات الانحدار الاعتيادية	المتغيرات المشاهدة	المتغيرات الكامنة
0.590	*1.000*	*X1*	تطبيق التحول الرقمي
0.473	*0.825*	*X2*	
0.519	*0.908*	*X3*	
0.498	*1.107*	*X4*	
0.528	*1.164*	*X5*	
0.601	*1.325*	*X6*	
0.640	*1.236*	*X7*	
0.577	*1.015*	*X8*	
0.499	*0.792*	*X9*	
0.534	*1.344*	*X10*	
0.551	*1.087*	*X11*	
0.619	*1.051*	*X12*	
0.490	*1.000*	*Z1*	

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0.495	*0.881*	*Z2*	جودة المراجعة الداخلية
0.549	*1.120*	*Z3*	
0.683	*1.460*	*Z4*	
0.751	*1.489*	*Z5*	
0.606	*1.089*	*Z6*	
0.701	*1.465*	*Z7*	
0.488	*0.733*	*Z8*	
0.521	*1.104*	*Z9*	
0.665	*1.344*	*Z10*	
0.648	*1.514*	*Z11*	
0.647	*1.393*	*Z12*	
0.569	*1.000*	*Y1*	الأداء المالي
0.644	*1.015*	*Y2*	
0.677	*0.980*	*Y3*	
0.556	*0.722*	*Y4*	
0.667	*0.872*	*Y5*	
0.761	*1.040*	*Y6*	
0.649	*0.734*	*Y7*	
0.697	*0.976*	*Y8*	
0.718	*0.887*	*Y9*	
0.732	*1.000*	*Y10*	
0.702	*0.848*	*Y11*	
0.567	*0.646*	*Y12*	

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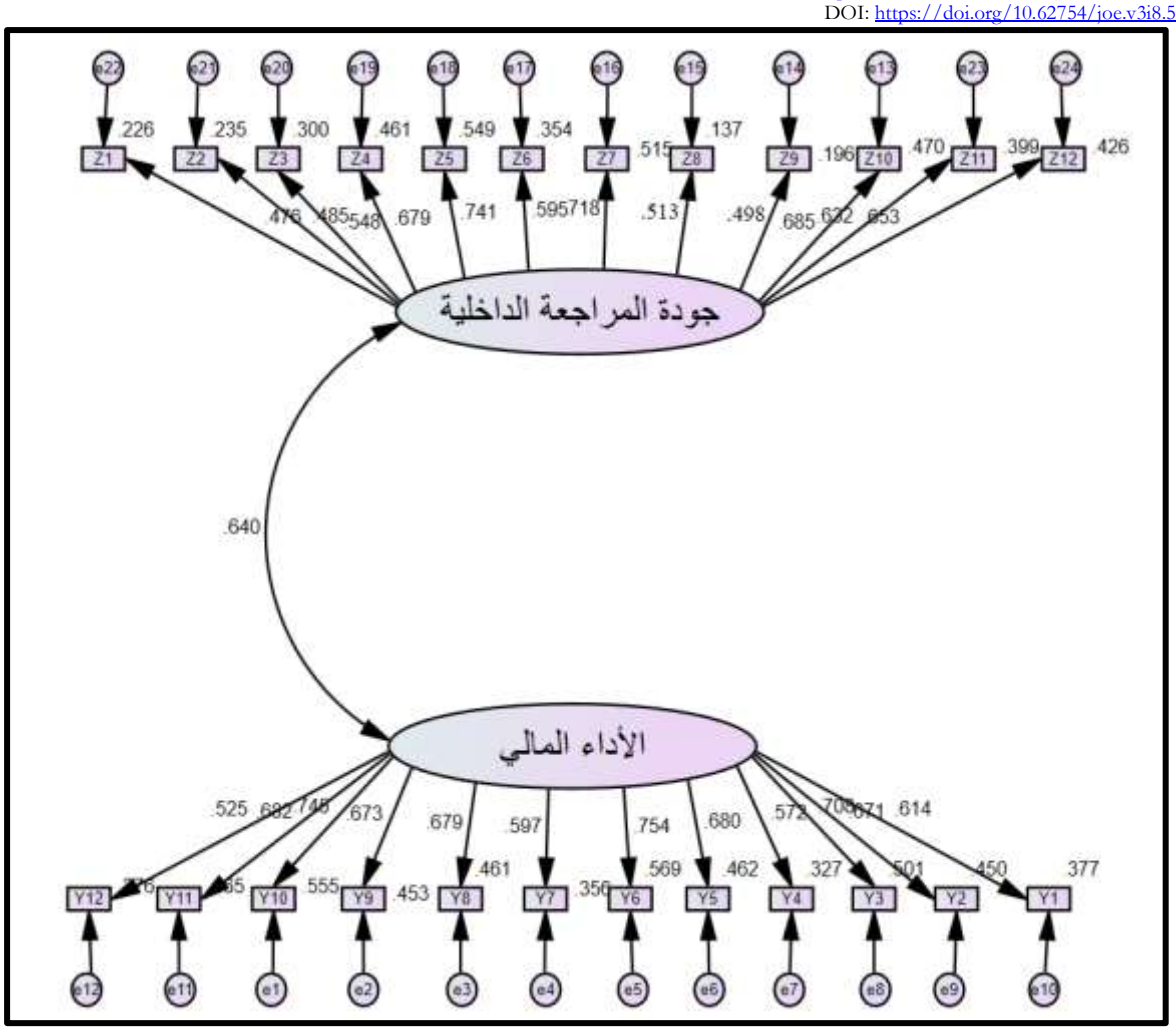

جدول (21): تحليل الارتباط بين جودة المراجعة الداخلية والأداء المالي

المتغيرات	الأداء المالي		
جودة المراجعة الداخلية	معامل الارتباط	القيمة الاحتمالية	الدلالة
	0.640	*0.000*	دال إحصائياً

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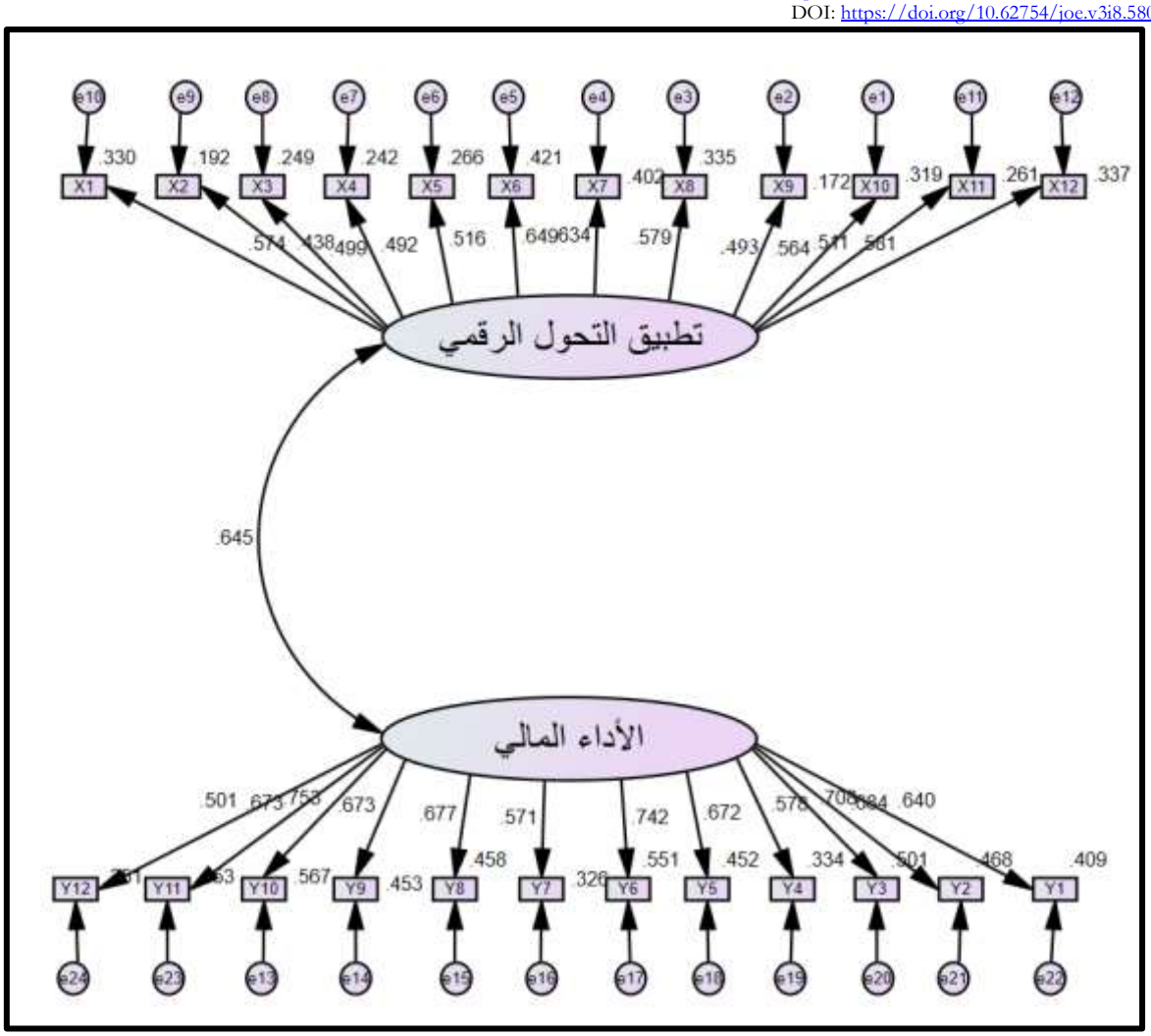

شكل (9): الارتباط بين تطبيق التحول الرقمي والأداء المالي

جدول (22): تحليل الارتباط بين تطبيق التحول الرقمي والأداء المالي

المتغيرات	الأداء المالي		
	معامل الارتباط	القيمة الاحتمالية	الدلالة
تطبيق التحول الرقمي	*0.645*	*0.000*	دال إحصائياً

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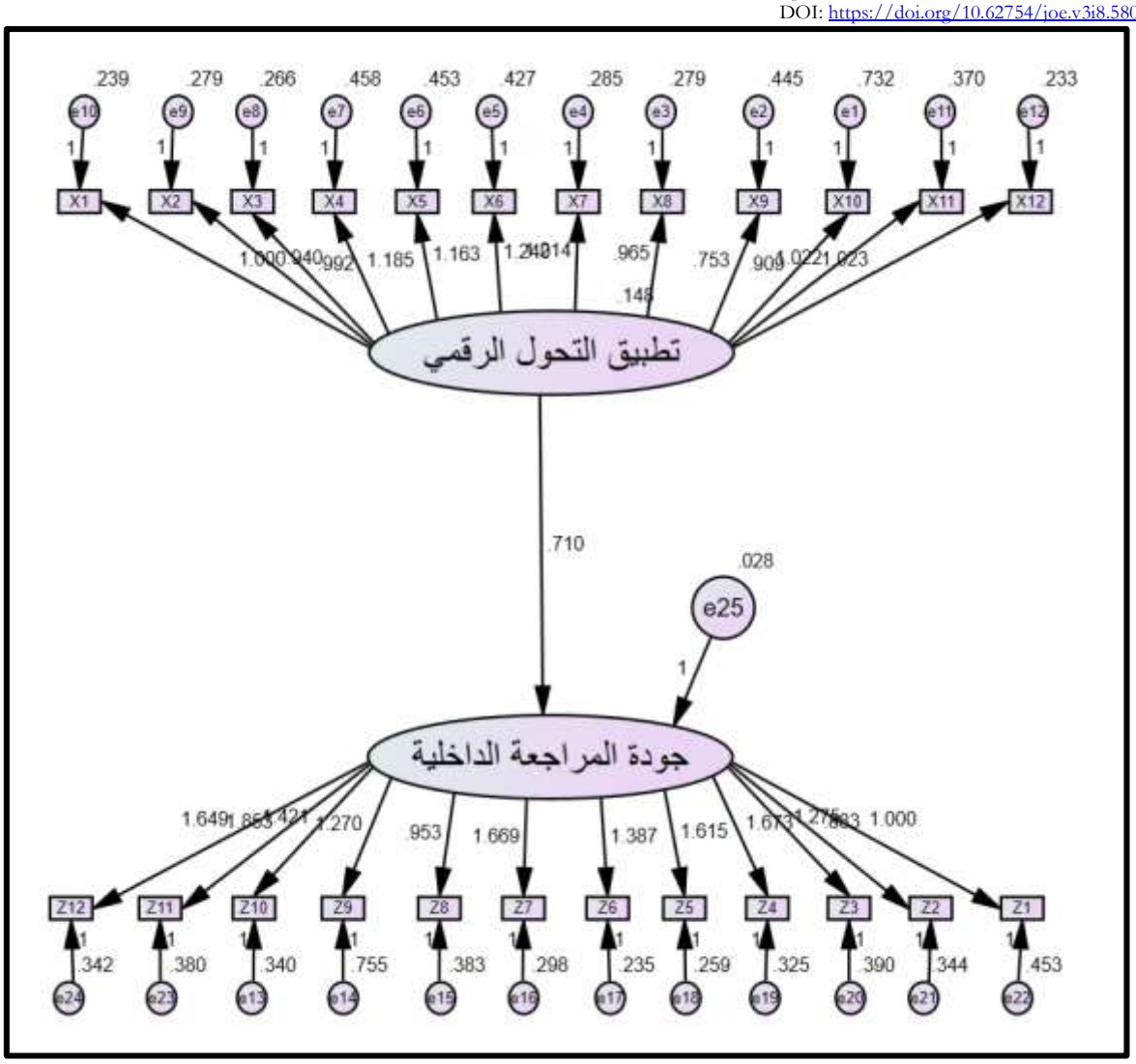

شكل (10): تأثير تطبيق التحول الرقمي في جودة المراجعة الداخلية

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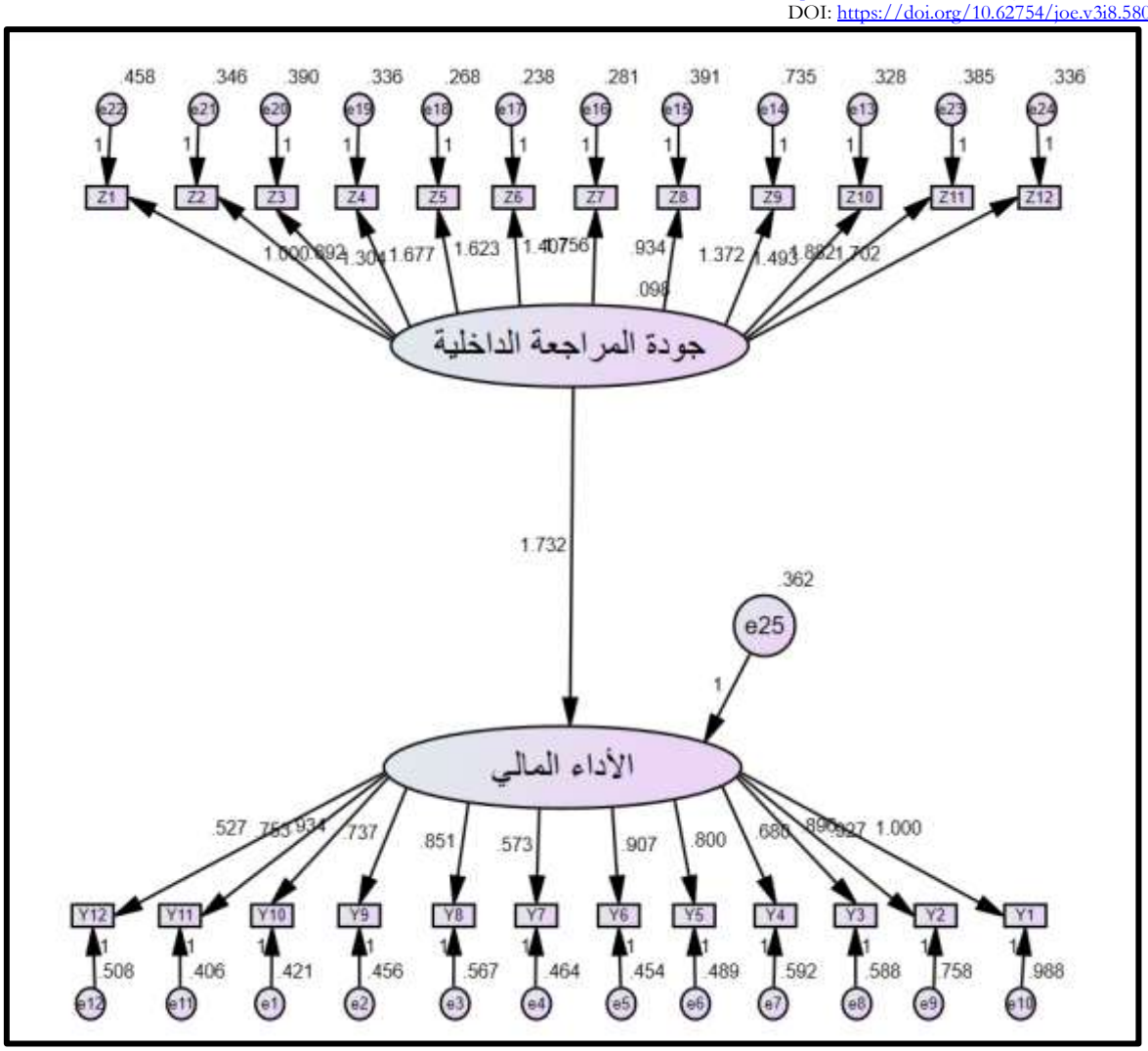

شكل (11): تأثير جودة المراجعة الداخلية في الأداء المالي

جدول (24): تأثير جودة المراجعة الداخلية في الأداء المالي

المتغير المستقل	المتغير المعتمد	معامل الانحدار	القيمة الاحتمالية	الدلالة
جودة المراجعة الداخلية	**الأداء المالي**	*1.732*	*0.000*	دال إحصائياً

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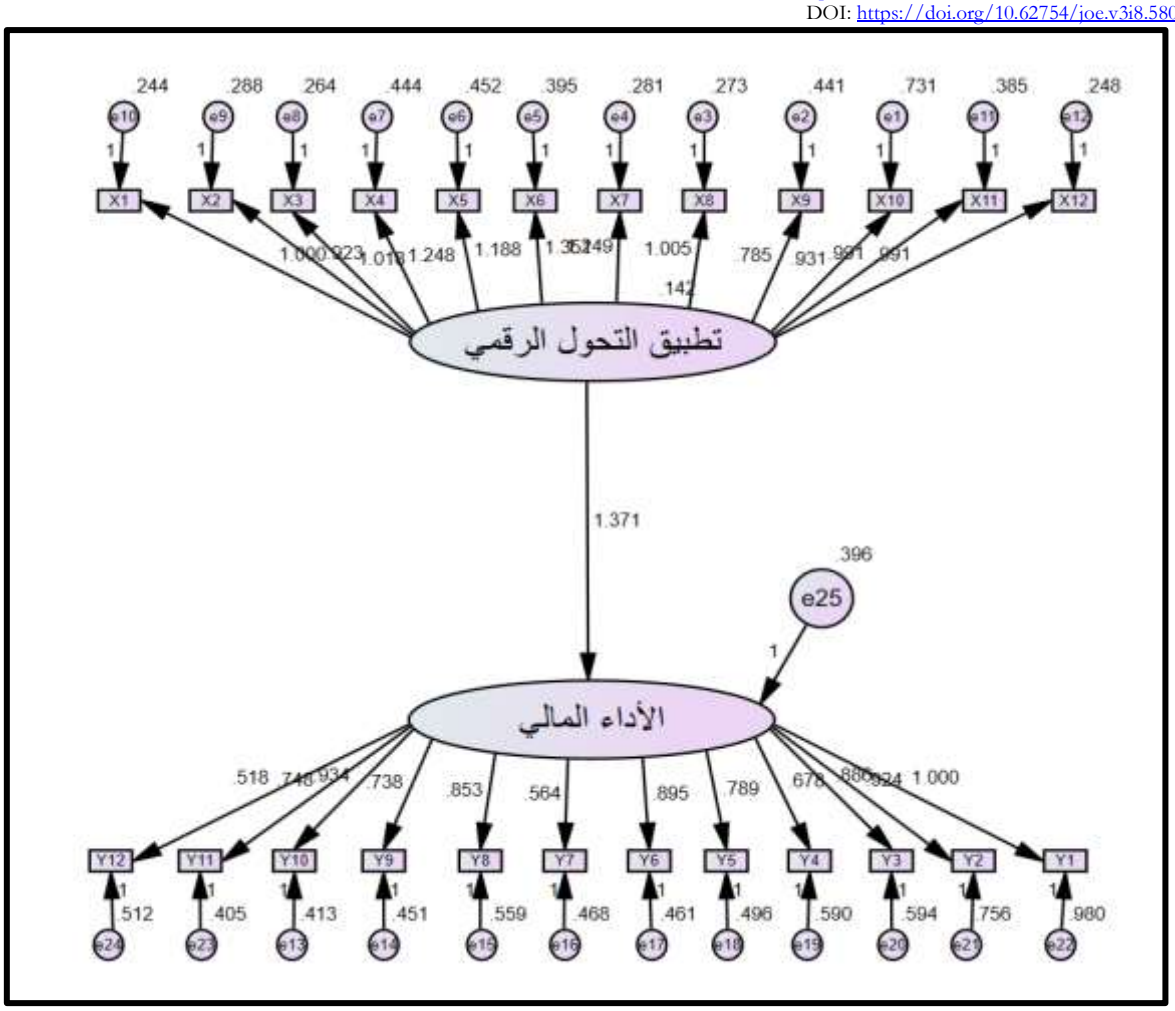
DOI: https://doi.org/10.62754/joe.v3i8.5804



شكل (12): تأثير تطبيق التحول الرقمي في الأداء المالي

جدول (25): تأثير تطبيق التحول الرقمي في الأداء المالي

المتغير المستقل	المتغير المعتمد	معامل الانحدار	القيمة الاحتمالية	الدلالة
تطبيق التحول الرقمي	الأداء المالي	*1.371*	*0.000*	دال إحصائياً

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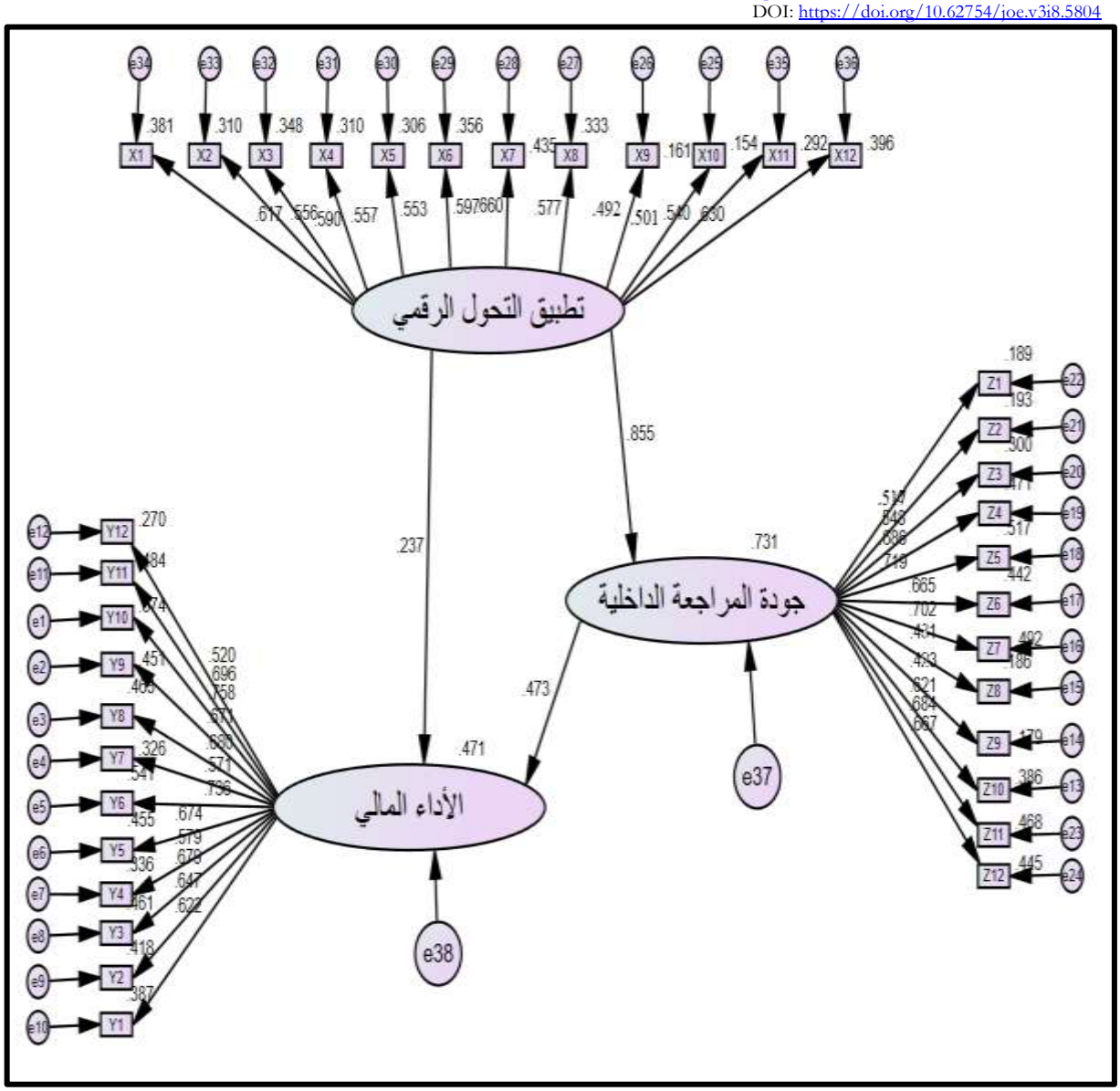

شكل (13): أثر تطبيق التحول الرقمي في الأداء المالي بوجود جودة المراجعة الداخلية كمتغير وسيط

جدول (26): نتائج تحليل المسار على المستوى الكلي

نوع التأثير	العلاقة الرياضية	التقدير	القيمة الاحتمالية
التأثيرات المباشرة	$X \rightarrow Z$	*0.855*	*0.000*
	$Z \rightarrow Y$	*0.473*	*0.024*
	$X \rightarrow Y$	*0.237*	*0.215*
التأثير غير المباشر	$X \overset{Z}{\rightarrow} Y$	*0.404*	*0.032*
التأثير الكلي	$X \rightarrow Y$ $X \overset{Z}{\rightarrow} Y$	*0.641*	*0.000*