



## **The Impact of Digital Transformation on Internal Auditing quality**

### **A Field Study in the Egyptian Banks**

### **تأثير التحول الرقمي على جودة المراجعة الداخلية دراسة ميدانية في البنوك التجارية المصرية**

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### **Abstract**

this research aimed to identify the impact of digital transformation on the quality of internal auditing in Egyptian banks. This objective was divided into a set of sub-objectives, and the survey list was relied upon to collect data from the study sample. The survey was distributed to employees in the internal audit departments of banks, and the study sample consisted of 144 individuals.

Using a set of appropriate statistical methods, the study reached the following results: Digital transformation plays an important role in commercial banks. Digital transformation affects the tools and methods used in internal auditing. Digital transformation affects the procedures of the internal audit process in banks. Digital transformation enhances the quality of internal auditing.

Based on the challenges and obstacles identified during the implementation of digital transformation in organizations, especially in Egyptian banks, the study proposes the following recommendations: - Developing the technological infrastructure in banks by providing the necessary financial resources to equip them with computers and advanced Internet networks that are commensurate with the size of their customer base and the services they provide. - Diversifying banking applications and educating citizens on how to use them, which facilitates access to banking services and benefit from them. - Facilitating access to technology and Internet networks for all citizens to facilitate the use of banking applications and thus reduce transaction costs.

### **Keywords:**

Digital Transformation, Internal Auditing, Egyptian Banks.

### الملخص:

هدف هذا البحث إلى التعرف على أثر التحول الرقمي على جودة المراجعة الداخلية في البنوك المصرية. وتم تقسيم هذا الهدف لمجموعة من الأهداف الفرعية، وتم الاعتماد على قائمة الإستقصاء لتجميع البيانات من عينة الدراسة، وتم توزيع الإستقصاء على العاملين بأقسام المراجعة الداخلية بالبنوك، وتكونت عينة الدراسة من 144 مفردة.

وباستخدام مجموعة من الأساليب الإحصائية المناسبة توصلت الدراسة إلى النتائج التالية: يلعب التحول الرقمي دوراً هاماً في البنوك التجارية. يؤثر التحول الرقمي على الأدوات والأساليب المستخدمة في المراجعة الداخلية. يؤثر التحول الرقمي على إجراءات عملية المراجعة الداخلية في البنوك. يعزز التحول الرقمي من جودة المراجعة الداخلية.

وبناءً على التحديات والعقبات التي تم تحديدها أثناء تنفيذ التحول الرقمي في المنظمات وخاصة في البنوك المصرية، تقترح الدراسة التوصيات التالية: - تطوير البنية التحتية التكنولوجية في البنوك من خلال توفير الموارد المالية اللازمة لتجهيزها بأجهزة كمبيوتر وشبكات إنترنت متطورة تتناسب مع حجم قاعدة عملائها والخدمات التي تقدمها. - تنويع التطبيقات المصرفية وتوعية المواطنين بكيفية استخدامها مما يسهل الوصول إلى الخدمات المصرفية والاستفادة منها. - تسهيل وصول التكنولوجيا وشبكات الإنترنت إلى جميع المواطنين لتسهيل استخدام التطبيقات المصرفية وبالتالي تقليل تكاليف المعاملات.

### الكلمات المفتاحية:

التحول الرقمي، المراجعة الداخلية، البنوك المصرية.

## 1- Introduction

Digital transformation is a key outcome of the various technological revolutions that occurred in the past era, and it reflects the numerous attempts at development. Recently, many countries have focused on digital transformation by investing their resources and capabilities in implementing digital transformation technologies (Kraus et al., 2021). Likewise, many governments have adopted the concept of “e-government” to benefit from the advantages of technology, such as minimizing human errors and enhancing accuracy and efficiency in performing tasks. For example, the Egyptian government allocates a lot of effort, time, and money to become an electronic government. The fast and continuous developments have also encouraged organizations to pursue change, development, and innovation.

Digital transformation is a key factor and enabler for economic, labor, and industrial growth, as banks need to Adopt digital transformation to stay competitive in the business markets (Qureshi, 2022).

Digital transformation in banking is the process of using technology to improve the performance, efficiency, and customer experience of banks and financial institutions (Lugovsky, 2021). It involves changing the business models, processes, culture, and products of banks to meet the changing needs and expectations of customers and the market (Kazim, 2023)

Digital transformation has some benefits. in banking as follows:  
:(Dolgorukov, 2020 & Lugovsky, 2021 & Kazim, 2023)

- Enhanced customer satisfaction and loyalty by providing personalized, convenient, and seamless services across multiple channels.
- Increased operational efficiency and cost reduction by automating manual tasks, streamlining workflows, and integrating data and systems.
- Improved innovation and competitiveness by offering new and differentiated products and services, leveraging data analytics and

artificial intelligence, and collaborating with fintech and other partners.

- Reduced risk and compliance issues by enhancing security, privacy, and transparency, and adhering to regulatory standards and best practices

Some of the challenges of digital transformation in banking include (Dolgorukov, 2020; Lugovsky, 2021; Kazim, 2023):

- Resistance to change and cultural barriers within the organization, such as legacy mindsets, siloed structures, and a lack of skills and talent.
- Complexity and uncertainty of the digital environment, including rapid technological changes, evolving customer demands, and increased competition and disruption.
- Implementation and integration difficulties, such as technical limitations, legacy systems, data quality and availability issues, and interoperability challenges.
- Regulatory and ethical concerns, including data protection, cybersecurity, consumer rights, and social responsibility.

Digital transformation also significantly impacts the accounting environment in various ways (Gonçalves et al., 2022; Dabbas et al., 2023):

- It enables accountants to automate repetitive and tedious tasks, such as data entry, reconciliation, and reporting, allowing them to focus more on strategic and value-added activities like analysis, forecasting, and advisory services.
- It provides accountants with access to real-time and accurate data, improving decision-making, performance measurement, and compliance.
- It requires accountants to develop new skills and competencies, such as digital literacy, data analytics, critical thinking, and communication, to adapt to the changing demands and expectations of clients and stakeholders.

Digital transformation is not only a challenge but also an opportunity for accountants to enhance their role and value in the digital era. Additionally, digital transformation offers benefits for internal audit functions (PwC, 2017; Director Corps, 2020):

- It can improve the quality and efficiency of audit processes by automating repetitive and tedious tasks, such as data collection, analysis, testing, and reporting.
- It can enhance the value and relevance of audit insights by providing access to real-time and accurate data, applying advanced analytics and data visualization techniques, and identifying emerging risks and opportunities.
- It can strengthen relationships and collaboration with stakeholders by aligning audit objectives with business goals, delivering timely and proactive assurance and advice, and leveraging innovative solutions and best practices.

In conclusion, digital transformation can help internal audit become a more strategic, effective, and influential function in the digital era.

## **2-Literature Review and hypotheses development**

**There are some studies investigate digital transformation and its impact on business like:**

Saybek et al., (2020) which aims to provide a clear definition of digital transformation and suggest a structured framework that covers digital transformation stages, activities, and outcomes. It reviews six strategic frameworks for digital transformation found in the literature and explains their nature. The results indicate that while digital transformation is a familiar concept, a systematic approach to the digital transformation of business models is missing. The study offers a clear understanding of digital transformation of business models and the stages of digital transformation of business models.

While Morze & Strutynska (2021) focuses on analyzing the processes of digital transformation that are currently happening in business, production, education and society in general. The main driver behind digital transformation

is the impact of digital technology. Modern digital technologies, services and systems are very important for the advancement of society. One of the main challenges in implementing digital transformation is the shift in mindset and the skills requirements for practitioners in the industry. First, it relates to people's comprehension of the digital transformation process and their ability to use digital technologies efficiently. To measure the level of awareness among Ukrainian educators about the process of digital transformation, a survey was conducted. The result of the study highlights the need to raise awareness of the digital transformation process. Based on the analysis of the research findings, the authors create a general digital transformation model for companies, businesses and educational institutions.

Furthermore, Masoud & Basahel (2023) examined how digital Transformation affects the outcomes of firms by identifying the abilities. needed to achieve digital transformation, customer experience, and IT innovation. The researchers used a formal survey to gather data from 164 people. Who work in service sector firms in Saudi Arabia, such as chief information officers, chief transformation officers, and IT managers? The results of this Research shows that digital transformation, customer experience, and IT innovation has a positive effect on a firm's performance and customer Experience has the most influence. From the previous study, the first hypothesis developed for this study is:

**H<sub>01</sub>: There is a significant importance of digital transformation in Egyptian banks**

**Other studies investigated the role of digital transformation on internal and external audit such as**

Rashwan & Abu Rahma (2020). The aim of this study is to examine how audit quality is affected by digitalization. The researchers used a Delphi study with 20 statements about the quality of auditing in relation to digitalization and asked a group of Egyptian auditors to evaluate them in two rounds. The study found that the participants anticipate some major changes in the factors that influence audit quality in the future because of digitalization, especially regarding the skills of auditors, some of the audit methods used, and the speed

of audits. The study also revealed that the experts think that technological innovations have not had a significant impact on the factors that determine the quality of the exam, mainly in the areas that relate to the exam being less useful or obsolete, which makes the exam users lose trust in their audit expectations. Gap between audits There is a growing gap between the regulatory standards and the new business realities. The study suggests that advanced technologies such as big data analytics, artificial intelligence, block chain technology, and robotic process automation could reduce the human role in the audit process. Therefore, the audit profession is likely to change in the digitalization process.

Al-Malih (2021) aim of this study is to examine how audit quality is affected by digitalization. The researchers used 20 statements about the quality of auditing in relation to digitalization and asked a group of Egyptian auditors to evaluate them in two rounds. The study found that the participants anticipate some major changes in the factors that influence audit quality in the future because of digitalization, especially regarding the skills of auditors, some of the audit methods used, and the speed of audits. The study also revealed that the experts think that technological innovations have not had a significant impact on the factors that determine the quality of the exam, mainly in the areas that relate to the exam being less useful or obsolete, which makes the exam users lose trust in their audit expectations. Gap between audits There is a growing gap between the regulatory standards and the new business realities. The study suggests that advanced technologies such as big data analytics, artificial intelligence, block chain technology, and robotic process automation could reduce the human role in the audit process. Therefore, the audit profession is likely to change in the digitalization process.

Betti et al., (2021), This study aims to investigate how the internal audit function modifies its activities and practices in relation to the digital transformation of the organization. This paper specifically examines the use of data analytics and the performance of consulting activities by internal auditors. This study is based on a survey conducted with 82 chief audit executives based in the USA and members of the institute of internal auditors. The results indicate a positive relation between the organization's level of digitalization and the use of data analytics by internal auditors during their missions. Results also indicate that the organization's level of digitalization has an indirect effect on



the proportion of the internal audit planning dedicated to consulting activities. specifically, the use of data analytics mediates the relationship between the organization's level of digitalization and the proportion of the internal audit planning dedicated to consulting activities.

Rashwan & Abu Arab (2022), aimed to identify the role of digital transformation in improving the quality of the internal audit process. The researchers used the descriptive analytical approach, and the questionnaire was relied on as a study tool that was applied to the study population consisting of internal auditors working in banks listed on the Palestine Stock Exchange, and their number was (85). A checker and a comprehensive inventory method were used due to the small size of the community. The results of the study showed that the use of digital transformation helps to ensure the quality of the work of internal auditors and enables the use of electronic data to facilitate the highly accurate implementation and execution of audit processes. The study recommends that banks listed on the Palestine Stock Exchange commit to leveraging digital transformation as it facilitates fundamental changes in the organization and planning of the audit process and assesses possible risks to the internal audit process. Therefore, based on the previous studies, the following research hypotheses for the current study can be developed.

**H<sub>02</sub>: There is a significant impact of digital transformation on the improvement of internal auditing procedures.**

**H<sub>03</sub>: There is a significant impact of digital transformation on the compliance with internal audit standards.**

**H<sub>04</sub>: There is a significant impact of digital transformation on the internal auditor's ability to detect material misstatements.**

### **3- The Definition of Digital Transformation**

Digital transformation means becoming a digital organization, a company that uses technology to constantly enhance all aspects of its business its business model (what it provides, how it communicates with customers, how it operates). Each digital transformation project has its own objectives, but the main goal of any digital transformation is to upgrade existing processes. Digital

transformation is essential because businesses need to evolve to stay competitive in their industry (Vial, 2019, p2).

Digital transformation is the use of digital technologies to create new or modify existing business processes, organizational cultures and customer experiences to adapt to changing business and market demands. This is digital transformation, the adjustment of business in the digital era (Peter et al., 2020). Digital transformation is not only about disruption or technology, it is about value, people, optimization and ability to change quickly, when necessary, through the smart use of technology and information (Phornlaphatrachakorn, & Kalasindhu, 2021).

According to (Muehlburger et al., 2019, p1:2 & Vial, 2019, p2), digital transformation involves a radical change in the value chain or the internal structure of an organization, either as a result or a requirement of digital transformation. The use of technology, which supports the basic notion of a digital business strategy, implies that information technology is essential for innovation and competitiveness. There are many definitions given by scholars, government officials and business experts. Some of them are shown in Table 1.

**Table1. Definitions of the term “digital transformation”**

Source	Definition
Ismail, Khater, and Zaki (2017)	Digital transformation: is a “process by which an organization brings together multiple emerging digital technologies, enhanced by ubiquitous connectivity, with the goal of achieving high performance and sustainable competitive advantage through the transformation of multiple dimensions of business.”Includes business models, customer experience (including digital products and services) and operations (including processes and decisions) with simultaneous impacts on people (including skills, talent and culture) and networks (including entire value systems).
Schwertner (2017)	“Applying technology to build new business models, processes, software and systems that result in higher sales margins, greater competitive advantage and greater efficiency.”
OECD	“Digital transformation refers to the economic and social

(2018)	impact of digitization. Digitization is the transformation of analog data and processes into a machine-readable format. Digitization means the use of digital technologies and data and their networks, which lead to new or changed Activity.”
Deloitte (2018)	“Digital transformation is the use of technology to radically improve an organization’s performance and reach. In a digitally transformed business, digital technology enables improved processes, an engaged workforce, and new business models.”
Bloomber g (2018)	“Digital transformation requires the entire organization to cope well with change, essentially making change a core competence, as companies become end-to-end and customer-driven. This agility will facilitate on going digitization efforts, but should not be confused with it.”
European Commission (2019)	“Digital transformation is characterized by the convergence of advanced technologies and the integration of physical and digital systems, the dominance of innovative business models and new processes, and the creation of smart products and services.”

Source: (Verina&Titko 2019)

Therefore, the researchers define digital transformation as the change of organizations to a business model that relies on digital technologies for creating products and services, and generating new revenue streams and opportunities that increase their product value.

#### 4- The Importance of Digital Transformation:

Digital Transformation Is Very Significant, Impacting Performance, Attaining the Desired Growth, and empowering institutions to create benefits and competitive abilities. The importance of digital transformation can be shown through several key aspects, the most crucial of which are lowering the cost of activities and services. (Lappi et al., 2019, p160:162):

- Discovering efficient methods that help to use resources properly and optimize outputs, revenues, and profits.
- Enhancing the economic value of institutional and human performance.

- Speeding up and improving the documentation cycle and procedures, strengthening control and monitoring, and raising the level of satisfaction among customers and stakeholders with services.
- Boosting the quality of performance, outputs in terms of production, and services that match the expectations of customers and stakeholders.

## **5- Stages of Digital Transformation**

Digital transformation is a comprehensive process that involves integrating digital technologies into all aspects of a business to create new – or modify – business processes, culture, and customer experiences to meet changing business and market requirements. The process aims to enhance efficiency, improve customer experiences, and stay competitive in an increasingly digital world. The stages of digital transformation may vary from one framework or model to another. Bonnet (2022) identifies three stages of digital transformation as follow:

1- Modernization (stage one) is about simplifying and digitizing existing processes and functions. For customer experience, it can involve creating customer apps or introducing new self-service options. For operations, it can mean connecting products and digitally redesigning core processes. For employee experience, it can entail automating HR processes or providing a self-service portal for employees.

This stage is often overlooked or criticized, but it should not be. It makes the organization digitally stronger and smarter, just like the foundations of a house. It also provides relatively fast returns that can support more complex digital investments. And it is a great opportunity for the organization to enhance its digital capabilities.

2- Enterprise-wide transformation (stage two) is a complex change effort that spans across the value chain. For example, a retailer may want to have a fully integrated customer experience across all its physical and digital channels. For operations, it can be an internet-of-things application for condition maintenance or automating order-to-cash processes. For employee experience, it can be adopting agile ways of working or establishing a continuous learning and re-skilling culture.

Enterprise-wide transformations usually focus on improving existing operations. But, when they succeed, they often create new value creation opportunities, such as reaching new customers or finding new efficient ways of running operations. Enterprise-wide transformations are cross-functional and complex, but they are essential learning phases on the path to digital-transformation maturity.

3- New business creation (stage three) is about expanding the existing pie or generating new revenue streams. For customer experience, it can be shifting from selling products and services to new subscription-based business models. For operations, it can be using data and analytics to accurately predict operational performance of products or systems.

These are true transformations because they challenge the existing processes, structures, and capabilities of the organization and demand new ways of working. Leadership is crucial, as this is about moving from the existing mode of operations to new ones. Often, this stage also requires rethinking the boundaries of the organization as it transitions from traditional linear supply chains to ecosystems. It demands a high level of digital transformation maturity.

## 6- Advantages of Digital Transformation:

Even though digital transformation has various meanings, features, and stages, it is clear that it offers many benefits that set it apart from conventional databases, as shown below (Thottoli & Ahmed, 2022).

- **Accuracy:** EAIS should ensure that the data and information are free from errors and mistakes, and that they reflect the true and fair view of the accounting transactions and events.
- **Security:** EAIS should protect the data and information from unauthorized access, modification, or deletion, and ensure that they are available only to the intended users.
- **Clarity/Understandability:** EAIS should present the data and information in a clear and understandable manner, using appropriate formats, labels, and terminology, and avoiding unnecessary complexity or ambiguity.

- **Timely:** EAIS should provide the data and information in a timely manner, meeting the deadlines and expectations of the users, and allowing them to make informed decisions and actions.
- **Reliability:** EAIS should ensure that the data and information are consistent, complete, and verifiable, and that they can be trusted and relied upon by the users.
- **Comparability:** EAIS should enable the users to compare the data and information across different periods, entities, or standards, and highlight the similarities and differences among them.
- **Verifiability:** EAIS should allow the users to verify the data and information by providing the sources, methods, and assumptions used to generate them, and by facilitating the audit and review processes.
- **Neutrality:** EAIS should avoid any bias or influence in the data and information, and present them objectively and impartially, without favoring or disadvantaging any user or stakeholder.

## 7- Disadvantage of Digital Transformation

Digital transformation is the process of implementing and adopting digital technologies to transform a business or industry. It can offer many benefits, as illustrated before [However, it also comes with some disadvantages and challenges, such as](#) (Jaswinder, 2019 & Olçum & Gülova, 2023)

- **Complexity and fragmentation:** Digital transformation can lead to a more complex and fragmented system, as different technologies and data sources are integrated. This can make it difficult to manage, maintain, and secure the system.
- **Lack of standardization:** Digital transformation is still a relatively new concept, and there are no universal standards or best practices for how to implement it. This can make it hard to compare and evaluate different solutions and vendors, and to choose the most suitable approach for each business.

- **Cost and risk:** Digital transformation can be expensive and risky, as it requires investing in new technologies, moving away from legacy systems, training employees, and potentially changing the business model. It also exposes the business to new threats, such as cyberattacks, data breaches, and system failures.
- **Change management:** Digital transformation involves a significant change in the way a business operates and interacts with its customers, suppliers, and partners. This can cause resistance, confusion, and dissatisfaction among the stakeholders, especially if they are not involved or informed in the process. It also requires a clear vision, strategy, and leadership to guide and support the change.
- **Skills gap:** Digital transformation requires new skills and competencies, such as data analysis, digital literacy, and innovation. However, many businesses lack the talent and expertise to implement and use digital technologies effectively. This can result in a skills gap, which can hamper the performance and success of digital transformation.

## 8 -Digital Transformation Drivers:

The following is a brief explanation of the digital transformation drivers (Netheler et al., 2018, p3930:3931):

- Process improvement: Production is planned, controlled, and executed by adaptive systems. The benefits are higher efficiency and lower error rates.
- Workplace improvement: The goal is to enhance safety, ergonomics, or convenience. Robots perform complex or risky tasks. Technology also helps to ensure ergonomic work.
- Vertical integration: Sensors capture data at the operational level and integrate it at the management level. The control information is sent back to the production system through the hierarchy. This information exchange allows for more precise planning at the production level and enables the production of more diverse products and smaller batches.
- Management support: Management support involves developing vision and strategy. A key aspect of management support is providing structure, assigning roles, and hiring talent.

- Horizontal integration: It refers to the integration of different IT systems used at different stages of the manufacturing and business planning process, as well as the exchange of materials, energy, and information within a company (inbound logistics, production, outbound logistics, marketing) and across multiple companies including different industries (value creation network).
- Sales can network better with customer purchasing departments through the new interface. Digitization offers new business models.
- Cost reduction: Digital transformation enhances production processes, reducing setup times and downtime. This leads to a relative cost reduction.
- Customer demands: Tracking raw materials and (intermediate) products throughout the production process is a fundamental requirement of quality assurance demanded by customers.
- Supply chain: Collaborative planning and execution of processes with other companies, suppliers, and customers influences the demand for digital technologies. This results in joint design or R&D activities and communication through trade shows or conferences.
- Innovation push: New and innovative technologies create a push. New innovations are necessary for making digitization possible. Companies have to evaluate the value of innovation. This intensifies market competition.
- Market pressure: Companies' profit margins are shrinking and competition is rising. Competitors have or will soon adopt advanced technology. The use of these technologies is essential to avoid falling behind market standards and to gain a competitive edge in a globalized market.
- Laws/Government: The implementation of legal frameworks drives the use of technology. These regulations relate to environmental or sustainability standards.
- Employee support: Digital systems assist employees in completing their tasks. The job is considered easier, more enjoyable, and safer. In turn, digitization is supported by the employees, their knowledge, and their willingness to use innovations.



## 9- Digital Transformation Technology in Banking Institutions.

The advancement of information technology has led to the creation of new work methods to cope with the changing business environment. As a result, governments and countries around the world are implementing digital transformation in all sectors, as this technology is crucial for banks, commercial banks and financial institutions to stay competitive. Digital technology is now a fundamental business strategy that all organizations need to apply across all their departments, as it enhances the collaboration within the organization, which contributes to its success. (Phornlaphatrachakorn & Nakalsindhu, 2021)

Locally, the Central Bank plays a significant role in supporting digital and technological transformation within the state's vision of transformation, which has a positive impact on economic growth. It is anticipated that technology-based banks will soon join the banking sector. The digital society is marked by electronic payments using credit cards, debit cards, electronic payment apps, phone payment services. Digital transformation means using digital technology to perform various tasks in different fields, where data is converted from a paper form to a digital form.

Digital transformation can perform these tasks faster than traditional methods, which is why it has both public and private benefits for organizations and companies. The technological tools that can be used for implementation are diverse digital transformations of institutions and organizations. The most important and common ones are artificial intelligence, blockchain, robotics, cloud computing and big data.

Implementing digital transformation requires infrastructure, digital government, technological innovation capabilities, practical experience and other infrastructure. Modern technological tools used in the digital transformation process have attracted and gained the approval of users due to their many advantages. The most important of these are easy access to information, easy and quick distribution of information to users without the need for paper documents, the ability to store large amounts of information without fear of loss, and modern applications for accountants and auditors to complete the work. These benefits are more evident when relying on cloud computing, which provides huge storage space for information.

Due to the advantages of these tools, they have an important role in developing the accounting and auditing profession. Therefore, the application and use of digital transformation tools in accounting and auditing helps users communicate and update data effectively, making the team's work easier. Furthermore, when comparing traditional methods with modern technology, we found that traditional methods require more time and do not allow for innovation, whereas modern digital transformation means provide ideas and alternatives for future estimates and budgets. Strategies are more accurate, and accuracy creates efficiency. In recent years, blockchain and cloud computing technologies have become the foundation for banks' digital banking services and digital transformation (Busulwa & Evans,2021.).

## **10- The Impact of Digital Transformation in Internal Audit Quality**

Internal audit departments are digitizing and developing their internal processes and exploring how to take advantage of big data and new digital tools to add value to their clients. This digitization can improve audit quality and better satisfy shareholders and other stakeholders by making the audit more relevant. First, by using digital tools such as big data analytics, the auditor can evaluate all of the company's data under review and stop using the sampling method. In fact, the digitization of audits allows them to improve the risk assessment and quality of judgments of anomalies and to propose solutions to the problems that have been highlighted. Finally, the audit can also focus on current data, not just historical information, in order to give a future view of the sustainability of the company under review by evaluating the current level of sales, planned booking of orders, etc. (Manita, et al.,2020 )

Digital transformation enables the company to keep up with the changing customer needs and to be ready for the future. It helps companies to better compete in an economic environment that is constantly influenced by technological developments. Digital transformation creates a valuable opportunity for core business functions such as finance, internal audit and human resources to move away from manual processes and automate key areas such as payroll, allowing executives to move forward. (Hilali et al., 2020).

The role of internal auditing in achieving organizational goals has been acknowledged, and research has been requested on the effectiveness of internal

audit departments. By evaluating internal audit departments, organizations can identify and adopt best practices and measure its performance against the performance of its peer group (Mahyoro, & Kasoga, 2021).

The internal audit function handles issues of vital importance to the sustainability and success of companies. It illuminates the deals and risks of wider issues such as goodwill, development, environmental impact and how it manages its employees. Internal audit is an independent administrative function that involves continuous and critical evaluation of the company's work in order to suggest improvements and enhance and strengthen the company's overall management mechanism. This includes managing the strategic risks of the company and its internal control systems (Al-Marji & Al- Rashedy,2023).

audit quality is the probability that the auditor will detect and report any discrepancies in the financial statements to the stakeholders. A high-quality audit enhances the quality of financial information, improves the management of the company, and facilitates the investment decisions of the investors. Many previous studies have shown a growing demand for quality audits to reduce the gap between the information available to different parties. Moreover, other studies suggest that investors, especially those from abroad, need high-quality reviews and better corporate governance to invest in companies (Manita et al, 2020).

The quality of the audit is influenced by the skill level of the staff, the range of services offered and the degree to which audits are well planned, executed and reported. Quality internal audit lowers risk, enhances oversight, cuts the costs of external control, and prevents fraud and other self-serving behaviors within the organization. Audit quality is linked to the scope of audit services, efficient audit planning, fieldwork, efficient monitoring, and communication. There is a positive correlation between the quality of internal auditing and effectiveness (Al-Marji & Al- Rashedy,2023).

According to Betti & Sarens (2020) the internal auditor function must be developed by incorporating new technologies and digital knowledge to solve new problems and risks that arise in the digital processing process. In recent decades, the function of the internal auditor has evolved to meet the requirements of the changing business environment. During the nineties of the twentieth century, internal audit functions began to expand beyond financial

and accounting activities, and the performance of regulatory audits during this period, and internal auditor began to play an advisory role and began to perform more management consulting activities.

As new technologies are evolving and enabling extensive data analysis, the laws and regulations on data transfer, security and privacy, as well as the auditing standards need to be revised as digital business management advances quickly. Many of the auditing standards need to be updated by incorporating new techniques, especially all the standards related to the risk approach. In general, IT audit faces at least three challenges because of digital transformation (Al-Marji & Al- Rashedy,2023).

- 1- Increasing the volume of available data: Data integrity, reliability, completeness and security are issues that result from the increase in the volume of available data. This means that the IT audit will encounter data issues, especially regarding the use of data during the IT audit process and when making conclusions from the IT audit.
- 2- Emergence of new technologies: The emergence of new technologies offers new benefits and new risks to business management, which means that IT auditing will face new risks. New technology such as hyper-connectivity, new payment methods, big data, BYOT technology, etc.
- 3- Repair requirements and controls: There has been an increase in repair requirements and controls around the world. This means that IT audits face problems related to changes in controls, especially when balancing rapid changes in controls related to IT and other compliance requirements. The flexibility and digital knowledge required now by the International Accreditation Forum (IAF) reflect the dynamic skills approach, which emphasizes the importance of the ability to adapt administrative and organizational processes to changes in the systems of rapid technological change.

The Institute of Internal Auditors claims that the IT audit world can be defined in terms of four aspects as follows (Aditya et al.,2018):

- 1- IT management, the set of people, policies, procedures and processes that govern the IT environment, such as the software development life cycle, system monitoring, IT planning, changeover, vendor management, IT

- project management, disaster recovery, service management, security management and IT governance.
- 2- Technical infrastructure, the underlying technology that supports major business applications, such as operating systems, database management systems, networks, data centers, and security infrastructures.
  - 3- Applications and computer programs that perform specific tasks related to the company's business management operations and which are an integral part of these operations, such as transaction applications and support applications.
  - 4- External connections, an external network connected to an operational network. An operational network will not function if it is not connected to an external network, such as the Internet, cloud computing, and software such as a service provider.

From the previous discussion we can conclude that the mechanisms of digital transformation help the internal audit to offer advisory and assurance services to help the management achieve its goals, and the use of digital technologies in the operational audit activities helps to provide information to the decision-maker in the company, and the use of digital technologies in the internal audit activities enhances the independence of the internal auditor, and works. The use of digital technology in the scope of managing internal audit activities safeguards information and keeps backup copies for use when needed and applies digital transformation mechanisms to internal audit activities, which improves communication and control by providing written channels, consistent plans, organized procedures and digital transformation mechanisms that have communication channels between the internal auditor and the board of directors and stakeholders to coordinate work between them and examine internal and external communication protocols

## **11- Field Study**

### **-Study tool design.**

The researchers relied on the survey form as one of the data collection tools, and they prepared the questions that he formed after completing the theoretical study. The researchers tried to take into account the accuracy as much as possible when formulating the questions, through the following:

- Clarification of some terms.
- Obtaining general information from the respondents related to current job and educational qualification.
- The design of the survey list was based on a five-point Likert scale in order to measure the responses of the sample, as shown in the following table:

Table (2)

Five-point Likert scale

Strongly disagree	Disagree	Neutral	agree	Strongly agree
1	2	3	4	5

Thus, the item that takes an arithmetic average of more than three degrees is considered an agree and influential item and therefore it is accepted, while the item that does not achieve this average is considered an ineffective item and therefore it is rejected.

- Testing the stability and validity.

The reliability and validity of the scales used in the study were measured as follows:

### **Checking the level of Consistency in the scales:**

Consistency is an essential feature in any measuring tool. Consistency means the stability and consistency of the measurements resulting from any tool. That is, stability means the extent of the tool's ability to produce close or equal measurements if the measurement tool is applied multiple times to the same sample and under the same conditions. Testing the stability and validity of the survey in several ways, the most agree of which is Cronbach's alpha coefficient, and we find that the coefficient takes values between zero and one, and when its value is close to one, this indicates the stability of the survey and 60% can be considered acceptable to judge the stability of the survey, noting the exclusion of any variable that gets a coefficient A total correlation of less than 30% between it and the rest of the variables in the same scale.

**Table (3)**  
**Results of the validity and reliability test**

Items	Category	No	reliability
Hypotheses 1	X1.1--- X1.12	12	.968
Hypotheses 2	X2.1--- X2.9	9	.967
Hypotheses 3	X3.1--- X3.8	8	.965
Hypotheses 4	X4.1--- X4.7	7	.969
<b>Total</b>		<b>36</b>	<b>.988</b>

From the previous table, it was found that the value of Cronbach's alpha ranged between (0.965 – 0.969), and these values are acceptable in a way that reflects the reliability and confidence of the research variables and confirms their validity in the following analysis stages.

#### **- Field study population and sample:**

In light of achieving the aim of the study, the random sampling method was relied upon in selecting the study sample, which included some managers, accountants and internal auditors in Egyptian Banks. The researchers distributed the survey lists to the sample members electronically via the following link:

<https://forms.gle/Uaeb3tvW5hqzGUFK8>

The volume of questionnaires received was 144, all of which were suitable for statistical analysis.

- Sample Characteristics:

**With regard to the demographic characteristics of the study sample, frequencies and percentages were extracted in order to identify the characteristics of the study sample, as follows:**

First: Job Title:

**The frequencies and percentages were extracted for the distribution of the study sample according to job title of current work in the bank, as shown in the following table:**

**Table (4)**  
**Frequencies and percentages by Job Title**

Categories	Director general		Branch Manager		Head of the Department		Financial Accountant		Programmer		Auditor		Total
	No	%	No	%	No	%	No	%	No	%	No	%	
Total	16	11	6	4	33	23	45	31.5	12	8.5	32	22	144

### Second: Educational Level:

The frequencies and percentages were calculated to analyze the distribution of the study sample based on educational level. The results indicate the following breakdown: Ph.D. holders constitute 6% of the total, Master's degree holders make up 13%, Graduate Diploma holders account for 20%, and Bachelor's degree holders represent 61% of the total. This distribution is presented in the table below

**Table (5)**  
**Frequencies and percentages by Educational Level**

Categories	Bachelor's		Graduate Diploma		Master's degree		Ph.D.		Total
	N0.	%	N0.	%	N0.	%	N0	%	
Total	88	61	28	20	19	13	9	6	144

### Third: Experience:

The frequencies and percentages were calculated to analyze the distribution of the study sample based on years of job experience. The results reveal the following breakdown: the largest group comprises individuals with 5 to 10 years of experience (31%, 45 individuals), followed by those with less than 5



years of experience (30%, 43 individuals). Smaller proportions include individuals with more than 15 years of experience (26%, 38 individuals) and 10 to 15 years of experience\*\* (13%, 18 individuals). This distribution is presented in the table below.

**Table (5/5)**

**Frequencies and percentages by Experience**

Categories	Less than 5 years		5 To 10 Years		10 To 15 Years		More than 15 Years		Total
	N0.	%	N0.	%	N0.	%	N0.	%	
Total	43	30	45	31	18	13	38	26	144

**Fourth: Professional Certificates:**

The frequencies and percentages were calculated to analyze the distribution of the study sample based on professional certifications. The results show that the majority of individuals have no certifications or memberships (62.5%, 90 individuals). A smaller proportion hold other unspecified certifications or memberships (19%, 28 individuals). Only a few individuals have a general membership (3%, 4 individuals), a specific fellowship (2%, 3 individuals), or a CPA certification (3.5%, 5 individuals). Additionally, CMA certification holders account for 10% (14 individuals) of the total. This distribution is presented in the table below.

**Table (6)**

**Frequencies and percentages by Professional Certificates**

Categories	CMA		CPA		Specific fellowship		Membership		Other		None		Total
	N0	%	N0	%	N0.	%	N0.	%	N0	%	N0	%	
	14	10	5	3.5	3	2	4	3	28	19	90	62.5	

### - The statistical Symbols.

For the purposes of statistical analysis, the researchers coded the survey questions related to the Variables axes as follows:

Items for H0.1--- from X1.1 to X1.12

Items for H0.2--- from X2.1to X2.9

Items for H0.3--- from X3.1to X3.8

Items for H0.4--- from X4.1to X4.7

### - The Statistical Methods.

In order to test the hypotheses of the study, it has been relying on a set of statistical methods using the statistical software package (SPSS 26) and in order to determine the appropriate statistical methods for the nature of the field study, it first requires knowledge of the statistical distribution of the community from which the sample was drawn. To find out the extent to which the study data depend on the normal distribution, as shown in the following table:

**Table (7)**

#### **Results of Kolmogorov-Smirnov Test**

Items	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Items	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
X1.1	0.313	.000 <sup>c</sup>	X2.7	0.254	.000 <sup>c</sup>
X1.2	0.306	.000 <sup>c</sup>	X2.8	0.250	.000 <sup>c</sup>
X1.3	0.305	.000 <sup>c</sup>	X2.9	0.251	.000 <sup>c</sup>
X1.4	0.270	.000 <sup>c</sup>	X3.1	0.250	.000 <sup>c</sup>
X1.5	0.245	.000 <sup>c</sup>	X3.2	0.247	.000 <sup>c</sup>
X1.6	0.288	.000 <sup>c</sup>	X3.3	0.237	.000 <sup>c</sup>
X1.7	0.285	.000 <sup>c</sup>	X3.4	0.261	.000 <sup>c</sup>
X1.8	0.259	.000 <sup>c</sup>	X3.5	0.276	.000 <sup>c</sup>
X1.9	0.263	.000 <sup>c</sup>	X3.6	0.260	.000 <sup>c</sup>
X1.10	0.259	.000 <sup>c</sup>	X3.7	0.256	.000 <sup>c</sup>
X1.11	0.269	.000 <sup>c</sup>	X3.8	0.255	.000 <sup>c</sup>
X1.12	0.269	.000 <sup>c</sup>	X4.1	0.263	.000 <sup>c</sup>
X2.1	0.248	.000 <sup>c</sup>	X4.2	0.250	.000 <sup>c</sup>
X2.2	0.269	.000 <sup>c</sup>	X4.3	0.245	.000 <sup>c</sup>

Items	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Items	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
X2.3	0.273	.000 <sup>c</sup>	X4.4	0.248	.000 <sup>c</sup>
X2.4	0.282	.000 <sup>c</sup>	X4.5	0.258	.000 <sup>c</sup>
X2.5	0.246	.000 <sup>c</sup>	X4.6	0.258	.000 <sup>c</sup>
X2.6	0.235	.000 <sup>c</sup>	X4.7	0.250	.000 <sup>c</sup>

Source: SPSS statistical analysis results

Table (5/7) above shows that the data does not follow a normal distribution, and therefore the researchers will rely on non-parametric tests.

After determining the nature of the data used in the field study and ensuring the validity of the use of statistical methods for non-parametric tests appropriate to the nature of the data, the researchers tested the hypotheses of the study as follow:

#### - Examination of Study Hypotheses:

The results of the statistical analysis and testing the validity of the study hypotheses are dealt with as follows:

#### - Test hypothesis No. 1

“There is an importance of digital transformation in Egyptian banks”.

#### First: Descriptive statistics for H<sub>0.1</sub> Items

Table (8)

Descriptive statistics for H<sub>0.1</sub> Items

Items	Mean	Std. Deviation	Mode	General trend
X1.1	4.4167	.69463	5	Strongly Agree
X1.2	4.3889	.73008	5	Strongly Agree
X1.3	4.3819	.69962	5	Strongly Agree
X1.4	4.3056	.74117	5	Strongly Agree

X1.5	4.2153	.80352	4	Agree
X1.6	4.3472	.76934	5	Strongly Agree
X1.7	4.3403	.81217	5	Strongly Agree
X1.8	4.2847	.79915	5	Strongly Agree
X1.9	4.2569	.85072	4	Agree
X1.10	4.1736	.92615	5	Strongly Agree
X1.11	4.2708	.85459	5	Strongly Agree
X1.12	4.2986	.82003	5	Strongly Agree

Source: SPSS statistical analysis results

The previous table shows that the opinions of the study sample showed a trend of completely agreeing (**Strongly Agree**) on the importance of digital transformation in Egyptian banks.

### Second: Chi-Square Test

Table (9)  
Chi-Square Test for  $H_{0.1}$  Items

Items	Chi-Square	df	Asymp . Sig
X1.1	106.83	3	.000
X1.2	158.92	4	.000
X1.3	96.83	3	.000
X1.4	143.92	4	.000
X1.5	132.22	4	.000
X1.6	151.56	4	.000
X1.7	151.76	4	.000
X1.8	142.18	4	.000
X1.9	140.86	4	.000
X1.10	115.44	4	.000
X1.11	132.44	4	.000

X1.12	142.32	4	.000
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Source: SPSS statistical analysis results

The previous table shows that the calculated Chi-Square value for all statements is greater than the tabular Chi-Square value, and the significance level (Sig) for all statements is less than 05,0, which means that the study sample members accept the statements of the first sub-hypothesis, which indicates “**There is an importance of digital transformation in Egyptian banks**”.

### Third: Friedman Test

Table (10)  
Friedman Test for H<sub>0.1</sub> Items

Items	Mean Rank	Ranking	Chi-Square	Sig
X1.1	6.97	1	37.554	.000
X1.2	6.85	2		
X1.3	6.78	3		
X1.4	6.41	8		
X1.5	6.09	11		
X1.6	6.64	5		
X1.7	6.69	4		
X1.8	6.35	9		
X1.9	6.30	10		
X1.10	6.03	12		
X1.11	6.42	7		
X1.12	6.48	6		

Source: SPSS statistical analysis results

The previous table shows that:

1. The level of significance of this hypothesis is less than 0.05, which means that there is a fundamental difference between the opinions of the respondents about the importance of digital transformation in Egyptian banks, meaning that there is no agreement on the relative importance of the statements related to this hypothesis.

2. The highest average score is 6.97 for the first statement, which indicates that Digital transformation is one of the recent technological developments globally and locally, which means that this statement is the most agree statement.

3. The lowest average of the ranks is 6.03 for the phrase No. X1.10, which leads to the application of digital transformation requires the availability of large financial resources to provide modern technological tools such as computers and the Internet, which represents a challenge, which means that this phrase is the least agree of the phrases.

In light of the previous statistical analysis of the first sub-hypothesis related to the importance of digital transformation in commercial banks, the researchers can accept the first sub-hypothesis **“There is an importance of digital transformation in Egyptian banks”**.

**- Test hypothesis No. 2**

1. **“The is a significant impact of digital transformation on the improvement of internal auditing procedures.”**.

**First: Descriptive statistics for H<sub>0.2</sub>Items**

Table (11)  
Descriptive statistics for H<sub>0.2</sub> Items

Items	Mean	Std. Deviation	Mode	General trend
X2.1	4.2153	.74948	4	Agree
X2.2	4.2153	.80352	4	Agree
X2.3	4.1667	.81077	4	Agree
X2.4	4.1389	.84961	4	Agree
X2.5	4.1944	.79581	4	Agree
X2.6	4.1528	.85542	4	Agree
X2.7	4.2361	.77537	4	Agree
X2.8	4.2361	.83613	4	Agree
X2.9	4.2639	.80197	4	Agree

Source: SPSS statistical analysis results

The previous table shows that the opinions of the study sample showed a trend of completely agreeing (**Agree**) on the impact of digital transformation technologies on changing the tools and methods of internal auditing.

### Second: Chi-Square Test

Table (12)  
Chi-Square Test for H<sub>0.2</sub> Items

Items	Chi-Square	Df	Asymp. Sig
X2.1	79.833	3	.000
X2.2	141.347	4	.000
X2.3	134.264	4	.000
X2.4	130.861	4	.000
X2.5	74.889	3	.000
X2.6	107.597	4	.000
X2.7	72.222	3	.000
X2.8	132.250	4	.000
X2.9	138.778	4	.000

Source: SPSS statistical analysis results

The previous table shows that the calculated Chi-Square value for all statements is greater than the tabular Chi-Square value, and the significance level (Sig) for all statements is less than 05,0, which means that the study sample members accept the statements of the second sub-hypothesis, which indicates "There is a significant impact of digital transformation on the improvement of internal auditing procedures".

### Third: Friedman Test

Table (13)  
Friedman Test for H<sub>0.2</sub>Items

Items	Mean Rank	Ranking	Chi-Square	Sig
X2.1	5.02	5	12.644	.125
X2.2	5.03	4		
X2.3	4.88	8		
X2.4	4.78	9		
X2.5	4.93	6		

Items	Mean Rank	Ranking	Chi-Square	Sig
X2.6	4.90	7		
X2.7	5.12	2		
X2.8	5.10	3		
X2.9	5.25	1		

Source: SPSS statistical analysis results

The previous table shows that: level of significance of this hypothesis is greater than 0.05, which means that there is no significant difference between the opinions of the respondents about impact of digital transformation on the improvement of internal auditing procedures, meaning that there is agreement on the relative importance of the statements related to this hypothesis.

2. In light of the previous statistical analysis of the second sub-hypothesis related to impact of digital transformation technologies on changing the tools and methods of internal auditing, the researchers can accept the second sub-hypothesis **“There is a significant impact of digital transformation on the improvement of internal auditing procedures.”**.

### - Test hypothesis No. 3

**“The is a significant impact of digital transformation on compliance with internal audit standards.”**.

### First: Descriptive statistics for H<sub>0.3</sub> Items

**Table (14)**  
**Descriptive statistics for H<sub>0.3</sub> Items**

Items	Mean	Std. Deviation	Mode	General trend
X3.1	4.2014	.81575	4	Agree
X3.2	4.2014	.78962	4	Agree
X3.3	4.1597	.89022	5	Strongly Agree
X3.4	4.2500	.83205	5	Strongly Agree
X3.5	4.2917	.85178	5	Strongly Agree
X3.6	4.1944	.87128	5	Strongly Agree
X3.7	4.2222	.88059	5	Strongly Agree
X3.8	4.2917	.78335	4	Agree

Source: SPSS statistical analysis results



1. The previous table shows that the opinions of the study sample showed a trend of completely agreeing (**Strongly Agree**) on the impact of digital transformation on compliance with internal audit standards.

### Second: Chi-Square Test

Table (15)  
Chi-Square Test for H<sub>0.3</sub>Items

Items	Chi-Square	Df	Asymp. Sig.
X3.1	127.042	4	.000
X3.2	127.736	4	.000
X3.3	108.500	4	.000
X3.4	126.556	4	.000
X3.5	135.583	4	.000
X3.6	109.056	4	.000
X3.7	120.097	4	.000
X3.8	149.542	4	.000

Source: SPSS statistical analysis results

The previous table shows that the calculated Chi-Square value for all statements is greater than the tabular Chi-Square value, and the significance level (Sig) for all statements is less than 0.05, which means that the study sample members accept the statements of the third sub-hypothesis, which indicates “The is a significant impact of digital transformation on compliance with internal audit standards.”.

### Third: Friedman Test

Table (16)  
Friedman Test for H<sub>0.3</sub>Items

Items	Mean Rank	Ranking	Chi-Square	Sig.
X3.1	4.38	6	11.875	.068
X3.2	4.38	7		
X3.3	4.31	8		
X3.4	4.59	3		
X3.5	4.71	2		

X3.6	4.42	5		
X3.7	4.48	4		
X3.8	4.73	1		

Source: SPSS statistical analysis results

The previous table shows that: level of significance of this hypothesis is greater than **0.05**, which means that there is no significant difference between the opinions of the respondents about impact of digital transformation on compliance with internal audit standards., meaning that there is agreement on the relative importance of the statements related to this hypothesis.

3. In light of the previous statistical analysis of the third sub-hypothesis related to impact of digital transformation on changing the procedures of the internal audit process in banks, the researchers can accept the third sub-hypothesis **“The is a significant impact of digital transformation on compliance with internal audit standards.”**.

#### - Test hypothesis No. 4

1. **“The is a significant impact of digital transformation on the internal auditor’s ability to detect material misstatements.”**.

#### First: Descriptive statistics for H<sub>0.4</sub>Items

Table (17)  
Descriptive statistics for H<sub>0.4</sub> Items

Items	Mean	Std. Deviation	Mode	General trend
X4.1	4.2083	.83520	4	Agree
X4.2	4.2431	.82992	4	Agree
X4.3	4.2083	.86804	5	Strongly Agree
X4.4	4.1736	.88760	5	Strongly Agree
X4.5	4.2500	.86502	5	Strongly Agree
X4.6	4.2361	.84445	4	Agree
X4.7	4.2153	.81217	4	Agree

Source: SPSS statistical analysis results

1. The previous table shows that the opinions of the study sample showed a trend of completely agreeing (**Agree**) on the impact of digital transformation on the internal auditor’s ability to detect material misstatements.

## Second: Chi-Square Test

Table (18)  
Chi-Square Test for H<sub>0.4</sub>Items

Items	Chi-Square	Df	Asymp. Sig
X4.1	131.556	4	.000
X4.2	131.208	4	.000
X4.3	121.903	4	.000
X4.4	107.736	4	.000
X4.5	128.847	4	.000
X4.6	134.681	4	.000
X4.7	129.819	4	.000

Source: SPSS statistical analysis results

The previous table shows that the calculated Chi-Square value for all statements is greater than the tabular Chi-Square value, and the significance level (Sig) for all statements is less than 0.05, which means that the study sample members accept the statements of the fourth sub-hypothesis, which indicates “The is a significant impact of digital transformation on the internal auditor’s ability to detect material misstatements.”.

## Third: Friedman Test

Table (19)  
Friedman Test for H<sub>0.4</sub>Items

Items	Mean Rank	Ranking	Chi-Square	Sig.
X4.1	3.94	6	3.589	.732
X4.2	4.02	3		
X4.3	3.99	4		
X4.4	3.90	7		
X4.5	4.06	2		
X4.6	4.09	1		
X4.7	3.98	5		

Source: SPSS statistical analysis results

The previous table shows that: level of significance of this hypothesis is greater than 0.05, which means that there is no significant difference between the opinions of the respondents about impact of digital transformation on the

internal auditor's ability to detect material misstatements., meaning that there is agreement on the relative importance of the statements related to this hypothesis.

In light of the previous statistical analysis of the fourth sub-hypothesis related impact of digital transformation on the internal auditor's ability to detect material misstatements., the researchers can accept the fourth sub-hypothesis **"There is an impact of digital transformation on the internal auditor's ability to detect material misstatements."**

Based on the acceptance of the four sub-hypotheses, the researchers can accept the main hypothesis of the study, **"The is a significant impact of digital transformation on the quality of internal auditing in Egyptian banks"**

## 12- Results

The main findings are summarized as follows:

1. The first null hypothesis, which suggested that digital transformation has no significant role in commercial banks, was rejected, and the alternative hypothesis was accepted.
2. The second null hypothesis, which claimed no significant impact of digital transformation on altering internal auditing tools and methods, was also rejected in favor of the alternative hypothesis.
3. The third null hypothesis, stating that digital transformation does not significantly affect the procedures of internal audit processes in banks, was rejected, with the alternative hypothesis being accepted.
4. The fourth null hypothesis, proposing that digital transformation does not improve the quality of internal auditing, was similarly rejected, with the alternative hypothesis being accepted.
5. The main null hypothesis, asserting no significant role of digital transformation on internal auditing in Egyptian banks, was rejected, and the alternative hypothesis was accepted.

## 13- Suggestions and Recommendations

Based on the challenges and obstacles identified during the implementation of digital transformation in organizations and specifically in banking institutions, the study proposes the following recommendations:

1. Develop the technological infrastructure in banks by providing the necessary financial resources to equip them with advanced computers and

internet networks suitable for the size of their customer base and the services they offer.

2. Diversify banking applications and educate citizens on how to use them, making it easier to access and utilize banking services.
3. Ensure technology and internet networks are accessible to all citizens to facilitate the use of banking applications, thereby reducing transaction costs.
4. Employ modern technology to enhance control and data protection processes.
5. Develop strategies within banks to secure customer data, addressing information security challenges, and educate customers about digital financial services and their secure usage. Train banking staff to keep up with technological advancements and perform their tasks efficiently within the context of digital transformation.
6. Encourage standards setters to propose amendments to auditing standards that align with the evolving nature of internal audit activities amid digital transformation.
7. Universities should update curricula and courses to reflect modern technological developments, educating students on the importance of digital technologies and preparing them to effectively use these tools in the professional environment.
8. Professional unions should develop training programs for graduates to meet the needs and expectations of auditing facilities and banking institutions, equipping them for the job market.
9. Continuously develop the skills of accountants and auditors to enhance their expertise and improve their efficiency.

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## **Questionnaire**

Dear Sir.....

The researcher is preparing a study to obtain a professional master's degree in accounting, entitled "The Impact of Digital Transformation on Internal Auditing in Egyptian Banks."

The importance of this study is represented in the role that digital transformation plays in enabling users to make various decisions, and the impact of using digital transformation on improving the quality and procedures of the internal audit process in light of the banks' adoption of modern technologies to provide services with great quality and high speed.

Hence, the researcher wants to test the impact of digital transformation on internal auditing in Egyptian banks, by conducting a field study that aims to stand on practical practices in the Egyptian business environment. supplement to this study. The researcher informs you that the accuracy of this study depends on the accuracy of your opinions, and that these opinions will only be used for the purposes of scientific research, and they will be surrounded by complete confidentiality. Therefore, writing the name is optional.

**Researchers**

**First: personal data**

- 1- Name (optional) :.....
- 2- The number of years of job experience
  - Less than 3 years
  - More than 5 years to 10 years
  - More than 10 years to 15years
  - More than 15 years
- 3- Educational level
  - Bachelor's
  - Graduate Diploma
  - Master's degree
  - Ph.D.
- 4- Professional certificates
  - Certified Management Accountant CMA
  - Professional Auditor/CPA Professional
  - Specific fellowship
  - Member of the Egyptian Auditors Association
  - Other
  - None
- 5- The job title of the current work in the bank
  - Director general
  - Branch Manager
  - Head of the Department
  - Financial Accountant
  - Programmer
  - Auditor

### Third: Hypothesis test phrases

Please, tick (√) on suitable for each of the following phrases:

1. Phrases related to the importance of digital transformation in commercial banks:

NO	Phrase	Strongly agree	agree	Neutral	disagree	Strongly disagree
1	Digital transformation is one of the recent technological developments globally and locally					
2	The digital transformation of banking services means the use of modern technology to provide new banking services and products to increase competitiveness					
3	Digital transformation helps to develop banking services provided in line with customer requirements					
4	Digital transformation allows many banking services to customers all the time without the need for the customer to be physically present at the bank					
5	Digital transformation allows banking services to reach all customers, in a way that improves their living conditions, thus achieving sustainable development					
6	The application of digital transformation in government banks supports competitiveness, which increases their market share					
7	Digital transformation helps					

	bring about major changes and a boom in banking services provided to customers					
8	Digital transformation provides many advantages to customers, such as the availability of banking services easily, transparently, and at any time, and achieves customer satisfaction					
9	There are some challenges and obstacles associated with the implementation of digital transformation, such as the lack of sufficient expertise and skills to deal with modern technological means					
10	The application of digital transformation requires the availability of large financial resources to provide modern technological tools such as computers and the Internet, which represents a challenge					
11	The protection and security of information is one of the risks facing the implementation of digital transformation in institutions and organizations					
12	Training in the use of modern technological means is necessary to meet the challenges of implementing digital transformation					

2. Phrases related to the impact of digital transformation on improving of internal auditing procedures

NO	Phrase	Strongly agree	agree	Neutral	disagree	Strongly disagree
1	Digital transformation contributes to improving the performance of the internal auditor by providing information quickly					
2	The internal audit profession in banks will require the internal auditor to be familiar with modern technological applications and electronic banking services					
3	The application of digital transformation in government banks helps the internal auditor in performing his work efficiently and effectively					
4	Digital transformation contributes to increasing the quality of internal auditing					
5	The use of digital transformation improves the quality of the internal auditor's reports by increasing the features of relevance and reliability					
6	The use of digital transformation helps in detecting weaknesses and defects in the internal					

	control systems when implementing the internal audit process					
7	Does the application of digital transformation efficiently and effectively help the internal auditor to conduct a financial audit, link multiple data sources, and provide a unified and integrated view of the bank's business					
8	Implementing digital transformation helps internal audit activities provide information to decision makers within the bank					
9	The use of digital technology within the scope of managing internal audit activities works to protect information and maintain a backup copy for use when needed					

**3. Phrases related to the impact of digital transformation on compliance with internal audit standards.**

NO	Phrase	Strongly agree	agree	Neutral	disagree	Strongly disagree
1	Digital transformation increases internal auditor independence					
2	Digital transformation needs new skills and training from the internal auditors					



3	Digital transformation helps internal auditor to due professional care					
4	Digital transformation helps internal auditors to collect sufficient and appropriate evidence					
5	Digital transformation helps in planning and supervision the internal audit					
6	Digital transformation helps internal auditor to examining and evaluating the internal control system					
7	Digital transformation helps internal auditors to prepare their reports in a relevant time					
8	Digital transformation helps internal auditors to prepare accurate reports					

**1. Phrases related to the impact of digital transformation on internal Auditor's ability to detect material misstatements?**

NO	Phrase	Strongly agree	agree	Neutral	disagree	Strongly disagree
1	The digital transformation helps the internal audit process in providing consultancy and assurance services to assist management and achieve the bank's goals					

2	Digital security contributes to the implementation of control measures related to internal audit activities to protect information and the confidentiality of its circulation, as well as to prevent intrusion and unauthorized access					
3	The use of digital transformation techniques in the internal audit activities in banks works to strengthen the independence of the internal auditor					
4	The use of digital technology in banks requires periodic training for internal auditors, which affects their professionalism and experience					
5	the application of digital transformation technology in internal auditing help increase the efficiency and effectiveness of operations within banks					
6	The application of digital transformation mechanisms to internal audit activities improves supervision and communication by providing written channels, consistent plans, and organized procedures					
7	The use of digital transformation mechanisms					

	in digital transformation activities in banks works to support the professional competence of the internal auditor					
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In the case of any suggestions or observations on the questionnaire, please mention them in details to benefit from your views.

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