

# The Impact of Financial Technology on Improving Internal Control from the Perspective of Internal Auditors in Jordanian Commercial Banks

Sameer Ahmad Al-Amro, Riad Musleh AL-Shaqahin, George Nasser Shawaqfeh, Atallah Ahmad Alhosban

<https://orcid.org/0000-0003-2035-5573> , Al-Balqa Applied university, Salt, Jordan. E-mail: sameer.amro@bau.edu.jo

<https://orcid.org/0009-0002-3992-959X> , Mutah University, Mu'tah, Jordan.

E-mail: riadshaqahin@mutah.edu.jo

<https://orcid.org/0000-0003-1344-0331> , Ajloun National University, Ajloun, Jordan. E-mail: g.shawaqfeh@anu.edu.

, <https://orcid.org/0000-0001-5439-2597> , aalhosban@gmail.com

ARTICLE INFO	ABSTRACT
Received: 19 Nov 2024 Revised: 10 Jan 2025 Accepted: 24 Jan 2025	<p>The study aimed to study the impact of financial technology on internal control in Jordanian commercial banks. The study was based on the variables of the control environment, risk assessment and monitoring. The study population consisted of internal auditors in Jordanian commercial banks. The study relied on the questionnaire to obtain primary information, so that 87 questionnaires were obtained from the study sample, valid for statistical analysis. The most important results of the study: There is a positive impact of the use of financial technology on the components of internal control, whether for the variables of the control environment, risk assessment, monitoring and supervision. Among its most important recommendations: The necessity of activating financial technology procedures within a legal framework through government legislation.</p> <p><b>Keywords:</b> fintech, internal control , risk analysis , Jordanian commercial banks.</p>

## 1. INTRODUCTION

The banking system is considered the core of the economy in any country, whether it is a developed or developing country, as commercial banks help support the activities of all segments of society. Therefore, they need advanced and sophisticated technology that suits the needs of members of society in general and meets the desires of customers on the other hand, as financial operations in banks in general require a large infrastructure to achieve goals represented in increasing profitability, retaining customers and increasing market share. (Dewi, 2024)

Therefore, financial technology in commercial banks in Jordan plays a pivotal and important role in implementing the various commercial activities of banks in terms of obtaining customer information, communicating data to them and making important decisions that help achieve the vision and mission of commercial banks, and Jordanian commercial banks play an important role in attracting financial technology tools that are compatible with meeting the desires and needs of investors and customers.

Internal control in commercial banks is considered a database for all those dealing in commercial banks, whether they are internal parties, external parties, or any category related to dealing with commercial banks. Financial technology also has opportunities and risks. Internal control must invest in financial technology opportunities and deal with the risks associated with them in terms of data breach, unauthorized modification, or illegal entry. (Momteiro, 2023)

## **1.1 Study Problem**

Financial technology is a double-edged sword. The first aspect is represented by the benefits that can be obtained, such as speed, accuracy, improving financial decisions, and meeting the desires of stakeholders in commercial banks. The second aspect is represented by the threats that can occur through the use of financial technology tools, such as the possibility of accessing customer data from outside the bank and modifying it or modifying the financial statements in a way that imposes a lack of stability and credibility in the data and information for stakeholders. Therefore, this study came to investigate the impact of financial technology on the components of internal control (control environment, control activities, risk assessment, and information and communications). Therefore, the study attempts to answer the following question: "What is the impact of financial technology on the components of internal control in Jordanian commercial banks?"

### **1.1.1 Elements of the study problem**

Based on the study problem, the elements of the study problem can be formulated as follows:

- 1- Is there an impact of using financial technology on the control environment in Jordanian commercial banks?
- 2- Is there an impact of using financial technology on risk assessment in Jordanian commercial banks?
- 3- Is there an impact of using financial technology on supervision in Jordanian commercial banks?

## **1.2 Study hypotheses**

Based on the study problem, the following hypotheses can be formulated

- 1- There is no impact of using financial technology on the control environment in Jordanian commercial banks
- 2- There is no impact of using financial technology on risk assessment in Jordanian commercial banks.
- 3- There is no impact of using financial technology on supervision in Jordanian commercial banks.

## **1.3 Study Objectives**

The study aims to achieve the following:

- 1- Identify the concept of financial technology, its characteristics and objectives, and determine the role it plays in achieving control in commercial banks.
- 2- Identify the impact of using financial technology tools on the components of internal control from a theoretical point of view.
- 3- Link the theoretical framework to practical reality through a questionnaire that takes into account the study variables to come up with results and recommendations that help commercial banks and researchers in studying the impact of technology on internal control.

## **1.4 Importance of the study**

Improving performance, as banks operate in an environment characterized by intense competition, they seek to maintain their competitive strength, growth and survival, which requires them to continue to improve and develop their performance in a manner consistent with the requirements of reality and the requirements of the competitive environment; and since the world is witnessing a financial technology revolution, banks of various types seek to keep pace with this development, and for it to be reflected in their banking and financing operations; in order to maintain their customers and attract new customers that meet their needs and desires, and gain additional competitive advantages and increase their market share.

Fintech plays an important role in restructuring banking services in Jordanian commercial banks in terms of providing technology infrastructure and new methods of dealing with it and creating additional job opportunities represented in training and maintenance of financial technology tools and spare parts, and the vital role that financial technology can play in achieving internal control. Internal control is an important database that helps deliver information to stakeholders, which requires the use of appropriate technology for authorized access to data, dealing with risks and mitigating illegal hacking of data and information in commercial banks.

## 1.5 Previous Studies

Bakhti and Majani's study (2020) The impact of financial technology in supporting the banking sector

The study aimed to show the impact of using financial technology on various activities of the banking sector, especially money transfer operations and borrowing operations. The study relied on the analytical method of the reality of the banking sector announced in the Algerian stock exchanges. Among the most important results of the study: There is a positive impact of financial technology on insurance and money transfer operations. The study also showed a positive impact on the quality of banking services provided to customers and stakeholders in general. Among its most important recommendations: There is a link between financial technology companies and the banking sector to increase customer confidence, and an attempt to deal with the risks of companies that deal with financial technology.

Abu Dalo's study (2024) "The impact of using financial technology in enhancing financial control in municipalities"

The study aimed to determine the impact of financial technology in achieving financial control in Jordanian municipalities in terms of the accounting software used, the use of artificial intelligence and related Internet applications, and achieving audit procedures. The study relied on the deductive method as primary sources to obtain information and data for the study. The most important results of the study are: Financial technology contributed to enhancing control over public money through electronic payment operations, and the use of accounting software helped reduce theft and embezzlement in Jordanian municipalities. Among its most important recommendations: Investing in financial technology tools due to the advantages it achieves in preserving public money, providing material and logistical support to apply financial technology to all state ministries.

Tong's study (2025) "Empirical analysis of the impact of financial technology on the profitability of listed banks" The study aimed to determine the impact of financial technology on the profitability of banks listed on the stock exchanges in China. The study relied on analytical statistical methods to find the degree of association between financial technology and the banks in the study sample. Among the most important results of the study: There is a strong positive impact on the impact of financial technology on bank profits, especially documentary credits and money transfers. Among its most important recommendations: The existence of a legal framework of government systems and instructions that regulate work in financial technology. The study also recommended linking investment in financial technology tools to the value of circulating capital in banks.

Study Tanya (2025) "The Influence of Information Technology Utilization and Internal Control Systems on the Quality of Financial Reports

The study aimed to determine the impact of using information technology on the internal control system and financial reports in health organizations. The study relied on the questionnaire that was distributed to external auditors in the banking sector to obtain the primary data for the study. One of its most important results is the presence of a strong impact of using the information technology infrastructure on internal control - in addition to the presence of a medium impact on the quality and type of financial reports in health facilities. Among its most important recommendations: the presence of a focus and allocation of investment amounts in the budgets of health facilities with information technology tools so that they can achieve effective internal control, and the necessity of linking the use of technology to improving the quality of financial reports.

Study Tawfeeq (2023) "The impact of financial technology and risk management practices on corporate financial system profitability: evidence from Kuwait

The study aimed to determine the impact of financial technology and administrative risk practices on the profits of financial companies in the State of Kuwait. The study relied on 62 financial companies in the State of Kuwait to determine the impact of using technology on Profits through financial analysis of the financial statements of companies listed in the Kuwaiti financial market. The most important results of the study: There is a moderate impact of financial technology on the profits of financial companies. Among its recommendations: The necessity of linking the company's vision to the use of financial technology and the presence of specialists in the infrastructure of financial technology.

### 1.5.1 The difference between the current study and previous studies

1- The current study focuses on the opinion of internal auditors, meaning that the study sample is internal auditors in Jordanian commercial banks.

2- This study focuses on activating internal control in Jordanian commercial banks through the use of financial technology in Jordanian commercial banks.

3- This study focuses on determining the impact of financial technology on the components of internal control, meaning that it is a specialized study in the environment of control, risk assessment, supervision, information and communications.

4- It conducts an applied study on commercial banks because this sector is considered one of the most used and applied sectors of financial technology.

### **1.5.2 Additions from this study over previous studies**

1- It is based on identifying financial technology tools and determining their impact on improving the reality of internal control in commercial banks.

2- It is based on determining the impact of using financial technology tools on all components of internal control separately and trying to measure the impact of financial technology on each component alone, which gives the study a greater degree of accuracy and detail.

3- It relies on internal auditors to judge the role of financial technology on internal control, as internal auditors have an effective role in judging the efficiency and effectiveness of the internal control system in commercial banks.

## **2. THEORETICAL FRAMEWORK OF THE STUDY**

### **2.1 Financial Technology**

#### **2.1.1 Introduction**

Financial technology is currently the basis for dealing with customers in banks in general, so that banking operations have become fully computerized, so that the customer can obtain banking services remotely and with great efficiency and effectiveness. Which means that financial technology has entered the banking sector automatically in a way that serves customers and bank owners alike. (Song, 2023)

#### **2.1.2 The concept of financial technology**

There are several definitions of financial technology, the most important of which are:

1- They are applications and programs that rely on computers and computer tools to implement financial functions and support the quality of financial and banking services in general. (Hassan, 2021)

2- They are goods and services that rely on technology and technology tools to improve the quality of financial services for stakeholders and rationalize their investment decisions. (Milan, 2019)

3- They are modern technological inventions and innovations in the field of the financial sector, and these inventions include a group of digital programs used in the financial operations of banks, which include transactions with customers and financial services such as money transfers, currency exchange, interest and profit calculations, and knowledge of expected profits. (Yaris, 2008)

From the above, financial technology can be defined as a group of programs, devices, and spare parts that rely on computers and computer technology to provide financial services to stakeholders to help them make appropriate decisions

#### **2.1.3 Sectors Main in FinTech in the Banking Sector**

There are three main sectors, which are (Hindawe, 2024)

1- Cash Payments Sector: It is the most interactive sector with FinTech in terms of paying electronic bills, electronic wallets, and online payment.

2- Loans and advances sector: Through the use of electronic platforms for borrowing operations and crowdfunding services, it also provides short-term financing for small and medium-sized enterprises.

3- Money Transfer Sector: It undertakes insurance and reinsurance work using informal digital currencies in parallel financial markets.

From the above, it can be concluded that FinTech has multiple applications in banking activities or banking activities, and this requires the existence of costs for investing in FinTech tools to obtain the expected returns from them.

#### **2.1.4 The importance of FinTech**

The importance of FinTech lies in the following (Hadeel, 2021)

- 1- Enhancing the quality of financial services provided to customers.
- 2- Expanding the provision of financial services to customers outside the country
- 3- Obtaining competitive advantages for banks or financial companies that help them survive and continue in the market
- 4- Diversifying the use of information technology tools in providing financial services such as electronic payment and others.

#### **2.1.5 Justifications for using financial technology in the banking sector**

Can be summarized as follows (Almashadani, 2022)

- 1- The desire of the banking system to improve performance due to the highly competitive environment in which it operates, which ensures continuity in the market in a competitive environment
- 2- Achieving competitive advantages in the nature of banking services provided to customers, which helps in attracting new customers or retaining existing customers.
- 3- Increasing market share and increasing the scope of providing banking services to customers regardless of where customers are located by using modern technology
- 4- Increasing profits in the medium or long term by reducing the costs of providing banking services to customers
- 5- Reducing advertising costs by advertising services using big data and social media tools.

#### **2.1.6 Characteristics of financial technology in the banking sector**

The following characteristics exist (Alkhawaja, 2022)

- 1- Meeting customer desires and innovation in redesigning and providing banking services to customers.
- 2- Flexibility in electronic payment operations for customers according to their times and ability to pay
- 3- Using a customer-focused strategy to meet their desires and the possibility of modifying them if possible.
- 4- Rapid completion of customer requests and transactions in terms of verifying customer identity and lending operations.

#### **2.1.7 The role of financial technology in supporting banking businesses and services in banks**

Finance technology supports the banking sector as follows (Abdelkafi, 2022)

- 1- Improving the banking sector's work environment with modern technology to improve the quality of banking services for customers.
- 2- Expanding payment and cash collection operations for customers locally and internationally, which helps improve the market share of banks that use financial technology.
- 3- Financial technology has helped achieve information security for customers and increase physical and electronic control devices to prevent hacking of customer data in banks.
- 4- Developing and innovating new banking services for customers, which helps diversify banking services according to customer needs
- 5- Improving the quality of daily operational work in banks, achieving stability and competition, and increasing the capabilities of employees to deal with new financial technology tools.

### **2.2 Internal Control**

As a result of the important role played by internal control systems in the success of companies, they have received the attention of accounting bodies that have sought to develop the concept of control on an ongoing basis. The first definition of it was set by the American Institute of Auditors, which stated that internal control is "the set of methods and measures followed by the entity in order to protect its assets and ensure the accuracy of accounting information" (Abdullah, 2017)

The rapid development in financial technology has emphasized the need for modern trends in internal control systems in relation to modern electronic systems. Therefore, the modern definition of internal control is "an important part of the company's management that provides reasonable assurance that the following objectives have been achieved: effectiveness and efficiency of operations, confidence in financial disclosure, and compliance with relevant laws and regulations." Internal control includes setting policies and procedures to provide reasonable assurance about determining the objectives set by a specific unit. (Roomney, 2018)

### **2.2.1 Responsibilities towards the internal control system**

The responsibility of internal control lies in the following

#### **1) Management's responsibility**

Management bears the responsibility for establishing and maintaining the internal control system, and when implementing its supervisory responsibilities It must regularly review the suitability and adequacy of internal control elements, to ensure that all important controls are effectively implemented. (Abdullah, 2017)

#### **2) Responsibility of the internal auditor**

The scope of work of the internal auditor includes examining and evaluating the adequacy and effectiveness of the internal control systems in the company, and the quality of performance in implementing the specified tasks. Therefore, internal control is considered an integral part of the administrative routine and must operate independently regardless of whether internal auditing is implemented or not. Also, no effective internal control system can replace internal auditing. However, the presence of the internal audit function increases the strength and durability of internal control systems. (Al-Sayed, 2017)

### **2.2.2 Services provided by internal auditing to the internal control system**

Internal auditing helps the internal control system in assuming its responsibilities by providing the following services to it: (Abdullah, 2017)

- Determining the adequacy and effectiveness of the internal control system in the facility.
- Determining the reliability of information.
- Achieving the protection of assets from theft, fire and illegal actions.
- Enable compliance with established procedures and in the event of non-compliance, the internal auditor must determine the reasons for it.
- Achieve access to goals and objectives and the auditor must ensure that programs or operational processes have been implemented as planned.
- Provide optimal use of resources.
- Identify areas of risk, which requires the internal auditor to circulate the audit plan in a manner that takes into account areas of risk and how to deal with them.
- Achieve prevention and detection of fraud and deception.

### **2.2.3 Objectives of financial technology in the internal control system**

The objectives of financial technology in internal control are as follows: (Stong, 2023)

- Obtaining evidence of the effectiveness and form of electronic data operation.
- Describing the impact of information technology on the internal control system in a logical manner and assessing control risks.
- Describing the benefits of internal control and the risks of information technology.
- Describing the evidence, which contributes to identifying the specialized skills required to determine the impact of computer processing on auditing and designing and implementing audit procedures.

### **2.2.4 Advantages and disadvantages of financial technology in the internal control system:**

First: Advantages of financial technology in the internal control system (Al-Qawas, 2020)

- Achieves consistency in the application of complex mathematical operations with large volumes of data to be processed.
- Increases the timeliness, appropriateness and accuracy of information.
- Facilitates additional analyses required by auditors for accounting and financial information.
- Increases the ability to supervise the performance of activities, policies and procedures in the company.

- Helps reduce control risks if effective.

Second: Disadvantages of financial technology in the internal control system (Harfoush, 2019)

- Causes errors in processing some data.
- Destroys data or changes its contents as a result of unauthorized access.
- Allows unauthorized changes in programs.
- Fails to make the necessary changes in programs that require change in light of technological developments.
- Prevents the use of manual control and the possibility of benefiting from its benefits.
- Allows the loss or loss of information needed by the company.

## **2.2.5 The impact of financial technology on the components of internal control**

### **First: The impact of financial technology on the control environment**

In order to gain an understanding of the control environment that affects electronic data processing, the auditor focuses on the following factors: (Aql , 2023)

1- Management philosophy and operating method: It is related to management trends related to investments and the benefits of electronic data processing.

2- Organizational structure: It is related to the centralization and decentralization of electronic data processing and is considered important for auditors to understand the internal control system.

3- Administrative control methods: These are related to the auditor's interest in the electronic work environment in management trends and ideas that revolve around the following:

- The auditor's proof of changes made to control systems, policies and procedures.
- The auditor's retention of programs and files.
- The possibility of authorized access to computer documents and records.

4- Policies and procedures related to people: These are related to management's policies and procedures regarding rewards, training, evaluation and compensation of employees whose work is related to computers.

So that , Financial technology has restructured data processing and report extraction methods, and in return, there are risks facing organizations that adopt information technology, so they must be monitored well to identify the control characteristics that must be applied to them.

### **The most important effects of financial technology on the regulatory environment can be highlighted as follows:**

First: General control

Financial technology affects the field of general control related to the computer environment currently applied and what has been processed, and affects the efficiency of the organization in general through the following matters: (Abu Dalou, 2024)

- Providing security.
- Developing and maintaining systems and changing the control method.
- Achieving control over computer operations that include networks, databases and planning.

Second: Application control

It regulates the company's operations or events and ensures authorized access to data and accuracy, and is based on completing the processing of inputs through processing to outputs. Application control is designed to detect, prevent or correct errors according to the following: (Olieuwe, 2024)

1) Preventive control:

It protects the company from unwanted events or operations, and financial technology affects this type of control through the following matters:

- Prevents unauthorized access to programs and systems.
- Defines what is required and determines the password to access the data.
- Restricts user violations (such as printing papers and storing on disks).
  - Prevents the closing of books and records in the event of an error.

## 2) Discovery control

It is concerned with errors that occur during the electronic processing of data that contain warnings and possible expectations to solve problems. Due to the rapid discovery of this type of error, the user must read the warnings and expectations to solve the problems extracted from the system itself. Due to the impact of developments in information technology on this type of control, it needs a precise design to avoid major errors. It also helps reduce the time consumed for auditing. Technology also imposes continuous supervision and monitoring.

## 3) Corrective control

It is concerned with errors after they occur, and is based on correcting the error and processing its results. This requires automated systems to do this, as information technology has created information of a large quantity and quality, which means the possibility of errors occurring that are not discovered, so they are corrected electronically quickly and accurately.

### **Second: The impact of financial technology on the process of assessing and analyzing risks**

Internal control these days is more concerned with risks and the risk assessment process than ever before, and the main reason for this is the possibility of changing the circumstances surrounding the company and technological developments that affect the activities and nature of the company's work. Risk is defined from the perspective of internal control as "circumstances of uncertainty about the occurrence of matters that have a significant impact on the company's objectives. These risks are measured in terms of frequency or high probability of occurrence." The risk is considered certain to occur in the financial technology environment when: (Tawfeeq, 2023)

- The skills available in the company do not affect it.
- The probability of its occurrence is calculated based on a large number of observations.
- The control system is weak.

Fintech risks, whether for information or the company's infrastructure, organizations assess the risks of modern technology based on those risks and their relationship to the company, such as: performance application, system information delivery, security, and vulnerability. In order to integrate the efforts of auditors and internal control workers to determine risk levels and estimate their relative importance, this requires following an effective method in assessing those risks, because the ability to determine the degree and level of risk affects the audit process procedures. The best way to analyze and assess risk is to follow analytical procedures, which help shorten time, in addition to being a preferred method for accomplishing and understanding customer desires and requests. (Arham, 2025) The process of assessing financial technology risks is based on identifying critical or sensitive data and identifying people who have the authority to access data and information, examining the integration and stability of systems, auditing the documentation and ownership of those systems, reviewing the continuity of work planning, evaluating employee-related policies and procedures, and finally testing the internal control system. Therefore, internal auditors in the financial technology environment must ask some questions that must be answered, which are: (Arham, 2025)

- What are the events that affect information security risks?
- What is the cost of these events if they occur?
- What is the probability of their occurrence?

The American Institute of Internal Auditing distinguished between risk analysis and risk assessment through the following: (Abdullah, 2017)

- 1- Risk assessment is a systematic process of evaluating and integrating specialists' judgments about the likelihood of inappropriate circumstances and events. (Alamro, et al., 2024)
- 2- Risk analysis, it provides meaning, distinction, and integration of specialists' judgments to develop the audit work. So that the list of risks provided by the auditor and supported by management must go through the following stages:

First: Risk analysis and assessment.

Second: Analysis of the probability of monetary loss resulting from risks and the resulting effects.

Third: Use the same programs used in other companies to benefit from the benefits that can be obtained, such as: reducing the cost of programs, application development and maintenance, support from other users, and ease of employee presence.

### **Specific rules for measuring risk assessment in the financial technology environment**

Include the following (Shaleh, 2024)

- Identifying the risks that cause weakness and disruption to the company's core activities, and the resulting monetary loss.
- Identifying the possibility of loss (loss appropriate to the risk), including risks related to functions and those related to assets, and preferably expressed in monetary terms.
- Identifying the monetary amount of loss or weakness resulting from the occurrence of the threat (this is related to the second point).
- Identifying the threat resulting from the possibility of the event recurring (the threat occurrence rate), and expressed annually.
- Identifying the possibility of dealing with the main issues of risk: conditions of uncertainty. How to identify those conditions, and what should be done if they occur.
- Determining cost efficiency either using the rate of return on investment or using cost and return.

### **Fintech Risk Assessment Steps**

(Barbe, 2023) Include the following

#### **1- Identifying information assets**

The important assets of each department must be identified, and these important assets include: computer parts, programs, systems, and related services, as well as related technology.

#### **2- Collecting and prioritizing these assets**

After completing the first step, the second step comes, which is arranging the assets according to their importance, whether they are so sensitive that no work can be done without them or not sensitive, while the second arrangement is suitable information that can be dispensed with for several days and a period not exceeding a week, while the third and final arrangement of information is ordinary information that can be dispensed with and work activities can be done without it for a long period.

#### **3- Identifying risks**

Here, each department identifies the risks, whether these problems or threats are specific or not. The risks must be tangible and specific to one or more types of assets

#### **4- Establishing a priority scale for risks according to their importance**

This gives the departments an idea of the locations of events that need planning, and also works to establish sequential steps, which makes the process of managing them easier. So that sensitive risks are placed at the top of the priority scale.

#### **5- Develop a list containing risks**

Here, the team members assigned to identify the risks with a statement of explanations and supporting details, based on the knowledge they possess about those risks.

#### **6- Refer to the risks according to sensitive assets (sensitive information)**

In this step, the work team develops a list of sensitive assets (most exposed to risks) arranged according to their priority in a separate section of the risk assessment report. This helps the departments propose appropriate solutions to those risks and implement plans to protect those assets.

#### **7- Make appropriate recommendations to find solutions to those risks.**

Companies, especially large ones, increasingly rely on the application of financial technology every day, in order to manage their business and activities in an appropriate manner and time, due to the rapid change in technological developments that affect the work environment of these companies. :( Haque, 2023)

First :The process of supervision or the continuity of supervision imposed by financial technology in an electronic work environment depends on three principles

- That the automated practices followed in the company are consistent with the policies set by that company.
- That there is the possibility of determining the speed at which managers or auditors can identify problems related to information technology or the electronic work environment.

- That the management determines the employees authorized to work in the electronic environment and determines what each employee should do in that environment.

Second: The process of continuing supervision in an electronic work environment or financial technology requires the separation of functions between employees, in order to be able to identify the sources of failure in a timely manner, and this is done by following the following:

- Conducting internal audits.
- Appointing an external auditor to conduct the audit on a monthly or quarterly basis.
- Applying the appropriate electronic work environment for the company's activities and business.

Third: The process of separating jobs and responsibilities also requires the following in order to maintain supervision:

- Identifying employees who cause conflicts and who should report them.
- Identifying those responsible for implementing critical work and activities in the company.
- Identifying important places to focus supervision on, identifying places that should be changed, who should change them and why they were changed.

The supervision process in the fintech environment includes the continuity of supervision of the following: (Haque, 2023)

#### 1- Supervising the work or activity of the user

The company's managers and auditors want to achieve effective control over the company's activities and work, so they must first determine the user authorized to accomplish and view the company's information, and as is known, large companies have several activities and several departments and departments, which means the need to provide qualified people to work in the information technology environment.

#### 2- Supervising the company's work and activities

Project owners and stakeholders need to supervise the company's activities at the macro and micro levels. At the macro level, they need to get a comprehensive view of the company's operations and activities and the feasibility of the electronic environment in the company. As for the micro level, they need to supervise the operations of employees and users and how they accomplish their work.

### 3. SUPERVISING APPLICATION CONTROL

This process monitors the internal control work that shows how the applications used in the company are used, and how the company's information is protected.

#### 3.1 Practical Framework and Statistical Analysis

##### 3.1 Study Community and Sample

The study community consists of internal auditors in Jordanian commercial banks traded on the Amman Stock Exchange, which number 11 commercial banks. The number of internal auditors in Jordanian commercial banks was limited to 164 internal auditors. As for the study sample, the simple random sample method was used in distributing questionnaires to internal auditors. 114 questionnaires were distributed, 95 questionnaires were returned, and the return rate was 83%. 8 questionnaires were excluded for not being suitable for analysis, which means that the questionnaires valid for statistical analysis were 87 questionnaires. Internal auditors were identified as the study community for the following justifications:

- 1- The banking sector in Jordan, according to the instructions of the Central Bank of Jordan, must appoint an internal audit department in each bank.
- 2- Their number is appropriate for implementing the study, and they are the ones who have the authority to review all operations carried out in commercial banks.
- 3- One of the main tasks of internal audit work is to ensure the reliability and efficiency of the internal control system.

### 3.2 Validity and reliability of the study tool

The questionnaire design process was done by taking into account the study variables and in line with the study hypotheses, and the Cronbach alpha coefficient was extracted for the questionnaire (which is a test that measures the degree of internal consistency of the study sample's answers to the questionnaire) and its value was 79%, which is higher than the minimum statistically acceptable limit of 70%, and the value of the alpha test for the hypotheses related to the study was extracted and it was as follows: The first hypothesis 82%, the second hypothesis 74%, the third hypothesis 78% / the fourth hypothesis 82%, and the fifth hypothesis 83%, which means that there is credibility in distributing the study answers to the questionnaire options, which gives it validity and stability with the possibility of generalizing the results and recommendations.

### 3.3 Questionnaire design

The questionnaire was designed using the five-point Likert system for each paragraph of the questionnaire, and for the purposes of analyzing the questionnaires, codes were given to the questionnaire options as follows: strongly agree with code 5, agree with code 4, neutral with code 3, disagree with code 2, and strongly disagree with code 1, which means that whenever the average of the hypothesis is 3 or more, there is an effect of the paragraph or hypothesis, and whenever the average is less than 3, this indicates that there is no effect or a small effect of the paragraphs or variables of the study.

### 3.4 Characteristics of the study sample

**Table No. 1 Characteristics of the study sample**

Variable	Description	Frequencies	Percentages
Years' experience	Less than 6 years	25	%28
	6 years to less than 12 years	30	%34
	12 years and more	36	%38
Academic qualification	Accounting	60	%69
	Accounting information system	14	%16
	Finance	13	%15
Career Center	Internal Audit Manager	8	%9
	Internal Auditor	79	%91
Total		87	100

The following is noted from the previous table:

1- The study sample has very suitable experience in commercial banks, as the experience category of 12 years or more has the largest percentage of 38%, followed by the category of 6 to less than 12 years, and this is a positive indicator for the study as the subject of financial technology requires great experience to deal with it and this helps the credibility of the study sample's answers.

2- The vast majority of the study sample's specialization is accounting, and this may be natural as Jordanian banks are keen to appoint accountants for the internal audit function, and the study sample targeted on internal auditors.

### 3.5 Discussion of the statistical results with the study variables

**Table No. 2 Opinions of the study sample on the variable of the impact of financial technology on the control environment**

Nom	Paragraph	Average	Standard deviation	Rank
1	There is a trend of management investing in financial technology tools and the benefits of electronic data processing.	2.61	0.59	7

2	Management applies decentralization in auditing electronic data related to the bank.	4.15	0.84	3
3	The internal auditor records the changes made by reviewing the electronic data.	4.29	0.73	2
4	The internal auditor records the changes made by reviewing the electronic data.	3.82	0.55	5
5	Fintech has restructured the way we process data and generate reports.	2.46	1.12	8
6	Fintech affects the general oversight of the computer environment currently in place and what has been processed.	3.87	0.81	4
7	The management provides oversight of financial technology operations that include networks, databases and planning.	3.12	0.76	6
8	Fintech is concerned with addressing errors that occur during electronic data processing and possible predictions for solving problems.	4.38	0.59	1
	Average	3.58	0.66	

It is noted from the previous table that the majority of the study sample answers are in the degree of agree and strongly agree, as most of the paragraphs have an average higher than 3. It is also noted that paragraph 8 represents the highest average with a value of 4.38, which is that financial technology is concerned with addressing errors during electronic data processing with making expectations to solve these problems. This means that there is a culture for bank management that it is necessary to anticipate errors and address them using financial technology tools. It was noted that paragraph 3 represents the second degree of influence with an average of 4.29, which is represented by the internal audit department writing down the changes that are made in electronic data processing that were made with the presence of financial technology. It is also noted that paragraph 3 has an average of 4.15 with a good degree of influence, which is represented by the management of Jordanian commercial banks applying the decentralized management method using financial technology tools when auditing electronic financial data. It is also noted that the average of the control environment variable is 3.58, which is greater than the hypothetical average of 3. This indicates that the use of financial technology tools helped in regulating the activities and operations of the control environment in terms of investing in technology, improving the electronic processing of financial data, and addressing and planning for errors. It also helped in changing the culture of the control environment among the administrations of Jordanian commercial banks.

**Table No. 3 Opinions of the study sample on the risk assessment variable**

Nom	Paragraph	Average	Standard deviation	Rank
1	Fintech has helped to activate the understanding of changes occurring in banking business	3.29	0.49	5
2	Fintech has helped to reduce the uncertainty in knowing the banking desires of customers	3.42	0.55	3
3	Fintech has helped to increase the skills of employees to deal with identifying operational risks in the bank	3.76	0.62	2
4	Fintech has helped to improve information security policies for both customers and investors in banks	4.46	0.84	1
5	Fintech has helped to examine the integration and stability of systems, audit the documentation and ownership of those systems, and review the continuity of business planning	2.28	0.96	8

6	Fintech is conducting a regular process to evaluate and integrate specialists' judgments about the possibility of inappropriate conditions and events.	3.05	0.72	6
7	Fintech has helped to identify risks that cause weakness and disruption to the company's core activities, and the resulting cash loss	3.31	0.69	4
8	Fintech has helped to establish sequential steps, making the management process easier. So that sensitive risks are placed at the top of the priority list.	2.78	0.59	7
	Average	3.67	0.68	

It is noted from the previous table that the study sample members confirm that the fourth paragraph represents the highest degree of influence with an average of 4.46, which is that financial technology tools helped activate information security tools for both customers and investors alike, and this indicates the existence of obstacles to information hacking or unauthorized entry. It is also noted that paragraph No. 3 represents a high degree of influence with an average of 3.76, which is that financial technology tools have a positive impact on increasing the skills of employees in the bank by identifying the technology infrastructure and how to deal with it and mitigate its risks if they occur. Financial technology also has a positive impact on reducing daily operational risks to the lowest possible level. Paragraph No. 2 has an average of 3.42, which is that financial technology tools helped reduce conditions of uncertainty to conditions of certainty through the presence of corporate governance that clarifies the work of all technology tools. This helps achieve the optimal use of the bank's resources, which is reflected in the profits of these banks. It is also noted that the standard deviation of all paragraphs of the risk assessment variable is less than 100%, which indicates that the standard deviation is appropriate for the average of each paragraph. It is also noted that the average of the variable in general is 3.67, which is higher than the hypothetical mean of 3, which indicates that there is a positive impact of the role of financial technology tools on improving the identification and assessment of risks present in Jordanian commercial banks.

**Table No. 4 Opinions of the study sample on the monitoring and supervision variable**

Nom	Paragraph	Average	Standard deviation	Rank
1	Fintech has imposed continuity of the supervision process due to the increased demand for information by management to make timely decisions	4.59	0.46	1
2	Fintech has helped to harmonize policies and separate functions used in the bank	3.56	0.59	4
3	Fintech has helped to identify the authorized user to accomplish and view the bank's information	3.27	0.67	6
4	Fintech has helped to provide qualified people to work in the IT environment.	4.34	0.66	2
5	Fintech has helped to supervise the company's activities at the macro and micro levels	2.68	0.82	7
6	Fintech has helped to audit the internal control work that shows how the applications used in the company are used	3.86	0.93	3
7	Fintech has helped to develop the control procedures used in the bank	3.37	0.73	5
	Average	3.67	0.69	

It is noted from the previous table that the first paragraph represents the highest degree of influence according to the opinion of the study sample individuals with an average of 4.59, which is that information technology tools have increased the quality of information required by management and

which helps it in making appropriate decisions. This means that there is a conviction among the administrations of Jordanian commercial banks that financial technology has become a reality that must be lived with and the need to increase the budgets allocated to support it. It is also noted that the fourth paragraph has a positive impact with an average of 4.34, which is that financial technology has helped in the necessity of monitoring the work of appointing employees to obtain qualified employees capable of dealing with and maintaining the financial technology tools used in the bank. It is also noted that paragraph 6 has an average of 3.86, which is that the financial technology tools used in Jordanian commercial banks have an impact on the methods of reviewing and auditing financial operations in banks and have helped in identifying accounting and financial programs appropriate for banking work. It is also noted that the general average of the variable is 3.67, which is higher than the hypothetical average of 3, which indicates that financial technology has helped improve the supervision and monitoring processes of banking operations in Jordanian commercial banks.

### 3.6 Hypothesis Testing

**The first hypothesis** is "There is no effect of using financial technology on the control environment in Jordanian commercial banks."

One sample t-test was used to test the first hypothesis, and the results of the hypothesis were as follows

**Table No. 4 Results of the first hypothesis**

Schedule T value	Statistical T value	Significant	Result of null hypotheses	Average
1.96	15.42	0	Reject	3.58

The rule of the test is that if the value of the t-statistic (calculated) is greater than the value of the t-table, the alternative hypothesis is accepted and the null hypothesis is rejected. Therefore, since the calculated value is 7.49 and the table value is 1.96, this means accepting the alternative hypothesis and rejecting the null hypothesis, and the result of the hypothesis is that there is an impact of the use of financial technology on the control activities in Jordanian commercial banks.

#### Testing the second hypothesis

The second hypothesis "There is no impact of the use of financial technology on risk assessment in Jordanian commercial banks."

A single-sample t-test was used to test the second hypothesis, and the results of the hypothesis were as follows

**Table No. 5 Results of the second hypothesis**

Schedule T value	Statistical T value	Significant	Result of null hypotheses	Average
1.96	7.49	0	Reject	3.67

The rule of the test is that if the value of the t-statistic (calculated) is greater than the value of the t-table, the alternative hypothesis is accepted and the null hypothesis is rejected. Therefore, since the calculated value is 7.49 and the table value is 1.96, this means accepting the alternative hypothesis and rejecting the null hypothesis, and the result of the hypothesis is that there is an effect of using financial technology on risk assessment in Jordanian commercial banks.

#### Testing the third hypothesis

The third hypothesis "There is no effect of using financial technology on supervision in Jordanian commercial banks."

One -sample t-test was used to test the third hypothesis, and the results of the hypothesis were as follows

**Table No. 5 Results of the third hypothesis**

Schedule T value	Statistical T value	Significant	Result of null hypotheses	Average
1.96	17.27	0	Reject	3.67

The test rule is that if the statistic value (calculated) is greater than the tabular value, the alternative hypothesis is accepted and the null hypothesis is rejected. Therefore, since the calculated value is 7.49 and the tabular value is 1.96, this means accepting the alternative hypothesis and rejecting the null

hypothesis. The result of the hypothesis is that there is an impact of using financial technology on supervision in Jordanian commercial banks.

#### **4. RESULTS AND RECOMMENDATIONS**

##### **4.1 Results: The study reached the following results**

1- The study sample has specializations appropriate to the subject of the study in terms of qualification and years of experience, as their qualifications are within the subject of accounting and their long experience in the subject of auditing and control in the work environment of commercial banks.

2- The financial technology used in the work environment of Jordanian commercial banks has a positive impact on improving the work of the control environment in terms of transforming the culture of investment in financial technology tools and the nature of the information that financial technology has helped to provide in making appropriate decisions. Financial technology has also imposed on bank administrations the necessity of making budgets for investment in it due to the advantages it brings to both customers and investors in Jordanian commercial banks.

4- The financial technology used in commercial banks has helped improve the methods and procedures for assessing risks related to banks and banking operations, as financial technology has helped improve the methods and procedures for information security and protected it from the risks of hacking or unauthorized entry or illegal modification. Financial technology has also helped increase training expenses and allocations for employees on technology tools in terms of purchasing, maintenance or training operations, which has helped increase employees' skills in dealing with and mitigating financial technology risks and planning how to deal with them if they occur.

5- The financial technology used in Jordanian commercial banks helped reduce the risks of uncertainty, and contributed to simplifying the procedures for implementing the IT infrastructure for customers, which may positively reflect on improving their financial performance. Financial technology also helped identify, evaluate and measure operational risks in the daily business of commercial banks and try to overcome them and benefit from the opportunities to exploit them to achieve the goal and strategy of Jordanian commercial banks represented by market share and continuity in the market.

5- Financial technology in Jordanian commercial banks helped improve the supervision and monitoring processes of financial and banking activities, which helps managements in making appropriate decisions. Financial technology also helped monitor the process of employing individuals in commercial banks in a way that allows the appointment of qualified people to keep pace with the requirements of financial technology and how to deal with it to achieve profits for commercial banks.

6- The financial technology used in Jordanian commercial banks has helped in self-reviewing and continuously supervising financial reports and evaluating their efficiency in the optimal use of bank resources and reducing waste of time, effort and expenses required to complete customer transactions with better efficiency and effectiveness.

7- Financial technology has also helped in identifying appropriate accounting programs for customer applications through the consistency of regulatory policies and the separation of functions between employees. This will ensure the integration between regulatory policies and procedures that have improved the quality of financial services for customers and investors.

##### **4.2 Second Recommendations**

Based on the results of the study, the researchers recommend the following:

1- The need to create clear and necessary legislation and laws for the use of financial technology by issuing legislation that regulates the good and effective use of financial technology tools.

2- The need for local and international accounting and banking bodies to pay attention to financial technology by holding conferences that focus on financial technology tools and focusing their axes on the advantages and risks related to financial technology tools in banks in general.

3- The need for a radical change in the management philosophy in the presence of budgets allocated for investment in financial technology tools and the need to prepare special reports from programmers and auditors in banks on evaluating computer networks from time to time to ensure full benefit from financial technology opportunities in Jordanian commercial banks.

4- The need to pay attention to reviewing changes in the infrastructure structure and maintaining it periodically for financial technology tools in Jordanian commercial banks, with the need to appoint qualified employees to deal with this technology.

5- Work on finding a legal way to integrate the work of all technological programs in banks so that their primary role is to improve the quality of financial and banking services provided to customers, with the necessity of conducting customer feedback processes on the degree to which financial technology achieves customers' desires and current and future aspirations.

6- The necessity for the financial technology used in Jordanian commercial banks to be integrated with the message and vision of the banks in terms of achieving profits, improving financial performance and increasing profitability from year to year.

7- The necessity of applying the study to other sectors to obtain a comprehensive view of how to apply financial technology tools to the Jordanian economy in general.

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