

The Role of Financial Technology in Improving the Performance of Commercial Banks: A Case Study of the Algerian Foreign Bank (BEA), Branch 44 - Annaba

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Abstract:

This study aimed to shed light on financial technology and its role in improving the performance of commercial banks. To achieve this objective, a field study was conducted by designing a questionnaire addressed to a sample of employees at the Algerian Foreign Bank, Annaba Branch No. 44. The number of analyzable questionnaires amounted to 30, and the data were analyzed using the Statistical Package for the Social Sciences (SPSS).

The study reached several findings, the most important of which are: the massive transformations that emerged in the banking sector with the advent of financial technology, where banks sought to keep pace in order to improve their performance toward their clients, gain customer satisfaction, and attract new clients due to the advantages it offers. Additionally, revenue increased as a result of an expanded customer base and increased demand for digital banking services, leading to additional profits. This study will highlight financial technology and the role it plays in improving the financial performance of commercial banks.

Keywords: Financial Technology, Commercial Banks, Banking Performance, Customer Satisfaction.

Jel Classification Codes : G21; O33, C83; L86

1. INTRODUCTION

Financial technology is defined as modern innovations and technological developments employed in the financial sector. It includes a set of systems and digital software used to carry out financial operations within banks, such as customer transactions and money transfers. The reliance on this technology has significantly increased due to the shift towards financial openness and rapid technological advancement. One of the most urgent drivers for the use of these digital tools was the COVID-19 pandemic, which represented the greatest humanitarian, economic, and financial crisis the world had known, exceeding in impact the Great Depression of 1929 and the global financial crisis of 2008. It caused comprehensive and fundamental changes across various sectors. During this period, financial technology products proved their high ability to ensure the continuity of the relationship between customers and their financial and banking institutions.

The banking sector is among the most affected and interconnected with technology, where in developed countries a new sector emerged concerned with digital financial tools, combining modern technology with financial and banking services. This has created a new competitive environment between traditional banks and fintech startups, where this sector provides banking services in a modern and innovative technological style.

Since banks are a main engine of national economies, they today seek to keep pace with this technological development by renewing their infrastructure and updating their operational mechanisms to improve their performance and enhance their competitiveness in the face of specialized financial technology companies.

• Research Problem:

In light of the above, the main research problem can be formulated as follows:

What is the role of financial technology in improving the financial performance of commercial banks?

• Sub-questions:

- Is there a statistically significant effect between the use of financial technology and reducing operating costs in banks?
- Is there a statistically significant effect between financial technology and improving the quality of financial services?
- Is there a statistically significant effect between financial technology and increasing profits in commercial banks?

• **Research Hypotheses:**

The following hypotheses were proposed:

- **First Hypothesis:** There is a statistically significant effect between the use of financial technology and reducing operating costs in banks.
- **Second Hypothesis:** There is a statistically significant effect between financial technology and improving the quality of financial services.
- **Third Hypothesis:** There is a statistically significant effect between financial technology and increasing profits in commercial banks.

• **Significance of the Study:**

The importance of this study lies in the importance of the financial technology sector and its transformation of the balance of power in the financial and banking sector, along with the introduction of modern techniques. The study addresses an important topic related to the Algerian Foreign Bank, which seeks to keep pace with developments in the field of financial technology and benefit from them to improve the bank's financial performance.

• **Research Methodology:**

The study relied on the descriptive analytical approach in its theoretical aspect, which involves collecting and analyzing information to reach accurate results. In the practical aspect, it relied on the analytical method by designing a questionnaire as a primary source for providing information on the subject of the study.

2. The Nature of Financial Technology:

Financial technology and the services, products, and innovative solutions it offers have become one of the most promising fields globally. It has significantly contributed to facilitating financial operations and improving financial performance. This section aims to explore the most important concepts of financial technology.

2.1. Concept and Emergence of Financial Technology:

This section presents a modern concept related to financial technology, beginning with the stages of its development, its characteristics and advantages, and then its major sectors.

2.1.1. Definition of Financial Technology:

Although there is no consensus on the best definition of financial technology, considering the field is rapidly evolving and it is premature to provide a precise definition, reviewing various definitions offers a good understanding of this contemporary term. Some definitions include:

. **First Definition:** Defined by the Financial Stability Board as: "Financial

technology is innovations that can create new business models, applications, processes, or products that have a significant impact on financial markets and institutions, and on the provision of financial services.” (Belkaïda & Remidi, 2021, p. 28)

. **Second Definition:** Defined by Digital Research in Dublin as: “Modern technological inventions and innovations in the financial sector, including a set of digital programs used in banks’ financial operations such as customer transactions, money transfers, currency exchange, interest and profit calculations, forecasting investment returns, and other banking operations.” (Talba & Bouhanik, 2022, p. 4)

. **Third Definition:** “Any technological invention employed in financial services by integrating the technological aspect with the financial aspect.” (Ben Nacer & Mesdaâ, 2022, p. 10)

Based on the above, financial technology can be defined as a field that combines technology and financial services to simplify and improve financial operations and provide innovative payment solutions.

2.1.2. Emergence of Financial Technology:

Financial technology is not a new phenomenon. Banking services and financial institutions have a long history of adopting technology. Its evolution can be summarized in three stages: (Harfoush, 2019, pp. 728-729).

. **First Stage (1866–1967):** This stage saw the laying of the first transatlantic cable and the invention of the ATM. Technology and finance combined to spark the first wave of financial globalization.

. **Second Stage (1967–2008):** During this phase, financial technology remained dominated by the traditional financial services sector, which used it to provide financial products and services. This period witnessed the beginning of electronic payments, clearing systems, ATMs, and online banking services.

. **Third Stage (2008–present):** Since the global financial crisis, new startups began offering financial products and services directly to companies and the public. The reasons for the rapid spread of financial technology globally and its rapidly growing investment rates include:

- Enormous developments in financial tools and banking technologies, especially in electronic payment techniques. (Nees, 2022, pp. 231-232)
- Easy access to broader populations via the virtual world and social media.
- Simplicity of transactions in the fintech world compared to the traditional world, which requires at least opening bank accounts domestically and abroad.

- Low costs of fintech services and easy access to quality services without high expenses.

2.2. Transformations Witnessed by Banks under Financial Technology:

2.2.1. Sectors of Financial Technology:

The main sectors where startups operate in financial technology can be summarized as follows: (Magdy, 2020, p. 5)

a. Payment Sector:

The payments sector is one of the most widely used, including mobile and internet payment services, digital wallets, and international money transfers. This sector was formed by startups like "Unocron" in 2016.

Financial technology has improved financial transaction services, making bill payments faster, safer, and easier (avoiding carrying cash and receipts due to electronic documentation and encryption), and cheaper due to low fees and time efficiency. It also helps address challenges in revenue collection by reducing payment delays. For example, the service reached up to 15 million clients.

b. Lending and Capital Raising Sector:

This sector includes loan comparison platforms, crowdfunding, and peer-to-peer lending. This technology has enabled individuals who do not have bank accounts—estimated at 1.7 billion people, 60% of whom own smartphones—to benefit from banking services. It has also enabled small and medium-sized enterprises, which are often a low priority for commercial bank executives especially in developing countries, to access crowdfunding services and circulate capital through direct lending platforms.

The number of fintech startups operating in this sector and valued at over "Unicorn" status was estimated at 8 companies in 2016.

c. Money Transfer Sector:

Fintech has developed the capital transfer service, making the process characterized by short execution time and low cost, estimated between 0.5%–1% of the transferred amount (compared to 7.4% traditional transfer costs outside fintech startups). It is also easier, as it spares the concerned party the need to go to the bank through internet or mobile applications. For example, "TransferWise," launched in 2011, succeeded in reducing money transfer costs away from banks and traditional methods.

d. Wealth Management Sector:

This sector focuses on providing wealth management services for individuals who do not have bank accounts and store their money outside the banking sector, through wealth management specialists like "Betterment" in

the United States, or "Hal Dafater" in Saudi Arabia, which was launched in 2014. It is a cloud solution for enterprise resource planning designed specifically for businesses. This solution performs traditional accounting tasks for those who do not employ full-time accountants or accounting experts.

e. Blockchain and Cryptocurrency Sector:

The blockchain technology is still in its early stages. It is a form of distributed ledger technology that involves storing all digital and encrypted currency transactions across a computer network and securing the data through encryption. In other words, this technology is considered a shared public database that verifies and records transactions permanently. It enables trust among parties without requiring a central authority that enjoys universal trust.

2.2.2. Fintech Technologies Used in Banks:

Adapting to the world of digitization and technology is a key to the future of the fintech industry. The financial sector forms the main driving force behind the digital transformation of the economy, being the largest user of digital technologies. This revolution has led to the emergence of many technologies in the fintech field, causing radical changes in various aspects of the financial industry. Below are five (05) main technologies developed in this field:

a. Artificial Intelligence (AI):

This term refers to the machine's ability, such as computers, to acquire intelligence and think logically in a way similar to human thinking. This is achieved through programs that provide computers with the ability to benefit from data and think logically to reach the desired results, such as performing calculations, understanding human language (speech), or translating large amounts of data, whether written or spoken. (Russell & Norvig, 2010, pp. 1-2)

AI is a branch of computer science that focuses on building smart machines capable of performing tasks that typically require human intelligence. Thus, it aims to develop systems capable of learning, thinking, and making decisions. Therefore, AI can be described as a system or machine that simulates human intelligence to perform tasks and can be continuously improved based on the data it collects.

Thanks to AI developments, tasks that were once exclusive to humans are now possible due to the four main advantages where machines surpass humans: power, reliability, speed, and connectivity. Computers have greater

power and sustainability, store information reliably and permanently using small devices, perform millions of calculations in seconds, and with the internet, enable fast and effective information transfer between smart devices. This creates a sense of direct global communication. (Wampé, 2021, p. 169)

b. Blockchain:

Multiple definitions of blockchain technology have been presented by experts, technical institutions, and academic entities to clarify and enhance its understanding and importance. Among these definitions are the following:

According to a report by the National Institute of Standards and Technology (NIST), blockchain is defined as: "A technology that enables a community of users to record transactions in a shared ledger within this community, such that no transaction can be changed once published under normal operation of the blockchain network." (Tierno, 2023)

The blockchain originates with the "Genesis block," and each subsequent block is cryptographically linked to the previous one. This link is created using a unique "hash," calculated from the Merkle root of the current block and the preceding block's hash. This hashing mechanism underpins blockchain's fundamental security. (Boufelfel, Selaïamia, & Benyoub, 2025, p. 614)

It is also defined as: "A technology for storing and transferring information that is transparent and secure and operates without a central controlling authority." (Pignel, 2019, p. 4)

Another definition is:

Blockchain is called a chain of blocks. A block is a type of digital data container, each defined by an encryption code. The blocks are linked one after another to form a chain of blocks. (Tucci, Rivière, & Boudault, 2019, p. 1).

c. Cloud Computing:

Several definitions of the concept of cloud computing exist due to its wide and varied applications. Among the most comprehensive of these definitions are:

The U.S. National Institute of Standards and Technology (NIST) defined it as:

"A model that allows users to access, from anywhere and on demand, a network that provides computing resources such as networks, servers, storage, applications, and services rapidly, with minimal management effort or interaction with the service provider." (Mell & Grance, 2011, p. 2)

Microsoft defined cloud computing as:

"The delivery of computing services—servers, storage, databases,

networking, software, analytics, and more—over the Internet. Companies that provide these computing services are called cloud providers and typically charge for cloud computing services based on usage, similar to how you pay for water or electricity at home." (Beriche, 2023, pp. 84-85)

It is also defined as: "A term that refers to computing resources and systems available on demand via the network, capable of providing a number of integrated computing services without being restricted by local resources to facilitate use for the user. These resources include data storage, backup, self-synchronization, processing capabilities, task scheduling, email delivery, remote printing, etc. When connected to the network, the user can control these resources via a simple programming interface that simplifies and hides many internal details and operations." (Tajour, 2022, p. 4).

d. Internet of Things – IoT:

There are several definitions of this term due to its complexity and the breadth of its uses and applications. Among these definitions are:

The Internet of Things is defined as: "A recently emerging term that refers to the new generation of the internet (the network) which enables communication among interconnected devices through the Internet protocol. These devices include tools, sensors, detectors, various AI tools, and more." (Kumar, Tiwari, & Zymbler, 2019, p. 1)

It is also defined as: "An emerging global technical infrastructure based on the Internet, facilitating the exchange of goods and services in global supply chain networks and having implications on the security and privacy of the stakeholders involved." (Salazar & Silvestre, 2017, p. 6)

It has also been defined as: "A term used to describe a network of physical objects embedded with sensors, software, and other technologies with the purpose of connecting and exchanging data with other devices and systems over the Internet. These devices range from ordinary household tools to advanced industrial tools." (Oracle, 2023).

Based on the above definitions, the term Internet of Things can be summarized as a term referring to the new generation of the global network (the Internet), where this type of internet connects various devices and enables their interaction with one another via electronic protocols.

3. The Contribution of Financial Technology to Achieving Banking Financial Performance

3.1. The Relationship Between Fintech Assets and Bank Profitability:

Financial technology has contributed to maintaining the current customer base by facilitating and simplifying all banking services, thereby

preserving the stability of bank profits. It has also enhanced financial inclusion procedures through fintech, which in turn has enabled startups and individuals without bank accounts to formally enter the banking sector. This has resulted in a noticeable increase in profitability rates.

Moreover, the application of fintech in banks has helped reduce many costs by abandoning the paper-based system and transitioning to the digital system. It has also led to a reduction in bank branches and reliance on technology and the Internet—whether through smartphones or computers—which in turn reduced costs and thus increased bank profitability. (Zoubaari, 2025, p. 41)

3.2. The Relationship Between Algerian Commercial Banks in Using Financial Technology:

- Developments in financial technology enable banks to maintain their current customer base or target a broader audience.
- Technological innovations in recent years have led to a radical transformation in the services provided by banks, starting from online banking services, which directly increase profitability and enhance the financial performance of banks.
- Banks have turned to using technology to manage capital and additional resources.
- This technology contributes to enhancing the productivity of banks, increasing profitability levels, and reducing costs, making the banking customer experience faster and easier.
- It offers customized solutions to the banking sector by collecting and analyzing large amounts of data, contributing to improved customer relationship management.

3.3. Cost Reduction:

The use of technology in completing banking operations and transferring and exchanging information between customers and bank branches has constituted one of the main pillars on which banks rely to reduce administrative expenses. This is achieved by depending on electronic systems in accomplishing banking work, which reduces both costs and prices. Global reports and statistics indicate that if the cost of banking service at the bank branch is 807 cents, it costs 55 cents via mobile phone, 45 cents via ATM, and only 4 cents via the internet.

4. Methodological Framework of the Study:

4.1. Study Population and Sample:

In this study, the External Algerian Bank, Agency No. -44- Annaba, was selected for the case study. The study population consists of a group of employees at this bank. A sample of 40 individuals was selected, and 40 questionnaire forms were distributed. Thirty forms were retrieved, thus the number of valid questionnaire forms for analysis is 30, representing 88%.

Statement	Number of Forms Distributed	Forms Not Retrieved	Cancelled Forms	Valid Forms
Frequency	40	5	0	30
Percentage	100%	12%	0%	88%

Source: Prepared by the researchers.

4.2. Data Collection Tool:

The questionnaire tool was used as the primary data collection tool in this study due to its ability to systematically and methodically access the opinions and perceptions of a large number of individuals. The questionnaire was prepared in the form of a two-part form:

- **Part One:** Dedicated to collecting personal and job-related data of the respondents, such as educational level, job position, years of experience, and other demographic variables that are later used to analyze individual differences among the respondents.
- **Part Two:** Included a set of statements related to the main axes of the study, divided into four axes: the first axis concerns financial technology, the second deals with reducing operating costs, the third addresses improving the quality of financial services, and finally, the fourth discusses increasing profits in commercial banks. The statements were formulated in a clear and direct style using the five-point Likert scale to measure the degree of agreement from "strongly agree" to "strongly disagree." This section aims to measure the awareness, behavior, or attitudes of individuals toward the phenomenon under study, allowing for accurate quantitative analysis of the results.

4.3. Data Collection Methods:

This research relied on a set of methodological tools for data collection and analysis to ensure the study's objectives are met accurately and objectively:

- **Cronbach's Alpha Coefficient:** To ensure the reliability of the questionnaire statements and their usability.

- **Pearson Correlation Coefficient:** To measure the construct validity of the questionnaire statements and determine the degree of correlation between the variables and dimensions of the study.
- **Descriptive Statistical Methods:** Represented in frequencies, arithmetic means, and standard deviations to clarify and determine relative importance.
- **Arithmetic Mean:** To measure the general trend of respondents' answers and determine the degree of agreement or disagreement with each statement.
- **Standard Deviation:** To measure the extent of dispersion or variance in the respondents' answers around the arithmetic mean, indicating the degree of consensus.
- **Percentages and Frequencies:** To present the demographic characteristics of individuals (such as experience, educational level, etc.) in a numerical way that facilitates understanding and comparison.

4.4. Validity and Reliability of the Study Tool:

- **Validity of the Study Tool:** The validity of the tool means that the form includes all the elements that should be included in the analysis, and its items and terms are clear and understandable to its users. The validity was confirmed through face validity and construct validity as follows:
 - **Face Validity:** To assess the apparent validity of the study tool, it was presented to the supervising professor for judgment, and then, with their assistance, to experts in the study field to gather their opinions on the clarity of the statements. After implementing their recommendations for deletion, modification, and rewording of some items, the final version of the questionnaire was obtained.
 - **Construct Validity:** This was verified using the Pearson correlation coefficient. The results are shown in the following table:

Table 02: Pearson Correlation Coefficient for Financial Technology and Performance Improvement

Axes	Dimensions	Pearson Correlation Coefficient	Significance Level
Total correlation for Financial Technology Axis	—	0.834	*0.000
Performance Improvement	Reducing Operating Costs	0.875	*0.000
	Improving Financial Service	0.761	*0.000

Axes	Dimensions	Pearson Correlation Coefficient	Significance Level
	Quality		
	Increasing Profits	0.686	*0.000
Performance Improvement (Total	—	0.927	*0.000

Source: Prepared by the researchers based on SPSS V26 outputs.

*Statistically significant at significance level $\alpha \leq 0.05$.

The above table shows that the correlation coefficients between each dimension and the variables of the questionnaire are statistically significant at a significance level of ($\alpha \leq 0.05$), with p-values less than 0.05. The correlation coefficients range between 0.686 and 0.927, which are high and positive values, indicating good construct validity of the study scale, thus reflecting the tool's validity for what it aims to measure.

• **Reliability of the Study Tool:** Reliability refers to the stability of results and their consistency if the tool were redistributed to the same sample under the same conditions over a specific period. The reliability of the study questionnaire was tested using **Cronbach's Alpha coefficient**, which measures the consistency of the respondents' answers across all items in the scale. The coefficient ranges between 0 (no reliability) and 1 (perfect reliability), with acceptable reliability above 0.6. The results were as follows:

Table 03: Cronbach's Alpha Coefficient for Measuring Reliability of Study Tool Axes

Cronbach's Alpha	Dimension	Variable
0.821	Total reliability	Financial Technolog
0.687	Reducing Operating Costs	Performance Improvement
0.728	Improving Financial Service Quality	—
0.797	Increasing Profits	—
0.823	Total reliability	Performance Improvement
0.823	Overall Questionnaire Reliability	—

Source: Prepared by the researchers based on SPSS V26 outputs.

The above table indicates that the total reliability value of the questionnaire reached (0.823), which is high and suitable for the purposes of

the study. It exceeds the general acceptance threshold (70%). The reliability values were also high for the variables of the study: financial technology (0.821) and performance improvement (0.823), indicating that the tool would yield consistent results if redistributed under similar conditions. This confirms the reliability and validity of the questionnaire, making it a trusted instrument for analyzing the results.

Section Three: Analysis and Discussion of the Field Context of the Study

This section is devoted to analyzing and discussing the results of the field study. The first requirement discusses the statistical description of the study sample, the second requirement analyzes the results through the respondents' attitudes toward the study variables, and the third tests the hypotheses.

5. Presentation and Analysis of Field Study Results:

5.1. Presentation and Analysis of Respondents' Attitudes Toward the Study Variables:

Here, the axes of the study concerning the independent variable (financial technology) and the dependent variable (performance improvement and its dimensions) are analyzed using statistical methods including arithmetic mean and standard deviation.

A. Analysis of the Financial Technology Axis:

This section presents and analyzes the results obtained by calculating the arithmetic mean and standard deviation for each statement in this axis, as shown in the following table:

Table 04: Arithmetic Means and Standard Deviations of Respondents' Opinions Regarding the Financial Technology Axis

No. Statement	Mean	Std. Deviation	Coefficient of Variation (%)	Level of Agreement	Importance Rank
01	4.53	0.507	11.19	Very High	1
02	4.40	0.675	15.34	Very High	6
03	4.43	0.504	11.37	Very High	4
04	4.43	0.568	12.82	Very High	5
05	4.23	0.898	21.22	Very High	9
06	4.47	0.507	11.34	Very High	3
07	4.37	0.669	15.30	Very High	7
08	4.50	0.572	12.71	Very High	2

No. Statement	Mean	Std. Deviation	Coefficient of Variation (%)	Level of Agreement	Importance Rank
09	4.03	0.928	23.02	High	10
10	4.27	0.740	17.33	Very High	8
11	3.87	0.629	16.25	High	11
Axis Total	4.32	0.400	9.27	Very High	/

Source: Prepared by the researchers based on SPSS V26 outputs.

It is evident from the data in the table above, related to the financial technology axis, that all statements within this axis reflected a very high level of agreement. Leading the ranking is statement No. (01), where the respondents' answers indicated a very high tendency, with a mean of (4.53), a standard deviation of (0.507), and a very low dispersion strength of (11.19%), indicating a strong convergence among the responses. This implies that the respondents perceive a tangible positive effect of financial technology in accelerating processes.

On the other hand, the last rank is occupied by statement No. (11), where responses indicated a high level of agreement, with a mean of (3.87) and a standard deviation of (0.629). The dispersion strength was low at (16.25%), showing some convergence, albeit with slight variation. This can be explained by differences in respondents' understanding of the role of big data in banking work, depending on their specialization, experience, and level of direct interaction with digital analysis systems.

It is also evident from Table (07) that the financial technology axis, according to the responses of the study sample, achieved an arithmetic mean of (4.32), with a standard deviation of (0.400) and a very low dispersion strength of (9.27%). This indicates a strong consensus among the respondents on the importance of financial technology, with very slight variance in their views. This reflects a collective and positive awareness of its role in improving banking performance, and this result translates into a very high level of agreement.

B. Analysis of the Axis of Performance Improvement:

This section presents and analyzes the results obtained by calculating the arithmetic mean and standard deviation for each dimension of performance improvement, as follows:

• Reducing Operating Costs:

The following table shows the results related to the dimension of

reducing operating costs:

**Table 05: Arithmetic Means and Standard Deviations of Respondents’
Opinions Regarding the Dimension of Reducing Operating Costs**

No. Statement	Mean	Std. Deviation	Coefficient of Variation (%)	Level of Agreemen	Importance Rank
01	4.07	0.785	19.28	High	8
02	4.27	0.691	16.18	Very High	6
03	4.33	0.547	12.63	Very High	4
04	4.27	0.450	10.53	Very High	5
05	4.47	0.730	16.33	Very High	2
06	4.50	0.509	11.31	Very High	1
07	4.17	0.648	15.53	High	7
08	4.40	0.621	14.11	Very High	3
09	3.97	0.669	16.85	High	9
Dimension Total	4.27	0.339	7.95	Very High	/

Source: Prepared by the researchers based on SPSS V26 outputs.

It is clear from the table above, related to the dimension of reducing operating costs, that all statements reflected a very high level of agreement. At the top of the ranking is statement No. (06), where responses showed a very high tendency, with a mean of (4.50), a standard deviation of (0.509), and very low dispersion strength of (11.31%). This indicates a strong convergence in the responses, which can be interpreted as most employees, from their work experience, observing that the adoption of financial technology has indeed accelerated procedures and reduced costs, leading them to agree highly when evaluating its impact on operating costs.

In contrast, the last rank is occupied by statement No. (09), where responses showed a high tendency, with a mean of (3.97), a standard deviation of (0.669), and a dispersion strength of (16.85%), indicating some variation in responses. This reflects that while most respondents agree on the potential operational risks resulting from over-reliance on financial technology, there is slight divergence in their opinions, reflecting a collective awareness of the challenges of digital transformation within banks.

From Table (05), it is evident that the dimension of reducing operating costs, according to respondents in the study sample, achieved an arithmetic

mean of (4.27), with a standard deviation of (0.339) and a very low dispersion strength of (7.95%). This indicates that most respondents clearly feel the impact of financial technology in cost reduction, explaining the high level of agreement and closeness of their opinions... This result reflects a very high level of agreement.

• Improving the Quality of Financial Services:

The following table shows the results related to the dimension of improving the quality of financial services:

Table 06: Arithmetic Means and Standard Deviations of Respondents' Opinions Regarding the Dimension of Improving the Quality of Financial Services

No. Statement	Mean	Std. Deviation	Coefficient of Variation (%)	Level of Agreement	Importance Rank
01	4.33	0.479	11.06	Very High	6
02	4.50	0.509	11.31	Very High	2
03	4.13	0.776	18.78	High	8
04	4.40	0.563	12.79	Very High	5
05	4.40	0.498	11.31	Very High	4
06	4.20	0.714	17.00	Very High	7
07	4.47	0.507	11.34	Very High	1
08	4.43	0.568	12.82	Very High	3
Dimension Total	4.35	0.343	7.89	Very High	/

Source: Prepared by the researchers based on SPSS V26 outputs.

It is evident from the table above, related to improving the quality of financial services, that all statements showed a very high level of agreement. At the top is statement No. (07), with a mean of (4.47), a standard deviation of (0.507), and very low dispersion strength (11.34%), indicating very close responses. This implies that financial technology facilitated and accelerated processes, increased their accuracy and security, improved the customer experience, and lightened the workload on employees.

The last rank is held by statement No. (03), with a mean of (4.13), a standard deviation of (0.776), and dispersion strength of (18.78%), indicating close responses with slight variation. This can be attributed to differences in

respondents’ practical experience, levels of technological engagement, departments, or the nature of their tasks, causing some to perceive greater improvement than others.

It is clear from the table that the dimension of improving the quality of financial services, according to respondents in the study sample, achieved an arithmetic mean of (4.35), a standard deviation of (0.343), and a very low dispersion strength (7.89%). This is due to strong agreement among respondents that the quality of financial services has improved, with responses closely clustered around the mean—indicating low dispersion and high consensus, reflecting a very high level of agreement.

• Increasing Profits:

The following table shows the results related to the dimension of increasing profits:

Table 07: Arithmetic Means and Standard Deviations of Respondents’ Opinions Regarding the Dimension of Increasing Profits

No. Statement	Mean	Std. Deviation	Coefficient of Variation (%)	Level of Agreement	Importance Rank
01	4.27	0.450	10.53	Very High	2
02	4.33	0.479	11.06	Very High	1
03	4.20	0.484	11.52	Very High	3
04	4.20	0.484	11.52	Very High	3
05	4.20	0.610	14.52	Very High	4
06	3.97	0.669	16.85	High	7
07	4.13	0.434	10.50	High	5
08	4.13	0.730	17.67	High	6
Dimension Total	4.17	0.312	7.47	High	/

Source: Prepared by the researchers based on SPSS V26 outputs.

It is evident from the table above, related to the dimension of increasing profits, that all statements reflected a high level of agreement. The top-ranked statement is No. (02), with a mean of (4.33), standard deviation of (0.479), and very low dispersion strength (11.06%), indicating high convergence. This suggests that financial technology helped improve efficiency, reduce operating costs, attract new customers, and provide faster, better services—ultimately increasing revenues and profits for commercial banks.

The last rank is held by statement No. (06), with a mean of (3.97), standard deviation of (0.669), and dispersion strength of (16.85%), indicating some variation in responses. This is due to varying levels of access to decision-making within banks; some employees may not be involved in or aware of strategic decisions, or may differ in evaluating their transparency and actual impact on profitability.

It is evident from Table (07) that the dimension of increasing profits, according to the study sample, achieved a mean of (4.17), a standard deviation of (0.312), and very low dispersion strength (7.47%). This reflects a clear consensus among respondents on profit increases, with closely aligned views indicating uniformity in evaluating the impact of financial technology. This result reflects a high level of agreement.

5.2. Hypotheses Testing:

This section aims to test the hypotheses upon which this study is based, through the application of statistical methods to its data. Therefore, the sub-hypotheses will be tested, and to verify their validity, simple linear regression was used, in addition to presenting the results obtained.

5.2.1. First Sub-Hypothesis Statistical Test:

The hypothesis states: "There is a statistically significant effect between the use of financial technology and the reduction of operating costs in banks." To test it, simple linear regression was used. The statistical analysis results can be summarized as follows:

Correlation Analysis (Correlation Index):

The following table shows the correlation relationship between financial technology as an independent variable and the reduction of operating costs as a dependent variable as follows:

Table 08: Correlation between financial technology and the reduction of operating costs

Variables	Correlation Coefficient (R)	Coefficient of Determination (R ²)	Adjusted R ²	Standard Error
Financial Technology	Reduction of Operating Costs	0.624	0.390	0.368

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

- The value of the correlation coefficient is (0.624), indicating a moderately strong positive correlation between financial technology and the reduction of operating costs.

- The coefficient of determination indicates that (39%) of the variation in the reduction of operating costs is due to financial technology, while the remaining (61%) is due to other variables not included in the study. The adjusted R^2 is (0.368), meaning the study model explains (36.8%) of the phenomenon.

- **F-Test (Model Significance Indicator):**

This phase tests the quality of the relationship model between financial technology as an independent variable and reduction of operating costs as a dependent variable, as shown in the following table:

Table 9: Simple linear regression model estimates for the effect of financial technology on reducing operating costs

Model	Sum of Squares	Degrees of Freedom	Mean Squares	F-Test Value	Significance Level (Sig)	Statistical Decision
Regression	1.305	1	1.305	17.870	*0.000	Hypothesis accepted
Error	2.045	28	0.073			
Total	3.350	29				

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

Interpretation: The value of (F-Test) indicates the quality of the model between financial technology and the reduction of operating costs, with $F = 17.870$ and $Sig = 0.000$, which is less than $\alpha \leq 0.05$. Thus, the model is statistically significant, and we accept the hypothesis stating that: **"There is a statistically significant effect between the use of financial technology and the reduction of operating costs in banks."**

5.2.2. Second Sub-Hypothesis Statistical Test:

The hypothesis states:

"There is a statistically significant effect between the use of financial technology and the improvement of financial service quality."

To test this, simple linear regression was used. The results of the statistical analysis can be summarized as follows:

Correlation Analysis (Correlation Index):

The following table shows the correlation relationship between financial technology as an independent variable and improving the quality of financial services as a dependent variable:

Table 12: Correlation between financial technology and the improvement of financial service quality

Variables	Correlation Coefficient (R)	Coefficient of Determination (R ²)	Adjusted R ²	Standard Error
Financial Technology	Improving Quality of Financial Services	0.245	0.060	0.026

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

Interpretation: The value of the correlation coefficient is (0.245), indicating a very weak positive correlation between financial technology and the improvement of financial service quality.

- The coefficient of determination shows that (6%) of the changes in the improvement of financial service quality are due to financial technology, while (94%) are due to other variables not included in the study. The adjusted R² is (0.026), meaning the model explains only (2.6%) of the phenomenon.

F-Test (Model Significance Indicator):

Table 13: Simple linear regression model estimates for the effect of financial technology on improving financial service quality

Model	Sum of Squares	Degrees of Freedom	Mean Squares	F-Test Value	Sig Level	Statistical Decision
Regression	0.206	1	0.206	1.787	*0.192	Hypothesis rejected
Error	3.223	28	0.115			
Total	3.429	29				

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

Interpretation: The (F-Test) value for the relationship between financial technology and improving financial service quality is (1.787), with a significance level (Sig = 0.192), which is greater than ($\alpha \leq 0.05$). Hence, the model is not statistically significant, and the hypothesis stating: **"There is a statistically significant effect between the use of financial technology and the improvement of financial service quality"** is rejected.

5.2.3. Third Sub-Hypothesis Statistical Test:

The hypothesis states:

"There is a statistically significant effect between the use of financial technology and increased profits in commercial banks."

To test this, simple linear regression was used. The results of the

statistical analysis can be summarized as follows:

Correlation Analysis (Correlation Index):

Table 14: Correlation between financial technology and increased profits

Variables	Correlation Coefficient (R)	Coefficient of Determination (R ²)	Adjusted R ²	Standard Error
Financial Technology	Increase in Profit	0.438	0.192	0.163

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

Interpretation: The value of the correlation coefficient is (0.438), indicating a weak positive correlation between financial technology and increased profits.

- The coefficient of determination indicates that (19.2%) of the variation in profit increase is due to financial technology, while (80.8%) is due to other variables not included in the study. The adjusted R² is (0.163), indicating the model explains (16.3%) of the phenomenon.

F-Test (Model Significance Indicator):

Table 15: Simple linear regression model estimates for the effect of financial technology on increased profits

Model	Sum of Squares	Degrees of Freedom	Mean Squares	F-Test Value	Sig Level	Statistical Decision
Regression	0.544	1	0.544	6.652	*0.015	Hypothesis accepted
Error	2.290	28	0.082			
Total	2.834	29				

Source: Prepared by the researchers based on SPSS V26 output.

* Statistically significant at significance level $\alpha \leq 0.05$

Interpretation: The (F-Test) value is (6.652) and significance level is (Sig = 0.015), which is less than $\alpha \leq 0.05$. Hence, the model is statistically significant, and we accept the hypothesis stating:

"There is a statistically significant effect between the use of financial technology and increased profits."

6. Conclusion:

Through our study of the topic of financial technology and its role in improving financial performance, this study revolved around the role that financial technology plays in adopting innovative financial tools and services,

which have become two essential elements in improving financial performance in various types of commercial banks. Digital solutions have contributed to speeding up processes, reducing costs, increasing profitability, and enhancing data accuracy, enabling banks to make more efficient financial decisions and respond more quickly to market changes. These technologies also provided broader capabilities in the field of effective risk management.

The study also highlights the level of interest in this type of research by identifying the importance of financial technology as well as the requirements for improving banking performance. The research required addressing this issue through three chapters using the methodology and tools mentioned in the introduction.

This study resulted in a set of findings obtained from both theoretical and practical studies. Below is a summary of these results:

- **Study Results:**

- The results proved a significant impact of financial technology in reducing banks' operating costs.
- The results did not show a statistically significant relationship between financial technology and the quality of banking services.
- The results showed that the use of financial technology positively contributes to increasing the profits of commercial banks.

7. Bibliography List:

- Ali Afif Tajour .(2022) .Cloud Computing in the Service of University Education. *1* .
- Ben Nacer A ,Mesdaâ R .(2022) .The Role of Financial Technology in Enhancing Financial Inclusion and Its Impact on the Banking Sector .*Al-Mudabber Journal.3* ,
- Boufelfel , S., Selaïamia, D., & Benyoub, F. (2025). The Importance of Adopting Blockchain Technology in the Financial and Banking Sector: Saudi Arabia as a Model. *Journal of Studies in Economics and Management*, pp.612-630. <https://asjp.cerist.dz/en/article/267568>
- Harfoush S .(2019) .Financial Technology: A Promising Industry in the Arab World .*Afaq Al-Ilmiya Journal* 728–729 ,3 p.
- Kumar S ,Tiwari P , Zymbler M .(2019) .Internet of Things is a revolutionary approach for future technology enhancement .*A review. Journal of Big Data.1* ,

- Belkaïda, M., & Remidi, A. (2021). *Collective Book: Financial Technology – Innovations and Digital Solutions*. Médéa, Algeria: Laboratory of Sustainable Local Development.
- Talba, M., & Bouhanik, H. (2022). Financial Technology and the Reality of Its Adoption in the Arab World During the Period 2015–2020. *Journal of Studies in Economics and Business Administration*, 1(5).
- Magdy N .(2020) .*Artificial Intelligence and Machine Learning* (v3) .Abu Dhabi, United Arab Emirates: Arab Handbooks Series, Arab Monetary Fund.
- Mell P ,Grance T .(2011) .*The NIST Definition of Cloud Computing. Recommendations of the National Institute of Standards and Technology Report*, p. 2 .
- Nees S .(2022) .Financial Technology as an Opportunity to Develop Financial Services .*Journal of Advanced Economic Research* ,2 ,pp.232–231
- Oracle .(2023) .*What is IoT?* Retrieved from <https://www.oracle.com/internet-of-things/what-is-iot/>
- Pignel M .(2019) .*Blockchain Technology: An Opportunity for the Social Economy? Pour la Solidarité – European Think & Do Tank, Economic Social*, p. 4 .
https://www.pourlasolidarite.eu/sites/default/files/publications/files/na-2019-technologie%20blockchain_0.pdf
- Rabeh Beriche .(2023) .*The Role of Financial Technology in the Development of the Islamic Financial Industry (Published Doctoral Dissertation)*. Faculty of Economic . ,Chlef – Algeria: Commercial and Management Sciences, Hassiba Ben Bouali University, Chlef – Algeria.
- Reem Zoubaari .(2025) .The Impact of Financial Technology Services on Bank Profitability: An Applied Study on Algerian Banks Listed on the Damascus Securities Exchange .*Journal of the National Private University*.1 ,
- Russell S. J , ,Norvig P .(2010) .*Artificial Intelligence: A Modern Approach* (v3) .Prentice Hall Series in Artificial Intelligence.
- Salazar J ,Silvestre S .(2017) .*Internet of Things. Czech Technical University of Prague, Faculty of Electrical Engineering, 1st Edition. TechPedia* .European Virtual Learning Platform for Electrical and Information Engineering.
- Sara Tucci ,Sylvie Rivière , ,Aurélien Boudault .(2019) .*Blockchain, CEA Challenges* No. 239, in collaboration with CEA-List .
<https://www.cea.fr/multimedia/Documents/infographies/blockchain.pdf>

- Tierno P .(2023) .*Cryptocurrency: Selected Policy Issues*. Congressional Research Service, CRS Report, R47425 Version 1 New, p. 4 .everycrsreport: https://www.everycrsreport.com/files/2023-02%2015_R47425_0542f34c13ff1d2a1b0619520a5a24c301d41bfa.pdf
- Wampé P .(2021) .*Machine Learning and Deep Learning: From Basics to Advanced Algorithm Design, with Examples in Python and JavaScript* .ENI Editions.