How to Cite:
Oueznadji, A., Kellil, D., & Kabouche, M. (2024). The role of financial technology in supporting the success of financial inclusion requirements. *International Journal of Economic Perspectives*, *18*(8), 1199–1218. Retrieved from https://ijeponline.org/index.php/journal/article/view/624

The role of financial technology in supporting the success of financial inclusion requirements

Abdelghani Oueznadji
Laboratory for the improvement of economic institutions in the state of Ghardaia, University of Ghardaia, Algeria
Email: oueznadji.abdelghani@univ-ghardaia.dz

Daoud Kellil
University of Khenchela, Algeria
Email: kellil.daoud@univ-khenchela.dz

Mohamed Kabouche
University of Khenchela, Algeria
Email: mohamed-kabouche@univ-khenchela.dz

***Abstract*---**This study aimed to explore the role of financial technology in achieving the financial inclusion. To reach this objective, a set of commercial banks was highlighted by studying the most important indicators of financial inclusion in these financial institutions. The study concluded that financial technology has an effective role in enhancing the effectiveness of financial inclusion by providing digital services that facilitate and save the financial transaction. Although the efforts spent in these commercial banks, they are still far from the global levels of the financial inclusion field due to the obstacles they face. Therefore, they seek to overcome them by keeping up with current developments in the field of digital financial services and enhancing the requirements for financial inclusion application.

***Keywords*---**Financial technology, financial inclusion, digitalization.

1-Introduction

Applying the financial inclusion requirements requires a set of fundamental elements, including commitment and political coordination between stakeholders from both the public and private sectors. These individuals must be able to create

Corresponding author: *Oueznadji, A., Email: oueznadji.abdelghani@univ-ghardaia.dz*
Submitted: 08 May 2024, Revised: 18 August 2024, Accepted: 13 September 2024

a conducive environment and develop inclusive policies that promote financial inclusion such as technological capacity, innovation, delivery mechanisms, as well as the provision of high-quality data to support the formulation of financial policies. Furthermore, it is essential to have financial systems that are able to efficiently deliver digital financial services.

Digital financial technology has expanded access to financial services for hard-to-reach individuals and small businesses at a low cost and with ease. The importance of developing digital financial services is highlighted by the opportunities it provides to address the challenges that face the financial institutions, banks, and traditional service delivery methods. The greatest credit for improving global financial inclusion is owed to the development of digital solutions and the expansion of remote payment systems via the internet. Moreover, governments have implemented mechanisms for paying salaries, pensions, and social security entitlements through bank transfers.

Statement of the Problem

Based on what has been presented, we propose the following question:
To what extent does financial technology contribute to supporting and enhancing the success of financial inclusion requirements?

Significance of the Study

This study is important in the way that both financial technology and inclusion have attracted the attention of governments and financial and political decision-makers in most worldwide countries, especially after the 2008 global financial crisis, followed by the global health crisis of the COVID-19 pandemic in 2020. The use of financial technology tools to provide different financial services has increased. Thus, it contributes to achieving financial inclusion for all society.

Aims of the Study

1- To examine the concept of financial inclusion, its importance, goals, and dimensions.
2- To state the main principles and pillars for enhancing financial inclusion.
3- To understand the importance of financial technology and its tools.
4- To explore the role of financial technology in promoting financial inclusion in the commercial banks under study.

Research Method

To achieve the objectives of the study and test its hypothesis, the study relied on the descriptive-analytical method as it fits the nature of the topic. This method aims to clarify the role of financial technology in enhancing financial inclusion by drawing on theoretical and applied literature, in addition to relevant data and reports. Tables and illustrative figures were also used to present information in a way that facilitates its analysis and interpretation in order to reach results that achieve the study's objectives.

2- The Conceptual Framework for Financial Technology and Financial Inclusion

2-1 What is Financial Technology?

The notion financial technology is often referred to by the abbreviation “FinTech”, which combines the terms finance with technology. It is a new field for financial management in the banking and financial sectors that uses communication and information technology.

2.1.1 Definition and Characteristics of Financial Technology

A- Definition of Financial Technology

Financial technology (Fin Tech) is made up of two words:”Technology” and “Finance”. In its broad sense, it refers to the application of technology in the financial services industry. It covers a wide range of financial services, such as loans, investments, payments, risk managements, data linking, insurance, and wealth management (Zarkata & Dhamen, 2023).

The Basel Committee on Banking Supervision also defines it as “any financial technology or innovation leads to a new business model, process, or product that impacts financial markets and institutions.” (Hafrouch, 2019). Therefore, financial technology can be defined as: any innovation that depends on technology to develop the financial sector. It aims to improve the quality of financial services, facilitate access to them, and reduce their costs compared to traditional transactions.

2.1.2 Characteristics of Financial Technology

The most important characteristics of financial technology can be summarized as follows: (Saber, 2020)

1- Financial technology is a group of knowledge in the financial field, including financial and banking methods, techniques, and approaches.
2- The banking sector is the main field for Fin Tech application through banking services.
3- Financial technology is the most important too used by financial institutions to achieve their goals.
4- It is characterized by flexibility and cost-efficiency, as start-ups in the field of financial technology provide customers with a wide range of offers and multiple payment options for the services presented.
5- FinTech services are fast, as Fin Tech companies which complete transactions in few minutes benefit from algorithms.
6- Financial technology provides innovative cross-border payment mechanisms. The latter are distinguished by efficiency, transparency, and high-profitability compared to traditional banking mechanisms or money transfer companies, which rely on correspondent banking relationships. This helps reduce the challenges imposed by the severance of relations between countries.

2.1.3. The Key Motives for the Shift towards Financial Technology

Some of the most important events and circumstances that have driven the shift towards financial technology are: (Berich, 2023)

- **The 2008 Financial Crisis:** The financial crisis led to a loss of trust in financial institutions when people lost their savings and properties. This prompted a search for safer alternatives that excluded intermediaries and reduced costs. Thus, it raised peer-to-peer lending, crowd funding, investment platforms, and robot-advisors.
- **The Fourth Industrial Revolution:** In today's era, it is hard to imagine the world without the internet or mobile devices. These elements have become essential to our lifestyles and have caused high disruption in almost every field of work. The digital revolution transforms the way customers access financial products and services and leads to the emergence of a new industry called "fin tech", which has spread globally.
- **Diversification and the Elimination of Financial Intermediaries:** The rise of fin tech companies has created a larger, more competitive, and diverse credit market, potentially more stable. Fin tech innovation expands participation in credit markets without over-lending.
- **Regulation as a Source of Disruption:** Current banking regulation is partially responsible for the rise of technology. For example, new liquidity regulations in banks have made deposits (savings) no longer a primary source of funding. There is now a "penalty" for excessive reliance on such sources, which are considered less stable to protect the financial system.
- **Funding Availability:** Access to funding has become easy and available to all stakeholders and individuals.
- **Customer Expectations Shift:** Customer trends and demands have shifted with an increased willingness to use fin tech products and services.
- **Regulatory Support:** Governments and regulatory authorities support technological innovations in the financial sector and recognize modern products and fin tech companies (Berich, 2023).

2.2 The Nature of Financial Inclusion

Financial inclusion occupies the priority of countries' financial policies and global economic and social bodies. It is defined in terms of its importance and the role of financial technology in achieving it.

2.2.1 Definition of Financial Inclusion

There are many definitions to the concept of financial inclusion which issued by several specialized bodies. The most notable ones are as follows:

- ✓ The G20 and the Alliance for Financial Inclusion (AFI) defined it as "the access of all society to financial services and products that suit their needs. These services are given in a fair, transparent manner and at reasonable costs" (Boulmerdj, 2023).
- ✓ According to the World Bank, financial inclusion is a concept aimed at generalizing financial products and services at affordable costs to the largest number of individuals and institutions, especially marginalized people or those with limited income. This is achieved through official channels and the innovation of suitable financial services at competitive

and fair costs in order to avoid exploiting these groups through unofficial channels that impose high, unregulated, and unsupervised costs (Zarkata & Dhamen, 2023).

2.2.2 The Importance and Objectives of Financial Inclusion

The main importance of financial inclusion lies in the following (Galmam & Meziane, 2023):
Financial inclusion presents economic benefits, such as savings accounts with secure and affordable financial service providers which enable householders to cover unexpected expenses when necessary. The importance of financial inclusion is also appeared in: (Galmam & Meziane, 2023):

- ✓ It drives institutions to diversify their products and improve their quality, which contributes to attract customers.
- ✓ Financial inclusion enhances financial stability by improving the living standards of deprived and poor people. This allows them to access and benefit from financial services at appropriate costs.
- ✓ It also improves the financial mediation processes between deposits and investment. Thus, it strengthens the role of the formal sector in the economy at the expense of the parallel economy.
- ✓ Financial inclusion helps achieve sustainable development goals by generalizing financial services, improving living standards, empowering marginalized groups and women, reducing poverty, and achieving equality. It also creates job through supporting small and medium-sized enterprises which reduces the informal economy and increasingly strengthens the formal sector.

2.2.3 Dimensions and Indicators of Financial Inclusion (Saber, 2020)

Access to financial services: This means that the client has the physical capacity to reach financial service points, such as branches, agencies, ATMs, and other outlets. This allows him/her to easily use different financial products and services. Moreover, the increased use of remote channels, such as mobile phones and computers, is associated with expanding the use of financial products.

Use of financial services: This refers to the extent to which clients use the financial services provided by the banking sector. To determine this use, it requires collecting data on the regularity and frequency of usage over a specific period. According to the client's perspective, the ability to access services is crucial for financial inclusion.

Quality of financial services: It is an indicator that reflects the importance of financial services to customers. It includes their attitudes towards the provided financial services. It is also considered the essential elements of consumer financial protection, such as disclosure of terms and conditions, fair treatment of consumers, and transparency.

Quality indicators: These are difficult to estimate as most are related to qualitative aspects, yet they represent important elements to measure financial inclusion. The most important quality indicators are: financial education and

awareness, financial behaviour, disclosure and transparency, dispute resolution mechanisms, credit barriers, and usage costs (Saber, 2020).

3. The Contribution of Financial Technology to Achieving Financial Inclusion Requirements

3.1 Financial Technology and Its Support for Payment Sector

The payment sector is the first area where financial technology was used in Algeria. After that, fin tech applications expanded into other fields (Berich, 2023).

Online Payment Activity: Algeria's efforts to promote the use of financial technology continue to create a suitable environment for financial inclusion. Payment cards are provided to all citizens requesting such services. Now, 510 web merchants are integrated into the bank electronic payment system. Since the launch of these services, approximately 84214341 transactions have been carried out across the following services as presented in the table below:

Year	Phone	Transport	Insurance	Billing Source	Administrative Services	Sale of Goods	Sports & Entertainment	Total Number	Total Amount (DZD)
2016	6536	388	51	391	0	0	0	7366	15009842,02
2017	87286	5677	2467	12414	0	0	0	107844	267993423,40
2018	138495	871	6439	29722	1455	0	0	176982	332592583,28
2019	141552	6292	8342	38806	2432	0	0	202480	503870361,61
2020	4210284	11350	4845	85676	68395	235	0	4593960	5423727074,80
2021	6993135	72164	8372	120841	155640	13468	0	7821346	11176475535,68
2022	7490626	195490	23571	320273	153957	24169	152925	9048125	18151104423,96
2023	8400869	371317	36996	640485	4086695	51154	708212	15351354	32196672024,03
First three months of 2024	813293	47466	8472	63462	1252	6365	61278	1069088	3007423813,89
	649587	45421	1690	84186	1164	5702	33802	911440	2731025550,91
	880653	54943	1758	139695	1749	6677	90232	1275788	3608383466,57
	814731	57677	10306	72326	2023	8553	122425	1178069	3666012667,57
	803057	60974	2275	143622	4123	8443	2703	1121859	3718620152,02

Source: Official website of SATIM

Based on the statistics released by the Automatic Cash and Interbank Relations Company in Algeria, there is a broad response to the use of available technologies in the field of online payment. It reaches a growing volume of financial transactions that contribute to financial inclusion; especially after the inclusion of Algeria Post in the Automatic Cash Group and achieving the exchange of transactions between the Golden Card and bank cards, which has been effective since January 5th, 2020. This is reflected in the increase in online services as presented in the table.

3.2 Financial Technology and Its Challenges in Facing Financial Fraud

Technology has proven to be a double-edged sword in the banking sector. As banking institutions evolve digitally to deliver financial services to all seekers,

fraudsters develop intrusion systems and become more creative in cyber attacks. Using the latest techniques and exploiting gaps in internal control procedures, preventing fraud becomes more complex. Many national and international efforts are in place to provide protection systems that enhance digital transactions aimed at financial inclusion (Mouldi, 2023).

Use of Cloud Storage: This precautionary measure is one of the solutions used by banks to enhance banking transactions by providing more secure storage and protection for customer accounts. This type of storage is impossible to hack due to its complex encryption.

Use of Neural Networks: Artificial neural networks mimic the organized processes of the human brain and improve performance through continuous learning. This is done by providing training data and updating connections to reduce errors. With an increasing number of layers, these networks become suitable for deep learning and make them an integral part of artificial intelligence (Chetioui, 2023).

Use of Fuzzy Logic: Fuzzy logic mimics human thinking and decision-making by dealing with partial facts and real degrees. It is a valuable tool for accountants in dealing with uncertainty and making informed decisions, enhancing their ability to work effectively in an environment full of changes and undefined factors.

Use of Hybrid Systems: Hybrid systems integrate different artificial intelligence techniques, including smart models and algorithms, with human accountants' expertise in mixed accounting systems. This combination of technology and human input aims to improve efficiency and accuracy, and foster collaboration within financial institutions. Despite this technological advancement, human accountants must possess the necessary skills and expertise to analyze, interpret, and strategically guide the goals of financial institutions.

4-Field Study for a Sample of Commercial Banks in Algeria

Algeria seeks to keep up with the financial modernity through the development of its digital financial transactions. One of the solutions is the Automated Teller Machine and Interbank Relations Company (SATIM) which was founded in Algeria in 1995. SATIM plays a crucial role in modernizing banking services, particularly in payment methods using bank cards. It includes 17 banks in its interbank automated teller machine network, 7 of which are public banks, 9 are private banks, in addition, to Algeria Post. SATIM's functions include setting up and managing the technical and regulatory infrastructure for digital cash services and supporting banks in the development of automated cash services.

4-1Research Methodology and Study Tool

- **Field Research Methodology:** To answer the research question, we conducted a field study on some commercial banks in Algeria. We designed a questionnaire based on some references and consultations with specialists to be distributed to

the study sample. The sample of employees was randomly selected from the banks under study. The results are displayed in the following table:

Table 1: The Distributed and Retrieved Questionnaires

The Targeted Bank	Distributed Questionnaires	Retrieved Questionnaires	Percentage
National Bank of Algeria	07	03	42%
External Bank of Algeria	08	05	62%
Agricultural and Rural Development Bank	10	09	90%
Société Générale Algeria	10	7	70%
Al Baraka Bank Algeria	10	08	80%
Total	45	33	73%

Source: Prepared by the researcher

The Study Tool: Data collection relied on a questionnaire designed based on the specificity of the topic. It included three main sections. The first section contained five questions about the personal information of the research sample (gender, educational level, academic major, job position, type of bank). The second section contained 15 statements related to financial technology, while the third section consisted of 12 statements on financial inclusion. A five-point Likert scale was used to prepare the response options for the statements where each choice is assigned a specific category as follows:

Table 2: Categories of Tests According to the Five-Point Likert Scale

Test	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Category	1	2	3	4	5

Source: Prepared by the researcher

3-The Role of Financial Technology in Achieving Financial Inclusion in the Commercial Banks under Study

Table 3: Reliability and Criterion Validity Test for Study Variables

Statement	Number of Items	Reliability Coefficient	Validity Coefficient (Criterion Validity)
Reliability of Independent Variable (Financial Technology)	15	0.685	0.827
Reliability of Dependent Variable (Financial Inclusion	12	0.746	0.863
Overall Reliability	27	0.881	0.938

Source: Prepared by the students based on Spss V25 output

From the table above, we observe that:
-Regarding the reliability of the independent variables: The Cronbach's alpha coefficient is 0.685, which is greater than the standard value of 0.6. The criterion validity coefficient, calculated by the square root of the Cronbach's alpha, is 0.827. Both of them indicate the reliability of the independent variable data;

-Regarding the reliability of the dependent variable: The Cronbach's alpha coefficient is 0.746, which is greater than the standard value of 0.6. The criterion validity coefficient, calculated by the square root of the Cronbach's alpha, is 0.863. Both of them indicate the reliability of the dependent variable data;

-Regarding the overall reliability of the questionnaire data: The Cronbach's alpha coefficient is 0.881, which is greater than the standard value of 0.6. The criterion validity coefficient, calculated by the square root of the Cronbach's alpha, is 0.938. Thus, we can say that the questionnaire is reliable. If we redistributed the same form to the same sample or a similar sample from the same population, we would obtain the same consistent responses.

-Hence, the questionnaire, as illustrated in the appendix, is ready for distribution. This gives us confidence in its accuracy for analyzing results, answering the questions, testing hypotheses, and ultimately achieving the research objectives.

Normal Distribution Test for Field Data

Table 4: Normal Distribution Test for Study Variables

Axis	Significance Level	Degrees of Freedom	Statistical Value
Axis 2	0.137	33	0.135
Axis 3	0.146	33	0.133

Source: Prepared by the students based on Spss $_{V25}$ output

-The significance level for Axis 2 is 0.137, which is greater than 0.05. It indicates that the data follows a normal distribution.
- The significance level for Axis 3 is 0.146, which is greater than 0.05. It indicates that the data follows a normal distribution.

3.1The Descriptive Study of the First Axis
It presents the study sample according to personal characteristics and attributes as follows:

- **Gender**

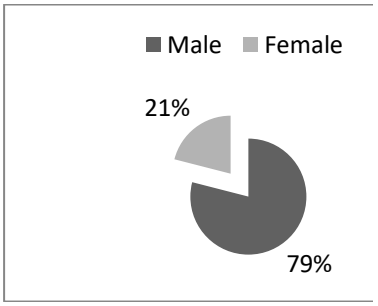

Table 1: Distribution of Sample by Gender

Statement	Percentage	Frequency%
Male	26	**78.8**
Female	07	**21.1**
Total	**33**	**100**

Source: Prepared by the students based on Spss $_{V25}$ output

It is clear from the table above that the number of males is 26, representing 60% of the respondents, while the number of females is 7, representing 30% of the participants.

- **Age**

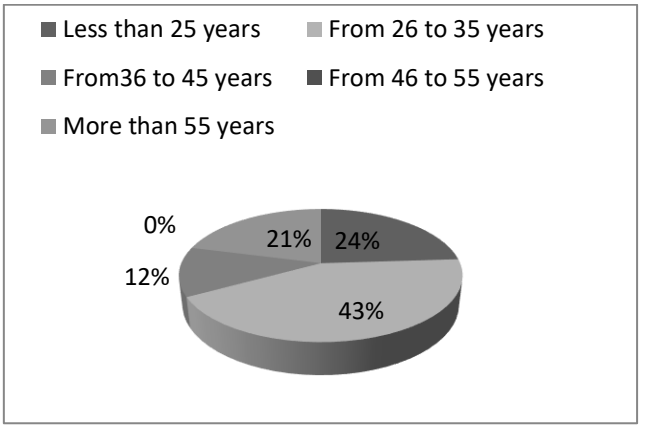

Table 2: Distribution of Sample by Age

Statement	**Percentage**	**Frequency%**
Less than 25 years	08	**24.2**
From 26 to 35 years	14	**42.4**
From36 to 45 years	04	**12.1**
From 46 to 55 years	-	**-**
More than 55 years	07	**21.2**
Total	**33**	**100**

Source: Prepared by the students based on Spss $_{V25}$ output

It is clear from the table above that the percentage of respondents aged between 26 to 35 years is the highest at 42.4%, followed by those under 25 years at 24.2%, more than 55 years at 21.2%, and those aged between 36 to 45 years at 12.1%

- **Job Position**

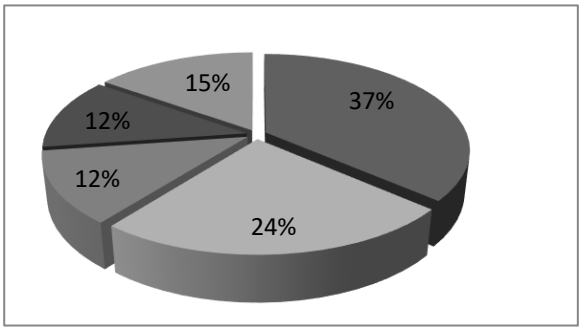

Table 3: Distribution of Sample by Job Position

Statement	Percentage	Frequency
Head of Department	12	**36.4**
Employees	18	**54.5**
Director/Deputy	03	**9.1**
Total	**33**	**100**

Source: Prepared by the students based on Spss V25 output

It is clear from the table above that the employees represents the highest portion of the respondents at 54.5%, followed by heads of departments at 36.4%, and directors or deputies at 9.1%.

- **Educational Level**

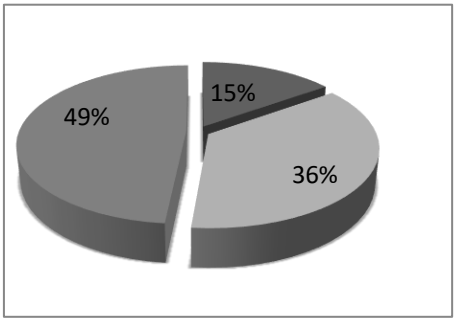

Table 4: Distribution of Sample by Educational Level

Statement	Percentage	Frequency
Bachelor	05	**15.2**
Master	12	**36.4**
Postgraduate	16	**48.5**
Total	**33**	**100**

Source: Prepared by the students based on Spss V25 output

It is clear from the table above that the percentage of respondents with postgraduate degrees is the highest at 48.5%, followed by those with a master's degree at 36.4%, finally those with a bachelor's degree or less at 15.2%.

3.2 Study of the General Trend of the Sample's Responses
First Axis: (Financial Technology)

3.2.1 Digital Payments

Table 8: Distribution of Sample Trends by Digital Payments Statements

Statements	Mean	Standard Deviation	Response Level	Ranking
1.Transfering value from one payment account to another using a digital device like a mobile phone or point of sale or computer	4.21	0.960	Very high	01
2. Using payment cards including credit, debit, and prepaid cards.	4.21	1.023	Very high	01
3. Start-up companies providing bill payment services.	4.12	1.166	High	02
4. Online and mobile payment solutions, as well as electronic wallets.	3.97	1.132	High	03
First Dimension: Digital Payments	**Mean**	**Standard Deviation**	**Response Level**	
	4.12	0.637	High	

Source: Prepared by the students based on Spss V25 output

From table (8), which represents the analysis of the sample's trends towards digital payments, we observe that:
-In the first rank, with a mean score of 4.21, are both statements (1) and (2). Statement (1) has a standard deviation of 0.960 which shows a very high response level, while statement (2) has a standard deviation of 1.023, which also indicates a high response level. After that, statement (3) ranks second with a mean score of 4.12 and a standard deviation of 1.116, which demonstrates the response level is high. Finally, statement (4) ranks third with a mean score of 3.97 and a standard deviation of 1.132 which reveals a high level of response too;
-This signifies that the response level is high in terms of the first dimension or the digital payments with an average mean score of 4.12 and a standard deviation of 0.637.

3.2.2 Digital Insurance

Table 9: Distribution of Sample Trends by Statements of Digital Insurance Dimension

Statements	Mean	Standard Deviation	Response Level	Ranking
1. Transforming all insurance services provided by insurance companies to all customers into digital servics.	4.09	1.042	High	01
2. Automating operations to enhance efficiency and speed.	3.85	1.202	High	03
3. Using software and user interfaces to address deficiencies in the insurance value chain.	3.94	1.059	High	02
4. Developing interaction between insurance companies and their customers.	3.55	1.227	High	04
Second Dimension: Digital Insurance	**Mean**	**Standard Deviation**	**Response Level**	
	3.85	0.497	High	

Source: Prepared by the students based on Spss V25 output

From table (9), which represents the analysis of the sample's trends towards digital insurance dimension, we observe that:
-In the first rank, with a mean score of 4.09, is statement (1) which has a standard deviation of 1.042. This shows a high response level. In the second rank is statement (3), with a mean score of 3.94 and a standard deviation of 1.059. It also indicates a high response level. After that, statement (2) ranks third with a mean score of 3.85 and a standard deviation of 1.202, which demonstrates the response level is high. Finally, statement (4) ranks fourth with a mean score of 3.55 and a standard deviation of 1.227 which reveals a high level of response too;
-This signifies that the response level is high in terms of the second dimension or the digital insurance with an average mean score of 3.85 and a standard deviation of 0.497.

3.2.3 Digital Finance

Table 10: Distribution of Sample Trends by Statements of Digital Finance Dimension

Statements		Mean	Standard Deviation	Response Level	Ranking
1. Making every citizen able to access financial services through modern technology.		3.61	1.391	High	03
2. Providing great opportunities to increase financial inclusion.		3.67	1.362	High	02
3. Expanding in the basic services with the spread use of mobile phones.		3.97	1.075	High	01
4. Impact of new technologies on the financial services industry.		3.21	1.409	High	04
Third Dimension: Digital Finance	**Mean**	**Standard Deviation**		**Response Level**	
	3.61	0.788		High	

Source: Prepared by the students based on Spss $_{V25}$ output

From table (10), which represents the analysis of the sample's trends towards digital finance dimension, we observe that:
-In the first rank, with a mean score of 3.97, is statement (3) which has a standard deviation of 1.075. This shows a high response level. In the second rank is statement (2), with a mean score of 3.67 and a standard deviation of 1.362. It also indicates a high response level. After that, statement (1) ranks third with a mean score of 3.61 and a standard deviation of 1.391, which demonstrates the response level is high. Finally, statement (4) ranks fourth with a mean score of 3.21 and a standard deviation of 1.409 which reveals a high level of response too;
-This signifies that the response level is high regarding the statements of the third dimension or the digital finance with an average mean score of 3.61 and a standard deviation of 0.788.

3.2.4 Organizational Technology

Table 11: Distribution of Sample Trends by Statements of Organizational Technology Dimension

Statements	Mean	Standard Deviation	Response Level	Ranking
1. Organizational monitoring and reporting	3.88	1.193	High	02
2. More efficient and effective compliance.	4.15	0.939	High	01

3. Using new technologies to solve regulatory burdens.		3.82	1.211	High	03
Fourth Dimension: Organizational Technology	**Mean**	**Standard Deviation**		**Response Level**	
	3.94	0.651		High	
First Axis: Financial Technology	**3.88**	**0.382**		High	

Source: Prepared by the students based on Spss V25 output

From table (11), which represents the analysis of the sample's trends towards Organizational Technology dimension, we observe that:
-In the first rank, with a mean score of 4.15, is statement (2) which has a standard deviation of 0.939. This shows a high response level. In the second rank is statement (1), with a mean score of 3.88 and a standard deviation of 1.193. It also indicates a high response level. Finally, statement (3) ranks third with a mean score of 3.82 and a standard deviation of 1.211, which demonstrates the response level is high.
-This signifies that the response level is high regarding the statements of the fourth dimension or the organizational technology with an average mean score of 3.94 and a standard deviation of 0.651.
The dimensions of the first axis are ranked as follows:

- ✓ In the first rank is the first dimension, digital payments, with a mean score of 4.12 and a standard deviation of 0.637.
- ✓ In the second rank is the fourth dimension, organizational technology, with a mean score of 3.94 and a standard deviation of 0.651.
- ✓ In the third rank is the second dimension, digital insurance, with a mean score of 3.85 and a standard deviation of 0.497.
- ✓ Finally, in the fourth rank is the third dimension, digital finance, with a mean score of 3.61 and a standard deviation of 0.788.

-This signifies that the response level is high regarding the statements of the first axis or the financial technology with an average mean score of 3.88 and a standard deviation of 0.382.

Axis 2: Financial Inclusion

Table 12: Distribution of Sample Trends by Statements of Financial Inclusion

Axis 2	Mean	Standard Deviation	Response Level
	3.74	0.525	High

Source: Prepared by the students based on Spss V25 output

From table (12), which represents the analysis of the sample's trends towards the axis of financial inclusion, we observe that:
- The response level is high regarding the statements of the second axis or the financial inclusion with an average mean score of 3.74 and a standard deviation of 0.525.

3.1 Hypotheses Testing

Main Hypothesis One:
H0: Financial technology does not affect financial inclusion.
H1: Financial technology affects financial inclusion.

Table 11: Main Hypothesis Testing

Hypothesis	R	R d	B	T	sig	F	Sig
Financial technology affects financial inclusion	0.470	0.221	0.645	2.963	0.006	8.779	0.006

Source: Prepared by the students based on Spss V25 output

From the table, we observe that the R-value (R = 0.470) which represents the relationship between financial technology and financial inclusion, was positive. This indicates a strong correlation. The coefficient of determination R^2 = 0.221 refers to the percentage of change in the dependent variable (financial inclusion) and results from the change in the independent variable (financial technology). When testing the null hypothesis (H0: Financial technology does not affect financial inclusion) against the alternative one (H1: Financial technology affects financial inclusion), we found that the calculated t-value (t = 2.963) is greater than its tabulated value at a significance level of 0.05. We also obtained that the observed significance level (sig = 0.006) is less than the adopted one. This means that financial technology has a significant effect on financial inclusion.

Using the Analysis of Variance (ANOVA) test to compare the calculated F-value with the tabulated one, we found that the calculated F-value is greater than the tabulated one, with an observed significance level of 0.006, which is less than 0.05. Hence, we reject the null hypothesis and accept the alternative one.

Sub-hypothesis 1: Digital Payments

Hypothesis	R	R d	B	T	sig	F	Sig
Digital payments affects financial inclusion	0.188	0.035	0.188	1.064	0.296	1.132	.0296

From the table, we observe that the R-value (R = 0.188) which represents the relationship between digital payments and financial inclusion, was positive. This indicates a strong correlation. The coefficient of determination R^2 = 0.035 refers to the percentage of change in the dependent variable (financial inclusion) and results from the change in the independent variable (digital payments). When testing the null hypothesis (H0: Digital payments do not affect financial inclusion) against the alternative one (H1: Digital payments affect financial inclusion), we found that the calculated t-value (t = 1.0643) is greater than its tabulated value at a significance level of 0.05. We also obtained that the observed significance level

(sig = 0.296) is greater than the adopted one. This means that digital payments have no significant effect on financial inclusion.

Using the Analysis of Variance (ANOVA) test to compare the calculated F-value with the tabulated one, we found that the calculated F-value is greater than the tabulated one, with an observed significance level of 0.296, which is greater than 0.05. Hence, we reject the alternative hypothesis and accept the null one.

Sub-hypothesis 2: Digital Insurance

Hypothesis	R	R d	B	T	sig	F	Sig
Digital insurance affects financial inclusion	0.184	0.034	0.206	1.040	0.306	1.081	.0306

From the table, we observe that the R-value (R = 0.184) which represents the relationship between digital insurance and financial inclusion, was positive. This indicates a strong correlation. The coefficient of determination R^2 = 0.034 refers to the percentage of change in the dependent variable (financial inclusion) and results from the change in the independent variable (digital insurance). When testing the null hypothesis (H0: Digital insurance does not affect financial inclusion) against the alternative one (H1: Digital insurance affects financial inclusion), we found that the calculated t-value (t = 1.040) is greater than its tabulated value at a significance level of 0.05. We also obtained that the observed significance level (sig = 0.306) is greater than the adopted one. This means that digital insurance has no significant effect on financial inclusion.

Using the Analysis of Variance (ANOVA) test to compare the calculated F-value with the tabulated one, we found that the calculated F-value is greater than the tabulated one, with an observed significance level of 0.306, which is greater than 0.05. Hence, we reject the alternative hypothesis and accept the null one.

Sub-hypothesis 3: Digital Finance

Hypothesis	R	R d	B	T	sig	F	Sig
Digital Finance affects financial inclusion	0.425	0.181	0.425	2.616	0.014	6.841	.0014

From the table, we observe that the R-value (R = 0.425) which represents the relationship between digital finance and financial inclusion, was positive. This indicates a strong correlation. The coefficient of determination R^2 = 0.181 refers to the percentage of change in the dependent variable (financial inclusion) and results from the change in the independent variable (digital finance). When testing the null hypothesis (H0: Digital finance does not affect financial inclusion) against the alternative one (H1: Digital finance affects financial inclusion), we found that the calculated t-value (t = 2.616) is greater than its tabulated value at a significance level of 0.05. We also obtained that the observed significance level (sig

= 0.014) is less than the adopted one. This means that digital finance has significant effect on financial inclusion.

Using the Analysis of Variance (ANOVA) test to compare the calculated F-value with the tabulated one, we found that the calculated F-value is greater than the tabulated one, with an observed significance level of 0.014, which is less than 0.05. Hence, we reject the null hypothesis and accept the alternative one.

Sub-hypothesis 4: Organizational Technology

Hypothesis	R	R d	B	T	sig	F	Sig
Organizational technology affects financial inclusion	0.273	0.074	0.273	1.579	0.124	2.494	0.124

From the table, we observe that the R-value (R = 0.273) which represents the relationship between organizational technology and financial inclusion, was positive. This indicates a strong correlation. The coefficient of determination R^2 = 0.074 refers to the percentage of change in the dependent variable (financial inclusion) and results from the change in the independent variable (organizational technology). When testing the null hypothesis (H0: Organizational technology does not affect financial inclusion) against the alternative one (H1: Organizational technology affects financial inclusion), we found that the calculated t-value (t = 1.579) is greater than its tabulated value at a significance level of 0.05. We also obtained that the observed significance level (sig = 0.124) is greater than the adopted one. This means that organizational technology has no significant effect on financial inclusion.

Using the Analysis of Variance (ANOVA) test to compare the calculated F-value with the tabulated one, we found that the calculated F-value is greater than the tabulated one, with an observed significance level of 0.124, which is greater than 0.05. Hence, we reject the alternative hypothesis and accept the null one.

4. Conclusion

Recently, financial technology has revolutionized the economic landscape. Thanks to the huge technological advancements that the world has witnessed, these technologies have facilitated financial transactions and reached a broader audience. This is supported by government initiatives promoting digital transactions which have led to a new shift in the financial sector, presented a big challenge to traditional banks, and emerged as a powerful competitor. This shift could negatively impact investment opportunities if banks fail to keep pace with the digital progress needed to serve their customers.

Using financial technology has improved access to financial services through different channels, such as banking agencies and mobile payment to reach all the society, including the poor. This, in turn, has enhanced financial inclusion in many regions, improved financial conditions, and raised the standard of living for

marginalized individuals. Therefore, financial development is achieved by supporting social and political stability, as well as the overall financial system.

- **Results of the Study**
- **The Theoretical Results**

-Financial technology provides financial services to a wide range of individuals who do not deal with the banking system. It is also an alternative financing source for small and medium enterprises.
-Financial technology is among the modern solutions used for offering innovative services, particularly in promoting financial inclusion.
-The adoption of Fin Tech by banks reflects significant interest due to its effective protection of customers' digital transactions and better use of material and human resources efficiently and effectively.
-Financial inclusion is the ultimate goal, providing financial services to all individuals in all regions, saving time and effort, and achieving competitive advantages in a short period.

- **The Practical Results**

From the field work conducted at several banking agencies in Algeria, the following results were summarized:
- Most of the selected banks were public banks;
- The banking institutions are keen on implementing aspects of Fin Tech;
- The banks studied actively encourage the use of modern techniques for financial technology;
- FinTech achieves financial inclusion by providing opportunities for financial access, expanding services, and creating financial accounts through the use of mobile phones and electronic payment devices;
- FinTech increases customer trust through digital security, which further activates financial inclusion;
- The financial institutions studied provide digital payments and regulatory technology that aim to create a good environment for expanding the application of financial inclusion.
- The banks studied actively encourage the use of modern techniques for financial technology;
- FinTech achieves financial inclusion by providing opportunities for financial access, expanding services, and creating financial accounts through the use of mobile phones and electronic payment devices;
- FinTech increases customer trust through digital security, which further activates financial inclusion;
- The financial institutions studied provide digital payments and regulatory technology that aim to create a good environment for expanding the application of financial inclusion.

- **Recommendations**

Through this study, we recommended the following points:
- We should work on improving the information and communication technology infrastructure and expanding digital services to allow customers to optimally use these technologies;
- Financial institutions should provide quick solutions to address the issues of fin tech, build workers trust, and expand financial inclusion;

- It is mandatory to keep up with the legal framework and regulatory legislation for commercial banks in the field of fin tch to expand its digital applications and achieve financial inclusion;
- We should encourage investment in fin tech and adopt the latest technologies in the field to achieve efficiency in the services offered to customers and stakeholders.

References

Asawar Chetioui, The Reality of Accounting in the Era of Artificial Intelligence in Iraq," Tikrit Journal of Economic Sciences, Iraq, number 4, 2023.

Meriem Zarkata and Wahiba Dhamen, "The Reality of Financial Technology in the Arab World and its Role in Promoting Financial Inclusion," Journal of Economic and Management Research, volume 04, number 01, January 2023.

Mohammed Abd Al-Aleem Saber, "Financial Technology and Its Role in Enhancing Financial Inclusion: An Analytical Study of Several Arab Countries," Alexandria Journal of Administrative Research and Information Systems, Alexandria.

Mouldi Abdelghani, "Innovations in Financial Technology and their Role in Improving the Performance of Financial Institutions through the Financial Inclusion System, PhD Thesis in Financial Sciences, specialization in Financial Management, Ahmed Draia University, Adrar, 2023.

Rabeh Berich, "The Role of Financial Technology in the Development of Islamic Financial Industry," PhD Thesis in Economic Sciences, specialization in Finance and Banking, University of Blida 02, Lounici Ali, Blida, 2022/2023.

Saada Galmam, Mohammed Toufik Meziane, " The Role of Financial Technology in Achieving Financial Inclusion and Attracting Customers: A Review of Global Financial Inclusion Indicators, " Journal of Economic and Financial Research, volume 10, number 02, December 2023.

Saida Hafrouch, "Financial Technology: A Promising Industry in the Arab World," Journal of Afak Ilmia, volume 11, number 03, 2019.

Saida Nis, "Finacial Technology as an Opportunity to Develop Finacial Services", Journal of Advanced Economic Research, volume 7, number 02, 2022.

The official website of the Automated Clearing House and Automated Transactions between Banks. Access on July 23rd, 2024: http:// www. Satim.dz/fr.

Wahida Boulmerdj, "Islamic Banking Products as a Mechanism to Promote Financial Inclusion in Algeria in Light of Some International Experiences", PhD Thesis in Economic Sciences, specialization in Monetary and Banking Economics, Ferhat Abbas, Setif 01, 2022/2023.