The Impact of Financial Inclusion on Bank Loans in Algeria: A Field Study on a Sample of Banking

Cezayir'de Finansal Kapsayıcılığın Banka Kredileri Üzerindeki Etkisi: Bankacılık Örneklemi Üzerine Bir Saha Araştırması

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Abstract

This study aims to investigate the impact of financial inclusion on the banking loan industry through a field study conducted on a sample of banking institutions in the province of Algiers. The study involved preparing and distributing a questionnaire to 200 customers who hold accounts in these institutions. The questionnaire included 53 statements. The content was analyzed using the Statistical Package for the Social Sciences (SPSS), transforming qualitative responses from the study sample into quantitative data to address the issue of how financial inclusion affects banking loans. The results, segmented by the financial bodies used, showed that both the financial inclusion and banking loans variables are closely aligned from the respondents' perspectives, with mean scores of 3.9954 and 3.9268, respectively, and low standard deviations of 0.44 and 0.43; this indicates a convergence in customers' views towards agreement.

Keywords: Financial Inclusion, Banking Loans, Banking System, Banking Institutions.

Öz

Bu çalışma, finansal kapsayıcılığın bankacılık kredi sektörü üzerindeki etkisini, Cezayir'in Algiers vilayetindeki banka kurumları örneği üzerinde gerçekleştirilen bir saha araştırması aracılığıyla incelemeyi amaçlamaktadır. Çalışma kapsamında, bu kurumlarda hesap sahibi olan 200 müşteriye anket hazırlanarak dağıtılmıştır. Anket, toplamda 53 ifadeden oluşmaktadır. İçerik analizi, Sosyal Bilimler için İstatistik Paketi (SPSS) kullanılarak gerçekleştirilmiş ve çalışma örnekleminden elde edilen nitel yanıtlar nicel verilere dönüştürülerek finansal kapsayıcılığın bankacılık kredileri üzerindeki etkisini ele almak için değerlendirilmiştir. Sonuçlar, kullanılan finansal kurumlara göre ayrıştırıldığında, finansal kapsayıcılık ve bankacılık kredileri değişkenlerinin katılımcıların perspektifinden yüksek bir uyum içinde olduğu görülmüştür; bu değişkenler sırasıyla 3.9954 ve 3.9268 ortalama puanlara ve 0.44 ile 0.43 gibi düşük standart sapmalara sahiptir. Bu bulgular, müşterilerin görüşlerinin büyük ölçüde mutabık olduğunu ve belirgin bir yakınsama gösterdiğini ortaya koymaktadır.

Anahtar Kelimeler: Finansal İçerme; Bankacılık Kredileri; Bankacılık Sistemi; Bankacılık Kurumları.

Introduction

The topic of financial inclusion is one of the most prominent and significant modern concepts in monetary economics. Algeria, like other developing countries, records modest levels of financial inclusion indicators compared to advanced and emerging economies. Statistics reveal that financial inclusion penetration in Algeria is lower than in other middle-income countries, with a significant proportion of adults excluded from formal financial and funding services (Hakimi & Boulahbal, 2021, p. 336).

Financial inclusion has become a key objective for governments and organizations due to its importance in supporting economic growth. It refers to the widespread provision of financial services and products to the largest possible segment of society and business organizations.

In this context, Algeria records modest financial inclusion levels compared to advanced and emerging economies. Statistics indicate that financial inclusion penetration in Algeria is lower than in other middle-income countries, with a significant portion of adults excluded from formal financial and funding services (Yalouli & Qarari, 2023, p. 170).

Consequently, financial inclusion has become a focal point for many governments and financial regulatory bodies worldwide. It facilitates credit accessibility for all segments of society, both poor and wealthy. Although the poor require credit more urgently, especially for education and consumption, in reality, wealthier segments are often the primary beneficiaries. It is noteworthy that expanding and developing financial inclusion is not an end in itself but a means to achieve broader objectives.

1. Study Problem

This study investigates the impact of financial inclusion on bank loans in Algerian banking institutions, given its importance in enhancing the banking sector's capacity to attract savings and provide financial services to various segments of society. Based on the above, the research problem can be summarized as follows:

1.1. What is the impact of financial inclusion on bank loans in banking institutions in Algeria?
To answer this main research problem, the following sub-questions are considered:

- What is financial inclusion, and what are the means to promote it?
- What are the indicators for measuring financial inclusion in Algeria?
- What are the most significant international experiences in financial inclusion?

1.2. Study Hypotheses
Given the topic of the study, the following hypotheses were formulated to align with the study's objectives:

1.3. Primary Hypothesis
The state of financial inclusion in bank loans under study is high at a statistically significant level of 1%.
Sub-Hypothesis 1 of Primary Hypothesis:

The state of digital financial services regarding guarantees, disputes, and collections in the banking institutions under study is high at a statistically significant level of 1%.

Sub-Hypotheses of the First Primary Hypothesis:

- Sub-Hypothesis 2 of the First Primary Hypothesis: The state of loan granting operations in the banking institutions under study significantly impacts non-repayment risks at a statistically significant level of 1%.
- Sub-Hypothesis 3 of the First Primary Hypothesis: The accessibility of financial services for customers significantly impacts the financing of short, medium, and long-term projects in the banking institutions under study at a statistically significant level of 1%.

–   Sub-Hypothesis 4 of the First Primary Hypothesis: The role of banks in mobilizing savings for customers significantly impacts the number of borrowing and deposit accounts in the banking institutions under study at a statistically significant level of 1%.

1.4. Study Significance

This study derives its significance from addressing a highly important topic, financial inclusion, and examining its impact on bank loans through an analytical study of a sample of banking institutions in the Wilaya of Algiers. The financial sector, both banking and non-banking, plays an increasingly vital role in the growth of contemporary economies.

Due to the growing interest of commercial banks in financial inclusion, it has become essential to raise awareness about financial inclusion and to identify the elements that promote it in Algeria and other Arab countries. The study's significance lies in:

–   Providing a clear vision of the Algerian banking system, ensuring its integrity, and exploring ways to develop it in various fields.
–   Ensuring that banks effectively engage in granting loans to customers and verifying the absence of challenges in loan repayment.
–   Highlighting the role of the central bank in promoting financial inclusion.
–   Shedding light on the mechanisms of financial inclusion and proposing key solutions to foster its growth.

1.5. Study Objectives

The objectives of the study include:

–   Identifying the main challenges faced by the banking system.
–   Offering a theoretical framework with a clear concept of bank loans and their related aspects.
–   Highlighting the historical phases of financial inclusion.
–   Providing a theoretical framework with a clear concept of financial inclusion and how it impacts bank loans.

1.6. Study Methodology

The study adopts the descriptive-analytical method, utilizing Arabic, French, and English sources, articles, and both foreign and local prior studies related to financial inclusion and bank loans. These resources form the theoretical framework of the topic.

For the empirical and analytical aspect, a field study was conducted on a sample of banking institutions using a structured questionnaire to collect and analyze data. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS).

1.7. Structure of the Study

The first section addresses general aspects of bank loans, their types, and the criteria and procedures for granting them. The second section explores the concept of financial inclusion, its historical evolution, principles, and the importance of gathering measurement data. The third section, which is the practical component, examines the impact of financial inclusion on bank loans in Algeria through a field study conducted on a sample of banking institutions in the Wilaya of Algiers. This section includes the analysis of the study sample, description of the research tool, statistical methods employed, data collection processes, and hypothesis testing. The study concludes with findings and recommendations.

2. General Aspects of Bank Loans

This section delves into the concept of loans, which are financial amounts borrowed by governments or other entities with the commitment to repay the borrowed sum along with interest, according to the terms specified in the loan agreement. Loans are essential for linking institutions with banks, as institutions often need additional resources beyond their limited internal ones. This necessity drives them to seek financial support from banks. Thus, a strong interdependent relationship exists between banks and institutions regarding lending activities.

2.1. Concept of Loans

The definition of loans varies depending on the perspective and specialization of researchers. Below are several definitions that provide clarity on the concept:

- Loan Terminology: The European origin of the word "credit" stems from the Latin term *creditum*, derived from the verb *credere*, meaning "to believe." Hence, the process of granting loans is essentially a matter of trust(Al-Qazwini, 2000, p. 90).

Loans are also considered a financial tool used by the state to generate revenue for covering expenditures. A loan involves a creditor providing funds (or goods as money) to a debtor or guaranteeing them to others in exchange for compensation, often in the form of interest. However, loans are not a primary source of public revenue but fall under ordinary revenue sources.

Additionally, loans are granted for a limited period, requiring repayment at an agreed-upon time. Several factors motivate banks to provide loans, primarily their purpose of existence. Banks also consider the financial solvency of the debtor. For instance, when a bank loans to an individual, it does so with confidence in that person's willingness and ability to repay the debt upon maturity. Similarly, the debtor is obligated to pay for the use of the funds under the agreed terms and conditions(Al-Tarsh, 2003, p. 55).

3. Procedures for Granting Loans

3.1. Loan Granting and Collection Procedures

The process of granting loans is one of the most critical and complex operations undertaken by banks, as it involves accepting credit risks. It also represents a key function for meeting financial needs, as individuals and institutions turn to banks to fund their projects. Banks rely on several essential criteria when deciding to grant a loan. This process involves several stages, which can be summarized in the following main steps: initial examination of the loan application, credit analysis of the client, negotiation with the borrower, decision-making, loan disbursement, loan and borrower monitoring, and loan collection. These steps are detailed as follows:

3.1.1. Loan Application Examination

The bank reviews the client's loan request to assess its initial eligibility according to the bank's lending policies. Typically, lending policies stipulate that the total loan value at any given time should not exceed a specific percentage, based on the purpose of the loan, its maturity date, and the repayment method. This helps in the preliminary evaluation of the application. Insights are also drawn from the client's interaction with bank representatives, which provide a general understanding of the client's character and capabilities. Lending policies guide the bank's approach to diversifying its investments.

3.1.2. Credit Analysis of the Client

This step involves gathering information from various sources to assess the client's creditworthiness, including their reputation, personality, and ability to repay the loan within the specified term. This analysis is conducted in conjunction with the bank.

3.1.3. Negotiation with the Borrower

Following a comprehensive analysis of the credit risks associated with the requested loan, based on the collected information and financial analysis of the client's financial statements, the loan amount is determined. The bank may adopt a loan-sharing policy, especially for loans exceeding the maximum stipulated limit. Additionally, the loan's purpose, disbursement method, repayment schedule, required guarantees, interest rate, and associated fees are established.

3.1.4. Decision-Making Levels

Lending policies should define the administrative levels responsible for initiating and processing loan requests to ensure prompt decision-making. At this stage, negotiations conclude, and the client either accepts or rejects the bank's terms. If the terms are accepted, a memorandum is prepared to recommend approval of the loan request.

3.1.5. Loan Disbursement
Loan utilization begins only after the borrower signs the loan agreement, provides the required guarantees, and commits to the obligations stipulated in the agreement.

3.1.6. Loan and Borrower Monitoring
Lending policies mandate the need to monitor loans to ensure the proper operation of the borrowing entity, identify potential repayment challenges, and prevent changes to the agreed repayment schedule. Monitoring also helps detect borrower actions that may necessitate legal action to safeguard the bank's rights, defer payments, or extend the loan term.

4. Procedures for Collecting Bank Loans

A series of procedures must be followed to ensure the collection of bank loans, detailed as follows:

4.1. Legal Procedures for Loan Recovery
Banks, as private institutions or companies, provide loans to customers in various forms, including loans secured by movable or real property guarantees, or unsecured loans. If a loan is unsecured, the bank typically resorts to the court to claim its debt. This involves obtaining both an initial and appellate judgment and executing standard legal procedures. The bank, being a private institution, has no authority to impose penalties or fines since it is not a state institution or public authority.

4.2. Secured Loans
- If the debt is secured by movable assets (e.g., a car), the bank may recover the asset via judicial ruling and sell it at a public auction.
- If the debt is secured by real estate, specific procedures must be followed, referred to as real estate enforcement mechanisms.

4.3. Non-Payment Cases
In the event of non-payment by the borrower upon the loan's maturity date, the bank transfers the case to its dispute resolution department. Recovering loans through the judiciary is often challenging, time-consuming, and costly.

4.4. Dispute Resolution and Notification Procedures
To enable amicable recovery, the dispute resolution department typically follows these steps:
- First Notice: A warning is issued to the borrower, notifying them of the overdue payment. This notice is sent by registered mail with a receipt acknowledgment.
- Second and Third Notices: If the borrower does not respond within eight days, a second warning is sent. If there is still no response, a third notice is issued.
- Judicial Referral: If the borrower fails to respond to all warnings within the legally prescribed time, the case is referred to the court. The bank's lawyer submits a file containing:
  - The borrower's name, address, and profession.
  - The amount owed.
  - Documents supporting the debt.
  - Copies of all issued warnings.

4.5 Court Procedures
Upon referral to the court, the following steps are taken:
- The court clerk prepares three summonses for the borrower to appear in court. Each summons includes the session date, time, the nature of the dispute (non-payment of the loan), and the defendant's name.
- Summonses are delivered as follows:
  - One to the borrower's residence.
  - One to the bank's lawyer.
  - One remains with the bailiff.

The bank waits for 15 days after notifying the borrower. If there is no response, the bank's lawyer files a petition to the presiding judge requesting the sale of the pledged assets to satisfy the principal debt, late payment interest, and legal expenses.

4.6 Auction and Asset Liquidation

Following court approval, the bailiff inventories all pledged assets and announces their sale via public auction. The proceeds are used to settle the debt, along with accrued interest and associated legal costs(Articles 174–175 of Law No. 90-10, 1990).

5. Theoretical Framework for Financial Inclusion and Its Requirements

5.1 Introduction to Financial Inclusion and Its Historical Path

5.1.1. Definitions of Financial Inclusion
- OECD and INFE Definition: The Organization for Economic Cooperation and Development (OECD) and the International Network on Financial Education (INFE) define financial inclusion as: "The process of improving access to a wide range of formal and regulated financial products and services at reasonable costs and appropriate quality, while expanding their usage among various segments of society. This involves innovative approaches, financial literacy, and qualitative measures aimed at enhancing financial well-being and promoting social and economic inclusion." (Institutions Secretariat of the Council of Governors of Arab Central Banks and Monetary, 2015).
- Egyptian Banking Institute Definition: "Financial inclusion refers to the provision and expansion of financial services to all segments of society, including all banking transactions, at affordable prices and in a fair and transparent manner." (Mohammed, 2015, p. 07).
- G20 and AFI Definition: The G20 and the Alliance for Financial Inclusion (AFI) define financial inclusion as: "The measures taken by regulatory authorities to enhance the access to and usage of financial products and services by all segments of society, including marginalized and affluent groups, in a manner that meets their needs. These services should be provided fairly, transparently, and at reasonable costs." (Lifta & Hussein, 2019, p. 83).

5.2. Extracted Insights on Financial Inclusion:

From these definitions, financial inclusion can be summarized as a structured strategy based on principles, laws, and procedures implemented by governments, institutions, and individuals. Its purpose is to enable companies, individuals, and projects—whether willing or reluctant—to access and utilize formal financial and banking services. Financial inclusion aims to encompass all segments of society, serving as a critical driver of national economic growth. It seeks to meet the needs, aspirations, and preferences of individuals and businesses efficiently and effectively, adhering to principles of quality, sustainability, and responsibility while ensuring the achievement of financial inclusion objectives.

Figure 1.
Financial Services for Individuals
Source: (Zerroukhi & Wahiba, 2019, p. 04).

There is a significant distinction between the concept of financial inclusion and access to financial services. Financial inclusion encompasses the percentage of individuals and businesses utilizing financial services. Non-usage does not necessarily imply difficulty in accessing these services. Some individuals may have access to financial services at prices affordable to them but may choose not to use certain services. On the other hand, many others may lack access due to high costs, regulatory barriers, organizational obstacles, or cultural factors (Saadan & Mahajbiya, 2018, p. 487).

5.3. Principles for Achieving Financial Inclusion
The G20 has adopted several principles or recommendations to promote financial inclusion. These principles aim to implement policies that create a regulatory environment conducive to facilitating universal access to innovative financial and banking services for all segments of society, including the poor and underserved. These principles include (Neamah & Hassan, 2018, p. 31):

– **Leadership:** Broad governmental commitment to encourage universal access to financial services as a means to alleviate poverty.
– **Diversity:** Policies that promote competition and provide appropriate incentives for offering diverse financial services at reasonable prices, such as deposit, credit, payment, and remittance services, provided by a variety of providers.
– **Innovation:** Leveraging technology and advanced institutional tools to expand access to the financial system. This involves addressing infrastructure weaknesses, encouraging technical and institutional innovations, and improving infrastructure to broaden access to financial services.
– **Protection:** Establishing a comprehensive consumer protection framework, ensuring alignment among governments, service providers, and consumers.
– Customer Empowerment: Enhancing financial literacy among individuals to enable them to benefit broadly from financial services.

- **Collaboration:** Creating an institutional environment that promotes the dissemination of financial services within a clear framework of government accountability. This involves fostering partnerships and consultations between the government and financial sectors and establishing participatory institutional structures.
- **Knowledge:** Utilizing improved databases to implement evidence-based policies, assess progress, and employ other tools. This includes conducting adequate research and building information systems to measure access to financial services.
- **Proportionality:** Developing policies and regulatory frameworks that minimize risks while maximizing the benefits of advanced financial products. This involves addressing gaps and barriers in existing regulations and achieving a balance between expanding financial services and managing risks.
- **Operational Framework:** Ensuring international standards and local conditions are considered when designing a regulatory framework for universal access. This includes creating a flexible and competitive regulatory environment that addresses risks related to money laundering and terrorism financing.

Figure 2.
Principles for Achieving Financial Inclusion
Source: (Naama & Matar, 2018, p. 36)

6. Study of the Impact of Financial Inclusion on Bank Loans in Algeria Field Study on a Sample of Banking Institutions in the Wilaya of Algiers (Case Study: Wilaya of Algiers)

6.1. Description of the Study Tool

To measure the level of financial inclusion and its impact on bank loans in this study, a paper-based questionnaire was used. This tool collects data through a set of questions or statements that respondents must answer. Additionally, other methods such as interviews and observations were utilized to gather data.

- Data Analysis Using SPSS: The content of the questionnaire was analyzed using the Statistical Package for Social Sciences (SPSS). This software was used to determine appropriate statistical tests by converting qualitative responses

from the study sample into quantitative data. This facilitated deriving meaningful results that reflect the study variables in the field.

– Structure of the Questionnaire: The questionnaire consisted of an introduction and two main sections, as follows:
  • Introduction: An opening message presenting the topic of the study and highlighting the research problem.
  • First Section: Focused on the personal and professional information of the study sample, including:
    ▪ Gender
    ▪ Age
    ▪ Educational qualification
    ▪ Seniority within the institution
    ▪ Job classification
    ▪ Type of organization
    ▪ Financial institutions used

– Second Section: Addressed the variables and dimensions of the study:

  ▪ Independent Variable: Financial inclusion, measured through the following dimensions:
    1. Digital financial services.
    2. Loan granting processes in financial institutions.
    3. Accessibility of financial services for customers.
    4. The role of banks in mobilizing savings.
  ▪ Dependent Variable: Bank loans, comprising the following dimensions:
    1. Guarantees, disputes, and collections.
    2. Risks of non-repayment.
    3. Financing short-, medium-, and long-term projects.
    4. Number of borrowing and deposit accounts.

6.2. Final Form of the Questionnaire

The questionnaire included 53 statements in its final version, categorized into different sections and dimensions, as shown in the following table:

Table 1.
Distribution of Questionnaire Items Across Sections and Dimensions

Axis	Dimensions	Number of Items
First Axis Financial Inclusion	Digital Financial Services	9
	Granting loans in financial institutions	6
	Availability of financial services for customers	7
	The bank's role in mobilizing savings	8
Second Axis Bank Loans	Guarantees, Disputes, and Collections	8
	Risks of non-repayment	6
	Financing short, medium, and long-term projects	4
	Number of borrowing and deposit accounts	5

Source: Prepared by the researcher based on a compilation of previous studies.

6.3. Likert Scale Utilization:

The five-point Likert scale was employed in analyzing the responses of the surveyed sample, with each statement in the study tool corresponding to five options as follows: (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). These were coded numerically during data entry for computer programs as (1, 2, 3, 4, 5), respectively.

Table 2.
Distribution of the Five-Point Likert Scale Scores

Measurement Alternatives	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Score/Code	1	2	3	4	5

Source: Prepared by the researcher based on the Likert Scale.

6.4. Determining the Distribution Type of Respondents' Data Toward Questionnaire Axes

To analyze the study variables effectively, it is essential to identify whether the sample data follow a normal distribution or other probability distributions. According to the Central Limit Theorem, adherence to normal distribution assumptions depends on the sample size:

- For small samples, a normal distribution is a necessary condition.
- For large samples (n > 30), this assumption can be relaxed as the sampling distribution of the mean tends to approach a normal distribution regardless of the population distribution(Amin, 2008, pp. 106-107).

However, to ensure accurate data processing and select statistical methods appropriate to the type of data distribution, we will examine the data distribution. This will guide the choice between parametric statistical methods, which require data normality, or non-parametric methods, which do not impose this condition.

To determine whether the data follows a normal distribution, we relied on the Kolmogorov-Smirnov and Shapiro-Wilk tests, and the results obtained are as follows:

Table 3.
Normality Test Results for Data Distribution
Source: Prepared by the researcher based on the outputs of the SPSS statistical software.

Total Scores	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Degree of Freedom	Sig.	Statistics	Degree of Freedom	Sig.
Digital Financial Services	120	200	0	932	200	0
Loan Granting Processes in Financial Institutions	120	200	0	979	200	4
Availability of Financial Services for Customers	117	200	0	959	200	0
The Bank's Role in Mobilizing Savings	76	200	6	984	200	23
Financial Inclusion	54	200	200	981	200	8
Guarantees, Disputes, and Collections	96	200	0	987	200	58
Risks of Non-Repayment	94	200	0	970	200	0
Financing Short, Medium, and Long-Term Projects	171	200	0	950	200	0
Number of Borrowing and Deposit Accounts	92	200	0	972	200	0
Bank Loans	48	200	200*	988	200	93
Overall	56	200	200*	986	200	74

This table considers the dimensions of financial inclusion, bank loan dimensions, and bank loans. Data were analyzed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The results indicate that most total scores for the dimensions do not follow a normal distribution because the SIG values are less than 0.05. According to the general rule, data are considered normally distributed when the SIG value is greater than 0.05. Consequently, the study model was analyzed using appropriate tools for non-parametric tests.

7. Testing the Study Hypotheses

The first main hypothesis states:
–   There is a statistically significant effect of financial inclusion on bank loans in the financial institutions included in the study.

Accordingly, the following statistical hypotheses were formulated:
– H_0: There is no statistically significant effect of financial inclusion on bank loans at a significance level of $\alpha = 0.05$.
– H_1: There is a statistically significant effect of financial inclusion on bank loans at a significance level of $\alpha = 0.05$.

To test this primary hypothesis, the simple linear regression model was applied. The results are presented in the following tables:

Table 4.
Results of Testing the First Main Hypothesis

Model		Sum of Squares	Degrees of Freedom	F Value	Sig. Value	Correlation Coefficient	Coefficient of Determination
1	Regression	13.656	1	656.116	0	0.609	0.371
	Residual	23.179	198	/	/		
	Total	835.36	199	/	/		

Source: Prepared by the researcher based on the outputs of SPSS statistical software.

Table 5.
Results of Testing the First Main Hypothesis (Detailed)

Model		Regression Coefficients		Standardized Coefficients	T Value	Sig. Value
		B	Standard Error	Bêta		
1	(Constant)	165.1	220	/	81.7	0
	Financial Inclusion	0.592	0.055	0.609	10.801	0

Source: Prepared by the researcher based on the outputs of SPSS statistical software.

–   Based on the results obtained, we observe that the F value is 656.116, which is a high value with a significance level of 0.000, far below 0.05. Accordingly, the linear regression model is statistically significant.
–   Additionally, the coefficient of determination (R^2) is 0.371, indicating that the model explains 37.1% of the total variance in the study sample.

Thus, we accept the results of the regression model presented in Table 2, which shows the following:

–   The sig value for the constant term is 0.000, which is far below 0.05, indicating that this coefficient is statistically significant. Consequently, it should not be removed from the regression equation. Its value is 165.1, representing the level of bank loans in the absence of the effect of financial inclusion.
–   The sig value for the financial inclusion coefficient is also 0.000, which is far below 0.05, confirming that this coefficient is statistically significant. Therefore, it should not be removed from the regression equation. As a result, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of financial inclusion on bank loans at a significance level of $\alpha = 0.05$. The estimated coefficient value of 0.592 indicates that for every one-unit increase in financial inclusion, bank loans increase by 0.592 units.

Consequently, the regression equation is as follows:

- Bank Loans =165.1+0.592(Financial Inclusion) + e
- Y represents bank loans.
- X represents financial inclusion.

Where:
- E represents the error term.

This implies that bank loans were initially low in the absence of financial inclusion, scoring 1.561, which reflects a "disagree" level from customers' perspectives. However, this score increases by 2.59% for each unit increase in financial inclusion.

7.1. Sub-Hypotheses

The first main hypothesis is divided into four sub-hypotheses, addressing the four dimensions of financial inclusion: digital financial services, loan granting processes in financial institutions, access to financial services for customers, and the bank's role in mobilizing savings. Additionally, it encompasses the dimensions of bank loans: guarantees, disputes, and collections; risks of non-repayment; financing of short, medium, and long-term projects; and the number of borrowing and deposit accounts.

Accordingly, the following statistical hypotheses are formulated:
- H_0: There is no statistically significant effect of the four dimensions of financial inclusion on guarantees, disputes, and collections at a significance level of $\alpha = 0.05$.
  H_1: There is a statistically significant effect of the four dimensions of financial inclusion on guarantees, disputes, and collections at a significance level of $\alpha = 0.05$.
- H_0: There is no statistically significant effect of the four dimensions of financial inclusion on risks of non-repayment at a significance level of $\alpha = 0.05$.
  H_1: There is a statistically significant effect of the four dimensions of financial inclusion on risks of non-repayment at a significance level of $\alpha = 0.05$.
- H_0: There is no statistically significant effect of the four dimensions of financial inclusion on the financing of short-, medium-, and long-term projects at a significance level of $\alpha = 0.05$.
  H_1: There is a statistically significant effect of the four dimensions of financial inclusion on the financing of short-, medium-, and long-term projects at a significance level of $\alpha = 0.05$.
- H_0: There is no statistically significant effect of the four dimensions of financial inclusion on the number of borrowing and deposit accounts at a significance level of $\alpha = 0.05$.
  H_1: There is a statistically significant effect of the four dimensions of financial inclusion on the number of borrowing and deposit accounts at a significance level of $\alpha = 0.05$.

Borrowing and depositing at a significance level of $\alpha=0.05$\alpha = 0.05$\alpha=0.05$.

Given that the sample size is 200, which is relatively large, the validity of the aforementioned hypotheses will be tested using the structural equation modeling approach with the AMOS software through Path Analysis.

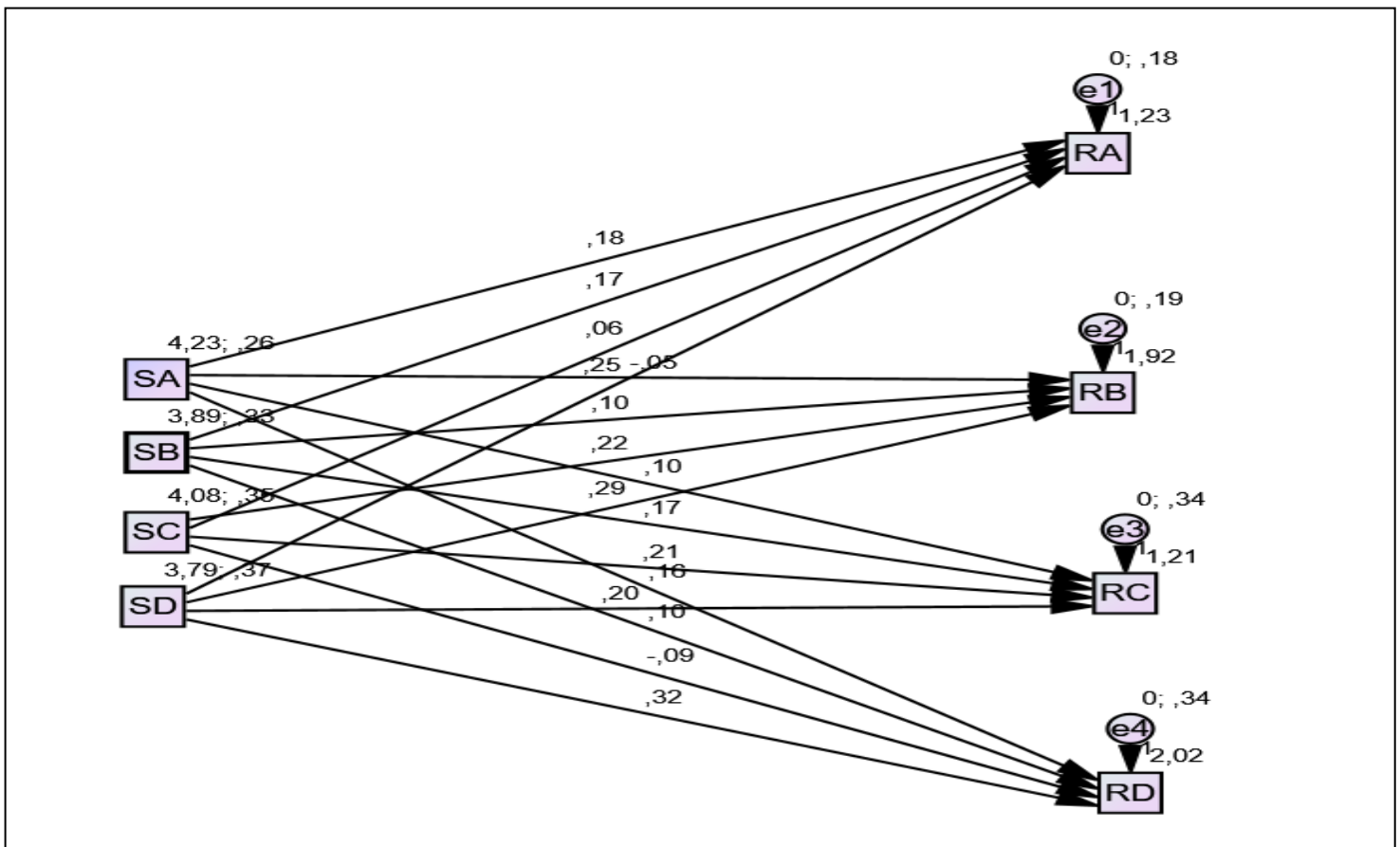The following figure represents the diagram of the model used:

Figure 3.
Structural Equation Model for the Study
Source: Prepared by the researcher based on the outputs of AMOS statistical software.

7.2 Discussion of Study Results

7.2.1 Results of the First Sub-Hypothesis

−The p-value was 0.004, which is significantly less than 0.05, indicating that the estimation of the constant term is statistically significant and should not be removed from the structural equation. Its value was 1.233, representing the degree of guarantees, disputes, and collections in the absence of the financial inclusion dimensions.

For the Path
Digital Financial Services < Guarantees, Disputes, and Collections
The p-value was 0.002, which is significantly less than 0.05. This indicates that the coefficient estimate for this path is statistically significant, and thus it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of digital financial services on guarantees, disputes, and collections at a significance level of α = 0.05. The coefficient value of 0.181 indicates that for every one-unit increase in digital financial services, guarantees, disputes, and collections increase by 0.181 units.

For the Path
Loan Granting Processes in Financial Institutions < Guarantees, Disputes, and Collections
The p-value was 0.001, which is significantly less than 0.05. This indicates that the coefficient estimate for this path is statistically significant, and thus it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of loan granting processes in financial institutions on guarantees, disputes, and collections at a significance level of α = 0.05. The coefficient value of 0.169 indicates that for every one-unit increase in loan granting processes in financial institutions, guarantees, disputes, and collections increase by 0.169 units.

For the Path

Availability of Financial Services for Customers < Guarantees, Disputes, and Collections
The p-value was 0.253, which is greater than 0.05. This indicates that the coefficient estimate for this path is not statistically significant, and thus it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of the availability of financial services for customers on guarantees, disputes, and collections at a significance level of α = 0.05.

For the Path

The Bank's Role in Mobilizing Savings < Guarantees, Disputes, and Collections
The p-value was 0.000, which is significantly less than 0.05. This indicates that the coefficient estimate for this path is statistically significant, and thus it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the bank's role in mobilizing savings on guarantees, disputes, and collections at a significance level of α = 0.05. The coefficient value of 0.25 indicates that for every one-unit increase in the bank's role in mobilizing savings, guarantees, disputes, and collections increase by 0.25 units.5.7 Structural Equation:

Where e represents the error term.

This means that guarantees, disputes, and collections are influenced by three dimensions of bank loans in the following order:
- An increase of 25% for every increase in activating the bank's role in mobilizing savings.
- An increase of 11.8% for every increase in the development of digital financial services.
- An increase of 29% for every increase in loan granting processes in financial institutions.

7.2.2 Results of the Second Sub-Hypothesis

For the constant term, the p-value was 0.000, which is significantly less than 0.05, indicating that the coefficient estimate is statistically significant. Thus, it should not be removed from the structural equation. Its value was 0.589, representing the level of non-repayment risks in the absence of the influence of financial inclusion dimensions.

For the Path

Digital Financial Services <Non-Repayment Risks
The p-value was 0.124, which is greater than 0.05. This indicates that the coefficient estimate for this path is not statistically significant, and thus it should be removed from the structural equation.
Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of digital financial services on non-repayment risks at a significance level of α = 0.05.
Guarantees, Disputes, and Collections = 233.1 + 0.181 × (Digital Financial Services) + 0.169 × (Loan Granting Processes in Financial Institutions) + 0.025 × (The Bank's Role in Mobilizing Savings) + e

For the Path

Loan Granting Processes in Financial Institutions < Non-Repayment Risks
The p-value was 0.075, which is greater than 0.05. This indicates that the coefficient estimate for this path is not statistically significant, and thus it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of loan granting processes in financial institutions on non-repayment risks at a significance level of α = 0.05.

For the Path

Availability of Financial Services for Customers < Non-Repayment Risks
The p-value was 0.000, which is significantly less than 0.05. This indicates that the coefficient estimate for this path is statistically significant, and thus it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the availability of financial services for customers on non-repayment risks at a significance level of α = 0.05.
The coefficient value of 0.215 indicates that for every one-unit increase in the availability of financial services for customers,

the level of avoiding non-repayment risks increases by 0.215 units.

For the Path
The Bank's Role in Mobilizing Savings < Non-Repayment Risks
The p-value was 0.000, which is significantly less than 0.05. This indicates that the coefficient estimate for this path is statistically significant, and thus it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the bank's role in mobilizing savings on non-repayment risks at a significance level of α = 0.05.

The coefficient value of 0.29 indicates that for every one-unit increase in the bank's role in mobilizing savings, the level of avoiding non-repayment risks increases by 0.29 units.

Non-repayment risks = 0.589 + 0.215 × availability of financial services for customers + 0.29 × the bank's role in mobilizing savings + e

Where e represents the error term.
Non-repayment risks are influenced by only two dimensions of bank loans in the following order:
- Avoidance of 29% for every increase in the bank's role in mobilizing savings.
- Avoidance of 21.5% for every increase in the availability of financial services for customers.

7.2.3 Results of the Third Sub-Hypothesis
- For the Constant Term: The p-value was 0.000, which is significantly less than 0.05, indicating that the coefficient estimate is statistically significant. Thus, it should not be removed from the structural equation. Its value was 1.923, representing the level of short-, medium-, and long-term project financing in the absence of the influence of financial inclusion dimensions.

For the Path
Digital Financial Services <--- Short-, Medium-, and Long-Term Project Financing
The p-value was 0.208, which is greater than 0.05, indicating that the coefficient estimate for this path is not statistically significant. Thus, it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of digital financial services on short-, medium-, and long-term project financing at a significance level of α = 0.05.

For the Path
Loan Granting Processes in Financial Institutions <--- Short-, Medium-, and Long-Term Project Financing
The p-value was 0.022, which is significantly less than 0.05, indicating that the coefficient estimate for this path is statistically significant. Thus, it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of loan granting processes in financial institutions on short-, medium-, and long-term project financing at a significance level of α = 0.05. The coefficient value of 0.165 indicates that for every one-unit increase in loan granting processes in financial institutions, short-, medium-, and long-term project financing increases by 0.165 units.

For the Path
Availability of Financial Services for Customers <--- Short-, Medium-, and Long-Term Project Financing
The p-value was 0.003, which is significantly less than 0.05, indicating that the coefficient estimate for this path is statistically significant. Thus, it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the availability of financial services for customers on short-, medium-, and long-term project financing at a significance level of α = 0.05. The coefficient value of 0.212 indicates that for every one-unit increase in the availability of financial services for customers, short-, medium-, and long-term project financing increases by 0.212 units.

For the Path

The Bank's Role in Mobilizing Savings < Short-, Medium-, and Long-Term Project Financing

The p-value was 0.003, which is significantly less than 0.05, indicating that the coefficient estimate for this path is statistically significant. Thus, it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the bank's role in mobilizing savings on short-, medium-, and long-term project financing at a significance level of $\alpha = 0.05$. The coefficient value of 0.202 indicates that for every one-unit increase in the bank's role in mobilizing savings, short-, medium-, and long-term project financing increases by 0.202 units.

Accordingly, the structural equation is as follows:

Short-, medium-, and long-term project financing = 1.923 + 0.165 × loan granting processes in financial institutions + 0.212 × availability of financial services for customers + 0.202 × the bank's role in mobilizing savings + e

Dimensions of bank loans, ranked as follows:
- 2.21% increase for every increase in the availability of financial services for customers.
- 2.20% increase for every increase in activating the bank's role in mobilizing savings.
- 1.65% increase for every increase in loan granting processes in financial institutions.

7.2.4 Results of the Fourth Sub-Hypothesis

- For the Constant Term: The p-value was 0.000, which is significantly less than 0.05, indicating that the coefficient estimate is statistically significant. Thus, it should not be removed from the structural equation. Its value was 1.208, representing the level of borrowing and deposit accounts in the absence of the influence of financial inclusion dimensions.

For the Path

Digital Financial Services < Borrowing and Deposit Accounts:

The p-value was 0.560, which is greater than 0.05, indicating that the coefficient estimate for this path is not statistically significant. Thus, it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of digital financial services on borrowing and deposit accounts at a significance level of $\alpha = 0.05$.

For the Path

Loan Granting Processes in Financial Institutions < Borrowing and Deposit Accounts

The p-value was 0.164, which is greater than 0.05, indicating that the coefficient estimate for this path is not statistically significant. Thus, it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of loan granting processes in financial institutions on borrowing and deposit accounts at a significance level of $\alpha = 0.05$.

For the Path

Availability of Financial Services for Customers < Borrowing and Deposit Accounts

The p-value was 0.184, which is greater than 0.05, indicating that the coefficient estimate for this path is not statistically significant. Thus, it should be removed from the structural equation. Therefore, we accept the null hypothesis, which states that there is no statistically significant effect of the availability of financial services for customers on borrowing and deposit accounts at a significance level of $\alpha = 0.05$.

For the Path

The Bank's Role in Mobilizing Savings < Borrowing and Deposit Accounts

The p-value was 0.000, which is significantly less than 0.05, indicating that the coefficient estimate for this path is statistically significant. Thus, it should not be removed from the structural equation. Therefore, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a statistically significant effect of the bank's role in mobilizing savings on borrowing and deposit accounts at a significance level of $\alpha = 0.05$.

The coefficient value of 0.316 indicates that for every one-unit increase in the bank's role in mobilizing savings, borrowing

and deposit accounts increase by 0.316 units.

Structural Equation

Borrowing and deposit accounts = 0.316 × the bank's role in mobilizing savings + e

Where e represents the error term. This means that borrowing and deposit accounts are influenced only by the bank's role in mobilizing savings, with a 6.31% increase for every increase in the activation of this dimension.

Financial inclusion is considered one of the modern concepts, aiming to provide all individuals with affordable and responsibly delivered financial services such as payment services, insurance, and others. These services assist individuals in managing their financial affairs and achieving their goals by interacting with the banking system through digital work systems, including mobile platforms. This means completing all financial transactions electronically.

This study aimed to address the research problem of understanding the effect of financial inclusion on bank loans, using the case of Algiers as a model. The study relied on a single main hypothesis to determine the impact of financial inclusion on bank loans, as well as the relationship between the independent variable (financial inclusion) and the dependent variable (bank loans), examining the level of verification and impact within this relationship. The analysis was conducted through four sub-hypotheses, leading to results, suggestions, and study prospects, summarized as follows:

8. Testing the Validity of Hypotheses

There is a statistically significant effect of financial inclusion on bank loans for the financial institutions under study at a significance level of $\alpha = 0.05$. It was found that for every one-unit increase in financial inclusion, the level of bank loans increases by 0.592 units, confirming the validity of the hypothesis.

Borrowing and deposit accounts = 1.208 + 0.316 × the bank's role in mobilizing savings + e

There is a statistically significant effect of digital financial services on guarantees, disputes, and collections for the financial institutions under study at a significance level of $\alpha = 0.05$. For every one-unit increase in digital financial services, the level of guarantees, disputes, and collections increases by 0.181 units, confirming the validity of the hypothesis.

There is no statistically significant effect of loan granting processes in financial institutions on non-repayment risks for the financial institutions under study at a significance level of $\alpha = 0.05$, confirming the invalidity of the hypothesis.

There is a statistically significant effect of the availability of financial services for customers on short-, medium-, and long-term project financing for the financial institutions under study at a significance level of $\alpha = 0.05$. For every one-unit increase in the availability of financial services for customers, the level of short-, medium-, and long-term project financing increases by 0.212 units, confirming the validity of the hypothesis.

There is a statistically significant effect of the bank's role in mobilizing savings for customers on the number of borrowing and deposit accounts for the financial institutions under study at a significance level of $\alpha = 0.05$. For every one-unit increase in the bank's role in mobilizing savings, the number of borrowing and deposit accounts increases by 0.316 units, confirming the validity of the hypothesis.

Study Results

Through our analysis of the study's subject, we have reached a set of results as follows:
   - A range of indicators can be adopted to enhance the Algerian banking system.
   - The primary goals of financial inclusion lie in achieving equitable growth across various sectors and increasing financial awareness based on the types of financial products that meet individual needs.
   - The Likert scale was used to facilitate the analysis and discussion of respondents' opinions regarding their agreement or disagreement with the statements and axes of the questionnaire.

- The results distributed across the financial institutions studied indicated that the variables of financial inclusion and bank loans are closely related from the respondents' perspective. The calculated means were 3.9268 for both variables, with low standard deviations of 0.44 and 0.43, respectively, indicating a close agreement among customers.
- The AMOS program was utilized based on the dimensions of financial inclusion and bank loans. The results showed a Chi-square value of 296.865 with a degree of freedom of 12, a high value at a significance level of 0.000, which is much less than 0.05, indicating that the study model is statistically significant.

Study Recommendations

In light of the findings, the following recommendations are proposed:
- Significant efforts should be made to enhance financial inclusion in Algeria, where public banks play a key role. Algeria must aim to improve the financial performance of its banking system by increasing the prevalence of financial inclusion.
- Efforts should be made to open new bank branches to expand the banking network and develop financial products and services, thereby broadening the use of financial inclusion across branches and making banking services accessible to all segments of society.
- A national strategy for financial inclusion should be adopted to improve access to financial services and funding, aiming to provide innovative and cost-effective services.
- Financial inclusion has a significant role in improving banking performance in Algeria. Therefore, substantial efforts are needed to ensure that the Algerian banking system does not remain underdeveloped, whether in terms of financial intermediation or risk management.
- Increasing financial inclusion by facilitating access to small loan credit will lead to greater stability among financial service providers.

References

Al-Qazwini, S. (2000). *Muhadarat fi iqtisad al-bunuk (Lectures on banking economics)* (2nd ed.). Algeria: Diwan Al-Matbou'at Al-Jam'iyya (University Printing Office).

Al-Tarsh, A.-T. (2003). *Taqniat al-bunuk (Banking techniques)* (2nd ed.). Algeria: Diwan Al-Matbou'at Al-Jaza'iriyya (Algerian Printing Office).

Amin, O. R. (2008). *Al-Tahlil Al-Ihsai Lil-Mutaghayyirat Al-Mutadaddida Bi-Isti'mal Barnamej SPSS (Statistical Analysis of Multivariate Variables Using SPSS Software)* (Vol. 2). Cairo, Egypt: Dar Al-Alamiyya (International Publishing House). Retrieved from https://www.noor-book.com/

Articles 174–175 of Law No. 90-10. (1990, 04 14). Concerning Currency and Credit. Official Journal of the People's Democratic Republic of Algeria.

Hakimi, N., & Boulahbal, S. (2021). Financial inclusion in Algeria: Access and use of financial services – a comparative study between Algeria, Tunisia, and Morocco. *Shuaa Journal of Economic Studies, 50*(2), 336.

Institutions Secretariat of the Council of Governors of Arab Central Banks and Monetary. (2015). *Mutatallibat Tabanni Istratijiyya Wataniyya Li-Ta'zeeze Al-Shumoul Al-Mali Fi Al-Duwal Al-Arabiyya (Requirements for Adopting a National Strategy to Enhance Financial Inclusion in Arab Countries).* United Arab Emirates: Arab Monetary Fund.

Lifta, R. O., & Hussein, S. A. (2019). Proposed mechanisms and policies to expand financial inclusion and access to financial services in Iraq. *Journal of Al-Madina University College, 11*(01), 83.

Mohammed, Z. (2015). The Role of the Egyptian Banking Institute in promoting financial literacy as a core component of financial inclusion. *Union of Arab Banks Journal*(419), 07.

Naama, N. H., & Matar, A. N. (2018). Indicators for measuring financial inclusion in Iraq. *Proceedings of the Fourth Scientific Specialized Conference of the Administrative Technical College – Baghdad* (p. 36). Baghdad, Iraq: Middle Technical University.

Neamah, N. H., & Hassan, A. N. (2018). Indicators for measuring financial inclusion in Iraq. *Proceedings of the Fourth Scientific Specialization Conference of the Administrative Technical College – Baghdad.02*, p. 36. Baghdad, Iraq: Middle Technical University.

Saadan, A., & Mahajbiya, N. (2018). The reality of financial inclusion in the Maghreb: A comparative study of Algeria, Tunisia, and Morocco. *The Arab Journal for Studies and Research in Humanities and Social Sciences, 10*(03), 748.

Yalouli, T., & Qarari, S. (2023). The reality and challenges of digital financial inclusion in Algeria. *Research Journal of Economics and Management, 4*(1), 701.

Zerroukhi, F., & Wahiba, K. (2019). Financial inclusion: A review of some Arab and international experiences. *National Scientific Forum on the Financial Technology Industry and Its Role in Enhancing Financial Inclusion in Arab Countries* (p. 04). Médéa, Algeria: Faculty of Economics and Management, Yahia Fares University.