

The Role of Electronic Banking Services in Promoting Financial Inclusion Case Study: The Bank of Agriculture and Rural Development (BADR) – Blida Branch

PhD Student. Khalissa Djerroudi¹/ Laboratory of Management, Performance, and Innovation, Higher School of Commercial Studies, Algeria, k.djerroudi@hec.dz

Pr. Meriem Lebsaira/ Department of Commercial Studies, Laboratory of Management, Performance, and Innovation, Higher School of Commercial Studies, Algeria, m.lebsaira@hec.dz

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Abstract:

This study aims to examine the role of electronic banking services in promoting financial inclusion in Algeria, using the case of the Bank of Agriculture and Rural Development (BADR) – Blida Branch. By distributing a questionnaire to a sample of 50 customers and using the Statistical Package for the Social Sciences (SPSS) to test hypotheses, the results revealed a statistically significant positive relationship between the digitalization of banking services and the level of financial inclusion among customers. Furthermore, it was found that expanding secure and convenient digital services contributes to facilitating access to formal financial products for underserved groups. The study recommends improving the digital infrastructure of banking institutions, expanding financial education, and promoting innovation to support financial inclusion in Algeria.

Keywords: Digitalization, Electronic Service, Banking Service, Financial Inclusion, BADR Bank.

Jel Classification Codes : G21 ; O33 ; E42 ; D14

ملخص:

تهدف الدراسة إلى اختبار دور الخدمات البنكية الإلكترونية في تعزيز الشمول المالي بالجزائر تطبيقاً على حالة بنك الفلاحة والتنمية الريفية فرع البليدة BADR. وباستخدام أداة الاستبيان في عينة مكونة من 50 فرداً من عملاء المؤسسة، واستخدام برنامج الحزم الإحصائية (SPSS) في اختبار الفرضيات، أظهرت النتائج وجود علاقة إيجابية ذات دلالة إحصائية بين رقمته الخدمة المصرفية ومستوى الشمول المالي لدى العملاء، كما اتضح أن توسيع الخدمات الرقمية الآمنة والملائمة، يساهم في تسهيل الوصول إلى المنتجات المالية الرسمية للفئات المحرومة. ومنه توصي الدراسة بضرورة تحسين البنية الرقمية للمؤسسات المصرفية، وتوسيع نطاق التثقيف المالي، وتعزيز الابتكار لخدمة الشمول المالي في الجزائر.

الكلمات المفتاحية: الرقمنة، خدمة إلكترونية، خدمة بنكية، شمول مالي، بنك BADR.

تصنيف JEL : D14;E42;O33;G21

¹. Corresponding author: Khalisa Djerroudi, e-mail address: k.djerroudi@hec.dz

I. Introduction

The global banking sector is undergoing radical transformations due to rapid advancements in digital technology, leading to the emergence of electronic banking services. These services have become a cornerstone in improving the quality of banking services and expanding their geographical reach. Among the objectives that economic systems aim to achieve through the adoption of digitalization in banking services is attaining the highest degree of financial inclusion, ensuring that banking services reach all social segments, particularly low-income groups.

In Algeria, banks face multiple challenges in achieving financial inclusion, including disparities between urban and rural areas, low financial literacy, and difficulties in accessing traditional services. Consequently, electronic banking services have emerged as a strategic tool to enhance financial inclusion by facilitating access to bank accounts, providing fast and secure services, and reducing transaction costs. These services also offer immediacy, speed, and broader marketing and promotional reach.

I. 1. Research Problem

The Bank of Agriculture and Rural Development (BADR) in Algeria is one of the leading public banks that has recently embarked on digitizing its services, introducing electronic payment cards, mobile applications, online payments, and more. This study focuses on the Blida Branch to test the role of these services in promoting financial inclusion. The main research question is: To what extent do the electronic banking services of BADR contribute to supporting and enhancing financial inclusion in Algeria?

The following sub-questions stem from this:

- What is the concept of digital services, and what are the levels of digital transformation in modern banking services?
- What is the concept of financial inclusion, its objectives, and the banking mechanisms capable of promoting and supporting it in society?
- What is the role of BADR's digital services in enhancing financial inclusion?

I. 2. Research Hypotheses

The study is based on the premise that BADR has adopted a digital policy at the institutional structure level, service delivery, and promotional activities. The main hypothesis is:

- There is a statistically significant relationship between the digitalization of banking services at BADR and the enhancement of financial inclusion among its customers.

I. 3. Research Objectives

The study aims to investigate the following aspects:

- Measuring the extent of customers' use of basic financial services at the institution under study.
- Proving the importance of developing banking services in achieving and enhancing financial inclusion due to its developmental advantages.
- Proving the role of service digitization at the institution under study (BADR) in enhancing financial inclusion in Algeria through customers' opinions.

I. 4. Research Significance

The significance of this study stems from the importance of digitizing the banking sector and its institutions to deliver high-quality, inclusive, and transparent services. It is also significant because BADR is one of Algeria's most prominent banking institutions, and financial inclusion is achieved through banks with extensive coverage.

I. 5. Literature Review.

Several studies have addressed the relationship between digital services, banking services, and financial inclusion. Examples include :

- **Bougishawi Murad and Imad Ghazzazi (2021):** This study addressed Algeria's efforts to enhance financial inclusion during the COVID-19 pandemic, noting that the health crisis accelerated reliance on digital payments and the use of formal financial services. The research focused on analyzing the measures taken by public authorities and the central bank to support electronic transactions and reduce direct cash dealings. The study also highlighted the principles and dimensions underpinning digital financial inclusion, as well as the regulatory and technical challenges associated with this exceptional period. Employing a descriptive–analytical methodology based on official data and statistics, the study concluded that promoting digitalization helped create new economic opportunities, reduce the financial access gap among different groups, and improve the payment system while managing financial risks. The authors recommended continued support for digital transformation and the development of technological infrastructure to achieve more effective and sustainable financial inclusion.
- **Shili wissam (2021):** This study aimed to examine the state of digital financial inclusion in Arab countries and the requirements for its enhancement. Using a descriptive–analytical approach, it presented the conceptual framework of digital financial inclusion and the G20 principles to achieve it, followed by an analysis of the evolution of inclusion indicators in Arab countries. The study found improvements in inclusion levels in 2017 compared to 2011 and 2014, with variations across different Arab nations. Further improvements were

observed in some countries' rankings in 2020 compared to 2017; however, these rates remain low relative to global levels.

- **Zubair Ayash and Khalaf Allah Ben Youssef (2021):** This field study targeted a sample of clients of Al Baraka Bank Algeria to analyze the contribution of financial technology (FinTech) in promoting financial inclusion. The researchers employed a questionnaire directed at bank clients. The results indicated a strong positive impact of FinTech applications on the ease of access to banking services, particularly for segments with limited interaction with the formal financial system. The study also highlighted that fostering trust and digital security is a fundamental condition for enhancing financial inclusion. The authors recommended developing technological infrastructure and expanding electronic payment services to support financial inclusion in Algeria.
- **Daqou Yamina and Ayad Laila (2022):** This recent study examined the impact of the COVID-19 pandemic on accelerating the adoption of digital payments and highlighted the importance of digital financial inclusion during crisis periods. The study focused on clarifying the theoretical foundations of digital financial inclusion and its objectives, alongside reviewing international standards and indicators used to measure it. It also analyzed the experiences of several countries in promoting digital financial services using a descriptive–analytical approach supported by statistical data and charts. The results indicated that the digital economy contributes to creating economic opportunities, reducing disparities among individuals, strengthening financial resilience, and improving shock management.
- **Amoumoune Belkhir and Aichouche Mohammed Hafid (2023):** Titled "The Reality of Electronic Financial Services in Algeria and Their Expected Role in Promoting Financial Inclusion," this study examined the state of electronic financial services in Algeria and their role in financial inclusion. It identified challenges such as low digital financial literacy, lack of trust in electronic channels, and inadequate network coverage in some areas. This study supports the current research by highlighting real obstacles to adopting financial technology, emphasizing the need for banking reforms to promote financial inclusion.
- **Alouane Samia and Bechichi Walid (2024):** Titled "The Impact of Financial Inclusion Dimensions on Competitive Advantage in Algerian Banks: A Case Study on Banking Agencies in M'sila," this study analyzed the relationship between financial inclusion and competitive advantage through a field study. It concluded that financial inclusion positively affects competitive advantage and recommended enhancing inclusivity to improve service quality and competitiveness.

- **Saadaoui Abd el kader and Selmani Adel (2024):** Titled "The Impact of Electronic Banking Services on Enhancing the Financial Performance of Commercial Banks," this study aimed to elucidate the mechanism by which electronic services enhance the financial performance of Algerian commercial banks. It found that these services indirectly improve financial performance by increasing service volume, attracting new customers, reducing risks, and minimizing losses. This study aligns with the current research in highlighting the importance of digitalization in improving financial and competitive indicators.

From the results of these literature review, it can be clarified that the research gap covered by our study lies at three levels; the first level is that the study of digital services varies temporally from year to year due to the rapid transformation in the digital aspect and the development of digital services. The second level is that our study addresses proving the digital awareness of the institution's customers first, then testing the hypothesis of a relationship between it and financial inclusion. The third level is the selection of an institution with a significant position in financial inclusion strategies, which is the Bank of Agriculture and Rural Development (BADR).

II. Theoretical Concepts of the Study Variables

In this section, the most important concepts related to digital transformation in the banking sector will be addressed, in addition to those related to financial inclusion, and how it is achieved through digital banking services.

II.1. Digital Transformation and Digital Banking Services

II.1.1. Concept of Digital Transformation

Digital transformation has brought about a qualitative shift in the contemporary economy; it has become a strategic choice for countries and economic institutions, particularly banking institutions, which seek to improve their services and enhance their competitiveness through digitalization.

Digital transformation refers to the process of integrating digital tools and technologies into various banking activities, whether at the management level, service delivery, or customer interaction. It is not limited to the use of computers or the internet but extends to include artificial intelligence applications, big data, cloud computing, and blockchain technologies.

Definitions of digital transformation have been summarized as a comprehensive reimagining of business models through the use of digital technology to deliver added value to customers. In the banking context, researcher Ben Moussa defines it as: "a set of technological and organizational transformations that enable the bank to improve its service delivery using modern digital platforms" (Ben Moussa, 2020). Meanwhile, the Hariri and Didouche study refers to digital transformation as a necessary stage for activating electronic

banking services and achieving financial inclusion (Hariri & Didouche , 2022, p.23).

In general, digital transformation is the process of institutions, including banks, relying on modern technology to develop their business models and services. This transformation aims to improve service quality, facilitate access to them, and reduce costs and time.

II.1.2. Modern Digital Banking Services

The term electronic banking services refers to operations performed remotely by the customer using digital platforms such as the internet, banking applications, or ATMs, without the need to visit the bank's premises; these services enable customers to access their accounts, make transfers, request loans, or pay bills at any time and from any place.

These services are characterized by a set of technical and functional features, the most prominent of which are: 24/7 continuity, ease of access across various platforms, speed and interactivity, low operational costs, reliance on high security standards, and regular updates to ensure improved performance and services (Hariri, Didouche, 2022, p. 25).

In terms of importance, service digitalization is a true lever for modernizing the banking sector by improving service quality, enhancing the efficiency of financial institutions, expanding the customer base, supporting financial inclusion by delivering services to broad segments, especially in remote areas, in addition to its role in accelerating the pace of digital transformation and reinforcing principles of transparency and oversight (Ben Moussa, 2020).

The types of banking services vary depending on their technical nature, complexity, and the functions they provide. They also differ in their level of interaction with users and the degree of security they offer. According to researcher Kandilji, these include the following:

- **Bank Cards :** These are payment tools issued by the bank to the cardholder based on a contract between the two parties, allowing them to withdraw cash from ATMs or pay for purchases and services without using cash, whether at points of sale or online.
- **Electronic Cheques:** These are secure, digitally signed electronic messages sent from the cheque issuer to the recipient; the recipient submits them electronically to the bank to transfer their value directly to their account. They can be canceled electronically in case of errors.
- **Electronic Wallets:** These are defined as magnetic plastic cards equipped with an electronic chip that can be linked to a computer or smartphone, used for storing and transferring financial value electronically, particularly via the internet.

- **Electronic Money (Monnaie électronique):** These are digital currencies stored in electronic media, used for transactions over the internet as a payment method.
- **Mobile Banking (mobile banking):** These are banking services that allow customers to perform certain banking operations via mobile phones using a PIN (Qandilji , 2014, p.25).

From the above, it is clear that electronic banking services have evolved to include various forms and contents of platforms and media, making them a fundamental pillar of digital transformation and enhancing financial inclusion.

In Algeria, despite the relative delay in banking digitalization, recent years have witnessed noticeable progress in this field. However, these developments remain limited; reports indicate low usage of electronic payment methods, a lack of digital banking culture among large population segments, and weak technological infrastructure.

II.2. Financial Inclusion and Mechanisms to Promote It

In recent years, the term financial inclusion has become a fundamental concept in economic development; it has strongly imposed itself on the economic scene in general and the financial and banking sectors in particular due to its importance in achieving economic growth and stability. In this context, definitions of financial inclusion have varied depending on the entities, organizations, and international bodies concerned with this field. The most prominent definitions are as follows.

II.2.1. Concept of Financial Inclusion

The World Bank defines financial inclusion as: enabling individuals and businesses to access and effectively use financial services that are affordable, accessible to all, and provided responsibly and sustainably to ensure the promotion of financial stability and economic development.

The Arab Monetary Fund defines financial inclusion as: the ability of all members of society to access formal banking services, improving their financial awareness, and encouraging their effective use (Boulmerdj & Kataf , 2021, p.185).

The Bank of Algeria defines it as: the process of providing financial services and products to all societal segments in a fair and affordable manner, enabling every individual or institution—including marginalized groups and remote areas—to access banking, credit, insurance, and digital services to support sustainable economic development and societal balance (Karkar, 2022,p.366).

From the above definitions, it is clear that financial inclusion is the provision and use of all financial and banking products and services (bank

accounts, loans, leasing, insurance, local and international payments and transfers, etc.) to various societal segments of individuals and institutions through formal financial channels at the lowest cost, with quality, consideration for consumer rights protection, and promoting banking and financial awareness.

II.2.2. Importance and Objectives of Financial Inclusion

Financial inclusion is one of the main objectives that countries strive to achieve in promoting economic growth and reducing poverty; it enables the provision of comprehensive and accessible financial services to all individuals regardless of their income level or social status, whether in cities or rural areas.

Financial inclusion is a cornerstone of achieving economic and social development. It has become a focus of attention for governments and global financial institutions, and its importance is particularly evident, according to (Khalil, 2015, p.07) in the following:

- **Supporting Economic Growth:** Financial inclusion enhances opportunities for access to financial services such as credit, savings, and insurance, contributing to stimulating investment and economic growth, especially in small and medium enterprises.
- **Reducing Poverty and Unemployment:** Financial inclusion helps individuals with limited income improve their living standards and fund small projects that contribute to job creation through microloans and accessible financial services.
- **Enhancing Financial Stability:** Financial inclusion contributes to integrating the informal sector into the formal financial system, promoting economic stability and reducing economic and social disparities.
- **Keeping Pace with Digital Developments:** With technological advancements, financial inclusion facilitates access to financial services via the internet, contributing to improved efficiency and reduced costs.

In general, financial inclusion aims to empower individuals and small enterprises with easy and secure access to formal financial services as a means of enhancing economic and social stability. This is achieved by facilitating the opening of bank accounts, encouraging savings and investment, expanding financial education, and protecting consumers from unregulated practices. It also aims to reduce reliance on informal income sources and encourage resorting to financial institutions that provide services tailored to the needs of all societal segments, including vulnerable and marginalized groups.

II.2.3. Dimensions and Indicators of Financial Inclusion

Financial inclusion relies on several interconnected dimensions, the most prominent of which, according to Jilali, Moulay Mustafa (2021), are:

- **Access Dimension:** Refers to the number of bank branches and service points available per population segment;
- **Usage Dimension:** Refers to the extent of individuals' actual use of financial services in terms of the number and volume of transactions;
- **Quality Dimension:** Measures the suitability of financial products to users' needs in terms of transparency, security, and effectiveness.

Based on the above and given the importance of financial inclusion in the path of development, Algeria, within the framework of the national digital transformation strategy, is working on adopting a set of measures to improve the situation and link the future of financial inclusion in Algeria, including: (Jilali, Moulay Mustafa, 2021).

Expanding the network of banks and Algeria Post offices in inland states;

- Strengthening the legal framework for electronic payments and expanding innovation in digital banking services.
- Supporting fintech startups to accelerate banking digitalization and invest in digital banks to reach unbanked populations to ensure a national financial inclusion plan;
- Integrating financial education into educational programs and organizing awareness campaigns about banking services (Jilali, Moulay Mustafa, 2021, p. 655).

III. Field Results and Hypothesis Testing

III.1. Methodological Framework

This section will clarify the methodological framework of the study by identifying the study population and sample, the research tool, and verifying data quality

III. 1.1. Study Population and Sample

Initially, it should be noted that the study was conducted on the Bank of Agriculture and Rural Development – Blida Branch – a banking institution with shares established on March 13, 1982, under a legal framework. The Bank of Agriculture and Rural Development aims to promote the agricultural sector, rural development, agribusiness, fisheries, and aquaculture in Algeria by offering a diverse range of financial and digital products and services to support and accompany customers in improving and developing their activities. To achieve this goal, the bank provides 340 agencies, including 8,000 employees distributed across the national territory, ensuring secure and fast service through a new information system.

Thus, the research population was defined as the customers of the Blida Branch institution. To measure the impact of their use of electronic banking services on their level of access to financial services and their inclusivity, i.e.,

their integration into the formal financial system, 53 questionnaires were distributed randomly, with 3 excluded, and only 50 retained for the study and analysis.

III. 1.2. Description of the Research Tool (Questionnaire)

The questionnaire was relied upon to obtain information and data from the studied sample, and the questionnaire was designed with reference to some Arabic and foreign studies. As for the scale, we used the five-point Likert scale, which consists of five degrees as follows (Strongly Disagree (01), Disagree (02), Neutral (03), Agree (04), Strongly Agree (05).

The questionnaire consisted of 20 statements to measure the study variables, divided into the following three sections:

- **First Section:** Includes the personal variables of the respondents: educational qualification, professional experience;
- **Second Section:** Concerns the independent variable (electronic banking services): represented by statements 01 to 10;
- **Third Section:** Concerns the dependent variable (enhancing financial inclusion), represented by statements 11 to 20.

III. 1.3. Testing the Quality of the Research Tool

To ensure the questionnaire's validity and reliability, the following statistical methods were applied:

a. Validity Testing:

To verify the suitability of the research tool and test its quality, the following statistical methods were conducted:

- Questionnaire Validity Test:

The structural validity of the research tool was tested, where internal consistency refers to the extent to which each statement in the questionnaire aligns with the dimension it belongs to, by calculating the correlation coefficients between each statement of the questionnaire sections and the total score of the same section. This is illustrated in Tables (01) and (02).

Table (01): Results of the Internal Validity Test for the Statements of the Electronic Banking Services Section

Section	Statement	Correlation Coefficient	Significance Level
Electronic Banking Services	I regularly use the bank card for withdrawals or payments.	0.573	0.000
	I use the MY BADR app for transfers and balance inquiries.	0.588	0.000
	I track my account balance and transactions via BADR Net or the app.	0.674	0.000
	I use electronic banking services to pay monthly bills.	0.636	0.000

	I prefer electronic banking transactions over visiting the branch.	0.668	0.000
	I feel secure using BADR's electronic services.	0.667	0.000
	I find BADR's app interfaces easy and clear to use.	0.639	0.000
	I benefit from BADR SMS alerts to track account activity instantly.	0.669	0.000
	I use digital services to apply for financing or salary statements.	0.716	0.000
	I use BADR Net to explore banking and financing offers.	0.685	0.000

Source: Prepared by the researchers using SPSS.

The table shows that the electronic banking services section has acceptable internal validity, with correlation coefficients ranging from 0.573 to 0.716 at a 0.05 significance level, confirming the section's reliability in measuring electronic service levels at BADR Blida Branch.

Table (02): Results of the Internal Validity Test for the Statements of the Financial Inclusion Section

Section	Statement	Correlation Coefficient	Significance Level
Financial Inclusion	I have an active bank account and use it regularly.	**0.518	0.000
	I can save easily through my bank account.	**0.703	0.000
	I can access various formal banking products.	**0.728	0.000
	I can obtain a loan or financing when needed.	**0.726	0.000
	I use electronic tools to manage my funds without relying on cash.	**0.696	0.000
	I feel banking services align with my social and professional status.	**0.760	0.000
	I can manage my monthly expenses thanks to banking services.	**0.546	0.000
	I trust dealing with formal banks over the informal market.	**0.594	0.000
	Available banking services have integrated me into the financial system.	**0.623	0.000
	I recommend others use bank accounts for their benefits.	**0.702	0.000

Source: Prepared by the researchers using SPSS.

The financial inclusion section shows acceptable internal validity, with correlation coefficients ranging from 0.518 to 0.760 at a 0.05 significance level, confirming its reliability in measuring financial inclusion at BADR Blida Branch.

b. Reliability Testing:

The following table represents the study results using the Cronbach's Alpha reliability coefficient.

Table (03): Results of the Reliability Test of the Research Tool Using Cronbach's Alpha Coefficient

Section	Cronbach's Alpha	Number of Statements	Number of Cases
Electronic Banking Services	0.883	10	50
Financial Inclusion	0.938	10	50
All Sections	0.943	20	50

Source: Prepared by the researchers using SPSS.

It is evident from the table that the Cronbach's Alpha coefficient for the first section is 0.883. For the second section, it is 0.938. The Cronbach's Alpha coefficient obtained for all questionnaire statements is 0.943, indicating an excellent level of reliability (reliability coefficients exceed the statistically acceptable threshold of 0.6) for both the sections and the questionnaire as a whole. Thus, the condition of the research tool's reliability is met, allowing the study results to be generalized to the entire study population.

III.2. Data Analysis

In this section, the various data obtained from the questionnaire will be presented and analyzed using the SPSS statistical program, in a manner that contributes to providing results that address the hypotheses previously proposed, to identify the personal characteristics of the study sample; the first section of the questionnaire addressed personal data, and frequencies, percentages, and arithmetic means for the sections and hypothesis testing were also extracted.

III.2.1. Descriptive Analysis of Personal Data

Table (04): Distribution of Study Sample Individuals According to Personal Data

Data	Category	Frequency/Percentage	Total
Gender	Male	34 (68%)	50 (100%)
	Female	16 (32%)	
Age	Under 30	5 (10%)	50 (100%)
	30–45	29 (58%)	
	Over 45	16 (32%)	
Education	University Degree	26 (52%)	50 (100%)
	No University Degree	24 (48%)	
Profession	Employee	20 (40%)	50 (100%)
	Self-Employed	6 (12%)	
	Other Professions	24 (48%)	
Bank Subscription Duration	1–2 Years	11 (22%)	50 (100%)
	2–5 Years	22 (44%)	
	Over 5 Years	17 (34%)	

Source: Prepared by the researchers using SPSS.

It is clear from the table that the majority of the sample are males, at a rate of 68% compared to 32% for females. This result is quite logical given the greater association of males with the financial aspect in terms of benefiting from

banking services and project financing. However, the significant presence of females indicates, initially, the inclusivity of the institution's financial services in covering the female segment, despite its greater focus on agriculture and development.

The results regarding the age groups of the sample showed that the majority are young, with 10% under 30 years, 58% between 30 and 45 years, and the remaining 32% over 45 years. This indicates that the majority of subscribers and beneficiaries of banking services are young, which naturally supports the path of financial inclusion, as this group is more in need of financing and banking services to realize their projects.

Regarding the educational qualification characteristic, the results showed that the sample is balanced and homogeneous between those with a university degree, the majority at 52%, and those without any degree at 48%. This indicates the inclusivity of banking services and subscription to the institution reaching those without degrees, although electronic services and financial awareness are more effective with higher customer qualifications.

Regarding professional status, an important aspect of banking services and their benefits, and the inclusivity of services for all professions and specializations to achieve development, the study revealed that the bank's customers are diverse in terms of professions, with 40% employees, the majority, distributed between government and private sector employees, as this was not specified in the questionnaire. Then, 6% are self-employed, who are concerned with financing and service inclusivity, and the final significant percentage, nearly half at 48%, for other professions and fields, possibly including the unemployed and university students. This indicates the breadth of the service and the diversity of BADR institution customers' characteristics.

From the table, we also note that the majority of the sample have subscriptions for years, with the dominant group being 2 to 5 years at 44%, followed by those with subscriptions over 5 years at 34%. The subscription rate for less than 2 years was 22%. This distribution indicates that the bank has attracted more customers in recent years, possibly due to the availability of digital services and the facilitation of access to banking services. It also indicates that it retains its customers for over 5 years and has a significant percentage of new subscribers.

This distribution in the study sample reflects that the majority of customers using BADR's electronic banking services have a medium to high educational level, which is a positive indicator of their awareness of financial technology and their engagement with digital banking transactions. It also reflects the sample's inclusivity and its ability to represent different customer segments of the institution under study.

III.2.2. Analysis of Electronic Banking Services Data

Table (05): Analysis of Electronic Banking Services Statements

No.	Statement	Mean	Std. deviation	Agreement level	rank
01	I regularly use the bank card for withdrawals or payments.	4.11	0.880	High	1
02	I use the MY BADR app for transfers and balance inquiries.	3.69	1.131	High	10
03	I track my account balance and transactions via BADR Net or the app.	3.77	1.015	High	9
04	I use electronic banking services to pay monthly bills.	3.87	1.021	High	8
05	I prefer electronic banking transactions over visiting the branch.	3.79	0.961	High	4
06	I feel secure using BADR's electronic services.	3.59	1.024	High	3
07	I find BADR's app interfaces easy and clear to use.	3.83	1.002	High	6
08	I benefit from BADR SMS alerts to track account activity instantly.	3.78	1.004	High	2
09	I use digital services to apply for financing or salary statements.	3.86	0.967	High	7
10	I use BADR Net to explore banking and financing offers.	3.73	1.061	high	5
Financial Inclusion		4.02	0.815	high	-

Source: Prepared by the researchers using SPSS.

The statistical analysis results from the above table indicate that all statements received a “high” agreement level, reflecting general customer satisfaction with the level of electronic services provided by the Bank of Agriculture and Rural Development. The statement “I regularly use the bank card for withdrawals or payments” received the highest arithmetic mean (4.11), with a standard deviation (0.880), indicating that respondents relatively trust the reliability of bank cards. It should be noted that the low standard deviation (less than 1) indicates convergence in individuals’ opinions and low variance, which enhances the reliability of this dimension’s results.

The statements “I use the MY BADR app for transfers and balance inquiries” and “I feel secure using BADR’s electronic services” received the lowest arithmetic means of (3.69) and (3.59), respectively, with standard deviations exceeding one, indicating clear variation in the opinions of the study sample regarding security and trust in using banking applications.

In general, these results confirm that the Bank of Agriculture and Rural Development provides acceptable to good electronic services in most aspects; however, attention to services through platforms or applications is necessary to

comprehensively improve the quality of electronic services by continuously improving the applications and platforms launched.

III. 2.3. Analysis of Financial Inclusion Data

The results related to the financial inclusion section can be presented as follows:

Table (06): Analysis of the Statements of the Financial Inclusion Enhancement Section

No.	Statement	Mean	Std. deviation	Agreement level	rank
11	I have an active bank account and use it regularly.	4.24	0.674	High	1
12	I can save easily through my bank account.	3.96	1.006	High	10
13	I can access various formal banking products.	4.00	0.993	High	9
14	I can obtain a loan or financing when needed.	4.02	0.899	High	8
15	I use electronic tools to manage my funds without relying on cash.	4.08	0.876	High	4
16	I feel banking services align with my social and professional status	4.11	0.896	High	3
17	I can manage my monthly expenses thanks to banking services.	4.05	0.954	High	6
18	I trust dealing with formal banks over the informal market.	4.12	0.910	High	2
19	Available banking services have integrated me into the financial system.	4.04	0.980	High	7
20	I recommend others use bank accounts for their benefits.	4.07	0.996	high	5
Financial Inclusion		4.13	0.729	high	-

Source: Prepared by the researchers using SPSS.

From the above table, the results indicate that the overall arithmetic mean for the section reached (4.13), with a standard deviation of (0.729), which expresses a “high” agreement level from the respondents. This means a high level of acceptance and satisfaction toward the factors for enhancing financial inclusion at the Bank of Agriculture and Rural Development.

At the statement level, the first statement recorded the highest arithmetic mean (4.24) with a low standard deviation (0.674), reflecting clear interest from customers in owning and regularly using a bank account, and it also shows significant homogeneity in the sample’s opinions (due to the low standard deviation).

Regarding the standard deviation, it is noted that most values range between (0.674) and (1.06), indicating slight variation in respondents’ opinions, which is normal in field studies involving a diverse sample in terms of backgrounds and

needs. However, statement number (12) recorded the lowest mean (3.36), indicating a lower customer evaluation of this point, likely due to reservations about trust in the confidentiality of information provided by electronic banking services, which may be considered a point needing future improvement.

III. 3. Testing the Hypothesis of Digital Services and Financial Inclusion at BADR

To test the validity of the main hypothesis stating: “There is a correlation between electronic banking services and enhancing financial inclusion at the Bank of Agriculture and Rural Development – Blida Branch,” we used the Pearson correlation coefficient to determine the strength and direction of the relationship between the independent and dependent variables. Table (07) illustrates this:

Table (07): Correlation Matrix for Electronic Banking Services and Financial Inclusion

Pearson Correlation		Electronic Banking Services
Financial Inclusion	Pearson Correlation	0.552
	Significance Level	0.000
	Sample Size	50

Source: Prepared by the researchers using SPSS.

The statistical analysis results shown in Table (07) indicate that there is a (positive or direct) correlation between the independent variable, the use of electronic banking services, and the dependent variable (level of financial inclusion enhancement) with a correlation coefficient of 0.552. This relationship is statistically significant at a 0.05 significance level; since the statistical significance value (sig=0.000) is less than 0.05, confirming that the relationship is not due to chance. Accordingly, it can be said that the increasing use of electronic banking services at the Bank of Agriculture and Rural Development positively contributes to enhancing financial inclusion levels among customers.

The results of the main hypothesis test can be clarified through the simple linear regression results shown in Table (08).

Table (08): Results of the Main Hypothesis Test

Hypothesis	Statistical analysis results					
There is a relationship between electronic banking services and enhanced financial inclusion at BADR.	R	R ²	B	T	f	Significance Level
?	0.552	0.305	0.603	4.239	17.971	0.000

Source: Prepared by the researchers using SPSS.

These results can be analyzed as follows:

- The correlation coefficient between the independent variable, electronic banking services, and the dependent variable, financial inclusion enhancement at the institution under study, reached $R=0.552$, confirming the existence of a relationship between the two variables, with a strength of 55.2%, significant at a 0.05 significance level;
- The determination coefficient $R^2 = 0.305$, meaning that the independent variable explains the dependent variable by 30.5%;
- The regression coefficient between the two variables $B= 0.60$; the positive sign of the regression coefficient indicates that the relationship between the variables is direct;
- The F value reached $F=17.971$, indicating that the model is statistically significant;
- The t-test value reached $t=4.239$, which is statistically significant, confirming the validity of this hypothesis.

IV. Conclusion

This study confirms a significant positive relationship between the adoption of electronic banking services and the enhancement of financial inclusion at the Bank of Agriculture and Rural Development. The findings demonstrate that digital banking services facilitate access to financial products, promote the use of formal financial channels, and reduce reliance on cash transactions. Statistical analysis revealed a moderate yet meaningful correlation ($R=0.552$) between digital adoption and inclusion levels, supporting the role of digitalization in integrating broader segments of the population into the formal financial system. Despite existing challenges such as infrastructural limitations and cultural hesitations, electronic banking emerges as a promising mechanism for advancing financial inclusion in Algeria.

Based on these results, the study recommends modernizing digital infrastructure, improving the usability and security of banking applications, and launching targeted awareness campaigns to build trust—especially in underserved and rural communities. It also suggests implementing staff training in digital transformation and diversifying digital financial products to meet the needs of diverse customer groups, including low-income and informal sectors. Furthermore, establishing a supportive regulatory framework for fintech innovation could accelerate the development of inclusive digital banking models.

Looking ahead, future research could explore comparative studies between public and private banks, investigate barriers to digital adoption among unbanked populations, examine the link between digital inclusion and social development indicators such as poverty reduction and women's empowerment, assess bank-fintech partnerships in expanding financial access, and evaluate the potential of

emerging technologies like AI and blockchain in creating secure and inclusive financial ecosystems.

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Annexe: RESEARCH QUESTIONNAIRE

Study Title: The Role of Electronic Banking Services in Promoting Financial Inclusion – Case of the Bank of Agriculture and Rural Development (BADR) – Blida Branch

Dear Participant,

This questionnaire is part of an academic research study aimed at examining the impact of electronic banking services on financial inclusion. Your responses are anonymous and confidential. Please answer honestly.

Section 1 : Personal Data

1. **Gender :**
 - ☐ Male
 - ☐ Female
2. **Age :**
 - ☐ Under 30
 - ☐ 30 – 45
 - ☐ Over 45
3. **Education Level :**
 - ☐ University degree
 - ☐ No university degree
4. **Profession :**
 - ☐ Employee
 - ☐ Self-employed
 - ☐ Other (specify): _____
5. **Length as BADR Client :**
 - ☐ 1 – 2 years
 - ☐ 2 – 5 years
 - ☐ Over 5 years

Section 2 : Electronic Banking Services

Please indicate your level of agreement with the following statements (1 = Strongly Disagree, 5 = Strongly Agree):

No.	Statement	1	2	3	4	5
1	I regularly use the bank card for withdrawals or payments.					
2	I use the MY BADR app for transfers and balance inquiries.					
3	I track my account balance and transactions via BADR Net or the app.					
4	I use electronic banking services to pay monthly bills.					
5	I prefer electronic banking transactions over visiting the branch.					
6	I feel secure using BADR's electronic services.					
7	I find BADR's app interfaces easy and clear to use.					
8	I benefit from BADR SMS alerts to track account activity instantly.					
9	I use digital services to apply for financing or salary statements.					
10	I use BADR Net to explore banking and financing offers.					

Section 3: Financial Inclusion

Please indicate your level of agreement with the following statements (1 = Strongly Disagree, 5 = Strongly Agree):

No.	Statement	1	2	3	4	5
11	I have an active bank account and use it regularly.					
12	I can save easily through my bank account.					
13	I can access various formal banking products.					
14	I can obtain a loan or financing when needed.					
15	I use electronic tools to manage my funds without relying on cash.					
16	I feel banking services align with my social and professional status.					
17	I can manage my monthly expenses thanks to banking services.					
18	I trust dealing with formal banks over the informal market.					
19	Available banking services have integrated me into the financial system.					
20	I recommend others use bank accounts for their benefits.					

Thank you for your participation!