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Study of the impact of Digitalization on the Financial Performance of Algerian Banks Case of the Banque Extérieure d'Algérie (BEA)

Hassiba SELLOU [1 *], Nihel OUDAINIA [2] , Amira MAINA [3]
[1] LEREN laboratory, Higher School of Management and Digital Economy, (Algeria), hsellou@esgen.edu.dz
[2] Higher School of Management and Digital Economy, (Algeria), nioudainia_etd@esgen.edu.dz
[3]Higher School of Management and Digital Economy, (Algeria), amaina_etd@esgen.edu.dz

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Abstract:
Digitalization has become an essential lever in the banking sector. This research analyzes the impact of digital tools on the financial performance of the Banque Extérieure d'Algérie (BEA) during the period 2021–2024. Based on an econometric methodology, the study examines the relationship between financial indicators—ROA and ROE—and the use of digital services such as CIB cards, POS terminals, and the BEA Mobile application. The results reveal a moderately positive impact of certain tools (notably BEA Mobile) on profitability, while others (such as CIB cards) show no significant effect. This variability highlights the need for a strategic integration of technology to ensure profitable digitalization.

Keywords: banking digitalization, financial performance, BEA, ROA, ROE, digital Tools.
JEL Classification: G21; O33 ; C58**.**

[*] ***Corresponding author.***

Introduction

Digital transformation today represents a major turning point in the banking sector, shaking its traditional paradigms in terms of management, organization, and customer relations. The rapid emergence of digital technologies, such as mobile applications, online platforms, artificial intelligence and blockchain, requires banks to fundamentally rethink their strategic approach. Beyond the simple automation of services, digitalization engages financial institutions to optimize their performance while meeting new customer expectations in terms of accessibility, speed and security.

Historically, the banking sector has undergone significant milestones since its beginnings in the Middle Ages, including the gradual structuring of financial services, the post-Second World War expansion with the generalization of wage banking, until the transformations caused by the financial crisis of 2008. The Commission stressed the need to strengthen financial resilience through strict prudential standards (Basel II and III), making financial performance a central indicator of bank soundness.

In the digital age, a new dimension enriches the issue of financial performance. Digitalization allows banks to reduce operational costs, improve service quality and increase efficiency. However, it entails substantial investments in technological infrastructure, cybersecurity and training, which must be profitable thanks to a clear strategic vision and innovative resource management.

In developed countries, this digital transition has been rapid and massive, supported by advanced information systems and sophisticated artificial intelligence solutions. On the other hand, in developing countries, particularly in Africa and especially in Algeria, this dynamic remains gradual despite encouraging initiatives. The Algerian banking system, long conservative and dominated by a strong state presence, is now trying to catch up. The External Bank of Algeria (BEA), a major public player, has launched several digitization projects (mobile applications, inter-bank cards, electronic payment terminals, automatic teller machines, online services) demonstrating a genuine desire for modernization.

The theme of the impact of digitalization on the financial performance of Algerian banks is becoming more and more relevant. While the authorities encourage financial inclusion and economic diversification, digitalization appears as a strategic opportunity to improve access to financial services and strengthen the competitiveness of public banks. However, research on the precise measurement of this impact remains rare, fragmentary and often descriptive, justifying the relevance of this study.

The literature review highlights that digitalization has become an essential lever for the transformation of the banking sector. Digital technologies promote a more personalized and accessible customer relationship, while inducing internal process automation and redefining traditional business models. Several international studies (MOUMTAZ, K., & MOUDINE, C., 2024) confirm the positive effect of digitalization on operational performance, customer satisfaction, and cost reduction, even if some research is limited to the security aspect without evaluating bank profitability.

In the Algerian context, two studies on the National Bank of Algeria (BNA) highlighted a notable improvement in customer relations and a progression in the adoption of digital tools, but without concrete financial data to measure the real economic impact. Other research, such as that of (Boumediene & Garcia-bardidia, 2021) and (BAHABI, 2024), remain descriptive and focused on customer perception, without robust modeling of financial performance.

These findings reveal an important methodological gap: the absence of in-depth empirical studies evaluating the quantifiable effect of digitalization on the financial performance of Algerian public banks, particularly through measurable financial indicators.

Starting from these elements, the central issue of this research is formulated as follows:

How does digitalization impact the financial performance of Algerian public banks, particularly that of the BEA?

To explore this question, several specific questions are asked:

• What digital tools does the BEA currently use?

• How to concretely measure the effect of digitalization on financial indicators?

• Do digital services have a significant impact on profitability and productivity?

• Which digital variables most influence financial performance?

• What limits hinder or mitigate the expected effect of digitalization?

Two research hypotheses guide this study:

1. The digital initiatives of Algerian banks exert a significant influence on their financial performance.

2. The adoption and use of digital tools positively contribute to improving financial performance.

To address this issue, the methodology combines a descriptive analysis of the digital practices of the BEA and an empirical study based on real financial data. This dual approach will allow for a quantitative evaluation of

the impact of digitalization on performance, while deepening the understanding of the forms and levels of adoption of digital tools.
This work thus aims to fill an important scientific gap by providing a rigorous and contextualized perspective on the challenges and results of banking digitalization in Algeria.

1- Conceptual framework: Banking digitalization and financial performance

The banking sector is undergoing profound changes due to digital technologies, increased competition and changing customer requirements. Digitalization is a strategic approach that transforms processes, business models and performance criteria. This conceptual framework analyzes the two key concepts of this study: banking digitalization and financial performance, whose interconnection is essential to understand current issues**.**

1-1-Banking digitalization: Concepts, tools and challenges:

Digitalization in banking is much more than a simple shift from paper to digital. It refers to a process of profound transformation involving the integration of digital technologies in all aspects of banking activity (BERRAHRAH & BERREZIGA, A., 2021). This transformation is driven by several factors: the evolution of customer expectations, technological acceleration (mobile, AI, cloud), increased competition, and the need for greater operational efficiency (AUTISSIER & Li, L., & MOUTOT, J.-M., 2015).

We distinguish several key components of digitalization :

- ✓ **Portability**: banking services are now accessible from smartphones, tablets and computers. (AUTISSIER & METAIS-WIERSCH, E., 2016)
- ✓ **Automation**: repetitive operations are delegated to robots or intelligent systems, reducing human errors.
- ✓ **Dematerialization**: processes take place without paper support (online forms, electronic signature, digital document management) (AUTISSIER & METAIS-WIERSCH, E., 2016, p. 12).

Among the main digital tools used in modern banks, we find:

- ✓ Bank cards (CIB), which facilitate electronic payments;
- ✓ Automated banking machines (ABMs), which provide seamless access to basic services;
- ✓ Electronic payment terminals (EPT), which support local commerce;

- ✓ Mobile applications, such as BEA Mobile, which allow remote access and management of accounts;
- ✓ Web platforms (online banking), which allow the complete management of operations;
- ✓ Emerging technologies, such as artificial intelligence (chatbots, scoring), blockchain (transaction security), and cloud computing.

Digitalization profoundly influences society and the economy by transforming working, communication, and consumption patterns. With more than 5 billion users online, it is an essential lever to improve access to information, reduce the digital divide and support social and environmental transitions.

- ✓ The strategic challenges concern rapid adaptation to market changes and competition, the design of new innovative products and services, as well as expansion into new markets. Digital technologies, such as artificial intelligence and cloud computing, allow organizations to better understand their customers and strengthen their competitive position (HUET, 2016).
- ✓ At the organizational level, digitalization optimizes internal processes by automating and dematerializing key functions such as document management, customer relationship, billing, supply chain, internal communication, and project management, which improves efficiency and reduces costs.
- ✓ The technical challenges are related to the judicious selection of technologies, their regular maintenance, as well as cybersecurity and data protection, essential to ensure reliability and trust in digital systems (MASNE, 2021).
- ✓ Human issues highlight the importance of training, digital skills development, employee engagement and morale management, as well as the recruitment of specialized talent, because the success of digital transformation also depends on people (BESSON, 2023).
- ✓ From a financial point of view, the stakes concern the financing of digital investments, the rigorous evaluation of the return on investment (ROI), and the management of operational costs, often lightened by dematerialization (Kwark Groupe, 2024).
- ✓ Legal and compliance challenges require compliance with industry regulations, data protection laws (such as GDPR), and intellectual property protection to secure operations and maintain customer trust.
- ✓ Finally, societal and ethical issues highlight the impact of digitalization on employment, the need to anticipate skills changes,

corporate social responsibility including reducing the environmental footprint (Porter, Michael E., , Mark R. , & Kramer, 2011), and the importance of ensuring digital accessibility for all, to build a more equitable society (OCDE, 2019).

- ✓ Security remains a fundamental pillar: the securing of online transactions, protection against cyber-attacks and rigorous risk management related to personal data are essential to preserve user trust (HUET, 2016).
- ✓ In terms of communication and marketing, mastering the online presence, developing adapted digital strategies, and proactive management of customer relations via digital tools are key factors for strengthening customer engagement and brand image (DERRAR & BELKHIR, 2019).

1-2-Financial performance: Definitions and measurement indicators

Financial performance represents an organization's ability to generate value and ensure its economic sustainability. In the case of a bank, this translates into the optimization of its resources, the control of its costs and the profitability of the services provided (DORIATH & C. GOUJET, 2005).

The most commonly used indicators in banking are :

- ROA (Return on Assets): It measures the return on assets of a bank, that is to say its ability to generate a profit from all its resources (loans, investments, etc.).

$$ROA = \text{Net income} / \text{Total assets}$$

The higher the ROA, the more efficiently the bank manages its overall resources.

- ROE (Return on Equity): It measures the profitability of equity capital. It reflects the gain generated for each unit of capital invested by shareholders.

$$ROE = \text{Net income} / \text{Equity}$$

A high ROE is often synonymous with efficient management, but can also indicate excessive recourse to debt (leverage).

2-Methodology of the empirical study

In order to address the study's issue, this section aims to analyze econometrically the impact of digitalization on the financial performance of an Algerian bank by first exposing the methodology adopted, including the choice of data, variables and analysis techniques.

2-1-Objective of the study

The main objective of this study is to econometrically evaluate the impact of the digitalization of banking services on the financial performance of banking institutions, taking as a case study the External Bank of Algeria (BEA).

In a context where financial institutions are increasingly adopting digital technologies to improve their operational efficiency and competitiveness, it is essential to quantify the real effect of these transformations on banking performance indicators.

To do this, this research will mobilize econometric analysis tools, notably multiple linear regression models, in order to establish statistical relationships between variables representative of digitalization and banking performance indicators.

The analysis will be carried out using R software, which offers a wide range of packages for data manipulation, econometric model estimation and results visualization.

This study thus aims to provide quantitative insights into the effectiveness of the digitalization initiatives implemented by the BEA, and to formulate recommendations based on empirical evidence to guide future digital transformation strategies in the Algerian banking sector (GAVARD-PERRET, GOTTELAND, D., HAON, C., & JOLIBERT, A, 2008).

2-2- Search variables

The study is based on the analysis of monthly data concerning the digitalization tools implemented by the BEA, as well as on indicators reflecting its financial performance, covering a period of four years, from 2021 to 2024.

The variables were selected to reflect key aspects of digital transformation and banking profitability.

Independent variables: Indicators of digitalization

•**X1**=Number of customers using CIB cards: The number of customers using CIB cards simply shows how many customers have adopted electronic bank cards, which reflects their willingness to use digital payment solutions rather than traditional methods such as cash payments. It is a sign that digitalization is progressing among customers.

• **X2**=Number of customers using BEA's digital services: This parameter evaluates the customer engagement in the use of BEA's digital services, such as mobile app and online services, indicating a preference for digital banking tools.

• **X3**=Number of customers accessing the mobile app: This parameter indicates the penetration of mobile services, offering customers increased autonomy in managing their banking operations.

•**X4**=Number of transactions carried out via ATM, ABM and POS terminal: This indicator quantifies the use of electronic infrastructures for banking operations (Cash Dispensers, Automatic Teller Machines, Electronic Payment Terminals) , testifying to the efficiency and accessibility of digital services.

Dependent variables: Financial performance indicators

• **Return on Assets (ROA):** This indicator measures the profitability of the bank's assets, evaluating the efficiency of resource use to generate profits.

• **Return on Equity (ROE)**: This ratio assesses the return on equity, indicating the bank's ability to generate profits from shareholder investments (RAMLI, 2018).

2-3- The econometric model

As part of this study, an econometric multiple linear regression model was developed, allowing to establish quantitative relationships between the explanatory variables related to digitalization and financial performance indicators.

-Multiple linear regression is a statistical method that allows modeling the relationship between a dependent variable and several independent variables, it is defined by the following equation :

$$Yi=\beta 0+\beta 1X1i+\beta 2X2i+...+\beta pXpi+\varepsilon i$$

Where:

Yi: represents the dependent variable for observation i, in this case the financial performance indicators the Return on Assets (ROA) or the Return on Equity (ROE).

X1i, X2i,... ,Xpi are the explanatory variables associated with the digitalization of banking services for observation i.

β 0: is the intercept (model constant).

β 1,β 2,... ,β p: are the regression coefficients to be estimated, reflecting the marginal effect of each explanatory variable on the dependent variable

ε i: is the random error term, capturing unobserved factors influencing the dependent variable

In this study, the R software was used to:

- The manipulation and cleaning of financial and numerical data. The estimation of multiple linear regression models.
- Conducting statistical tests (significance tests, multicollinearity, heteroscedasticity, etc.).
- The creation of graphs and visualizations to illustrate relationships between variables (VERZANI, 2014).

Dynamic regression was also used because it is a statistical technique that combines regression analysis with time series data. It allows modeling the relationship between a dependent variable and one or more independent variables while taking into account the temporal dynamics of the data. This method is particularly useful in fields such as economics, finance and environmental science, where it is essential to understand the impact of factors varying over time (Statistics Easily, 2025).

Unlike static models that assume an immediate and constant relationship between variables, the dynamic model assumes that :

• The effect of an independent variable can manifest with a certain delay (delayed effect).

• The dependent variable can be influenced by its own past values (autoregressive effect).

• Some variables may not be stationary and require transformation (differentiation) to avoid biases.

This type of model is well suited to contexts where economic or financial decisions take effect gradually over time.

The simplest form of a dynamic model (of type ADL – Autoregressive Distributed Lag) is:

$Yt=\alpha+\beta\ 1Yt\ 1+\beta\ 2Xt+\beta\ 3Xt\ 1+\varepsilon\ t$

2-4- Test of the stationarity of variables:

In order to evaluate the validity of the time series data used in this analysis, it is essential to verify their stationarity. To this end, we applied a statistical test commonly used in the analysis of series data: the ADF (Augmented Dickey-Fuller) test.

Test Augmented Dickey-Fuller (ADF) is a fundamental statistical test used in econometrics and time series analysis to determine whether a given time series is stationary or not. Stationarity is a crucial property of time series data that implies that the statistical properties of the series, such as mean, variance, and auto-correlation, are constant over time. On the other hand, non-stationary data may exhibit trends, cycles or other structures that evolve over time, which can lead to misleading models and predictions if not properly accounted for.

The ADF test solves this problem by testing the null hypothesis that a unit root is present in an autoregressive model of time series. A unit root indicates that the shocks at the series level have a permanent effect and that the series is therefore non-stationary. The test uses an autoregressive model and adds shifted difference terms to account for serial correlation, hence the "augmented" part of the noun (SETTI, METNAOUI, M., & HACINE, Y. , 2022).

Table number (01): **Results of the stationarity tests (ADF) of variables before differentiation**

Variable	P-value(ADF test)	decision
X1	0.03424	Stationary
X2	0.0369	Stationary
X3	0.8835	Non-stationary
X4	0.609	Non-stationary
Y1	0.04379	Stationary
Y2	0.06719	Non-stationary

Source: R software results

The ADF stationary tests show that some of these variables require differentiation before modeling, in particular X2 and X3, initially non-stationary.

Table number (02): **Results of stationarity tests (ADF) of variables after differentiation**

Variable	ADF test	decision
X3	0.01	Stationary
X4	0.03794	Stationary
Y2	0.01268	Stationary

Source: R software results

3-Presentation and Discussion of the results obtained:

This section presents the main results of the econometric analysis conducted on the BEA data, then proposes a critical discussion. It aims to interpret the estimated coefficients, to put into perspective the identified impacts of digitalization on financial performance, and to compare these results with the findings of the existing literature.

3-1- Analysis of the effect of variables on return on equity (ROE):

Diff(Y1) ~ L (X1, 1) + L (X2, 1) + diff(X3) + diff(X4)

Table number (03): Estimation des coefficients des variables explicatives sur le rendement des capitaux propres (ROE)

Variable	Estimate
Intercept	3.316 e-02
L(X1 ,1)	-6.140 e-07
L(X2,1)	6.151 e-07
Diff (X3)	5.077 e-06
Diff(X4)	-3.893 e-06

Source: R software results

- **Variable X1: Number of clients actually using the cards**

The coefficient associated with this variable is negative, suggesting that an increase in the number of active users of CIB bank cards correlates with a slight decrease in return on equity (ROE).

This counterintuitive relationship can be explained by several factors :

- ✓ High operational costs: The increased use of cards can lead to higher management fees, system maintenance or even security (fraud, litigation, etc.), which weighs on net profits.
- ✓ Limited return: CIB card transactions may not generate sufficient margins to cover costs, reducing their contribution to the profitability of equity.
- ✓ Scale effect not achieved: If the number of users increases without a commensurate improvement in operational efficiency, this could harm profitability.

- **Variable X2: Number of accounts opened via the mobile app**

The estimated coefficient for this variable is positive and statistically significant, indicating that an increase in the number of accounts opened to access the mobile application is associated with an improvement in ROE.

This result can be interpreted as follows:

- ✓ Cost reduction: the execution of various operations via the application (withdrawal, transfer, check request, balance consultation) reduces administrative and human costs related to physical processes (paper, agency staff, processing time...).
- ✓ Efficiency and accessibility: Unlike the use of CIB cards (X1), the increased use of the bank's mobile application appears to be a more efficient digitalization lever, contributing positively to equity profitability (ROE). Indeed, the mobile application reduces operational costs (less staff in the agency, fewer manual treatments), while increasing accessibility and the frequency of interactions with clients. This improvement in efficiency and customer satisfaction promotes loyalty, the increase of subscribed bank products and therefore revenues, which, at constant capital, translates into a better return on invested equity.

- **Variable x3: total number of digitized clients**

This coefficient associated with variable X3 is positive, indicating that the increase in the number of customers using digital services is linked to an improvement in return on equity (ROE).

However, this effect remains low or moderate over the analyzed period.

The positive coefficient associated with variable X3, representing the number of customers using digital services, indicates a direct correlation between overall adoption of digital services and improvement in return on equity (ROE). This means that, in general, digitalization helps to increase operational efficiency and strengthen profitability through cost reduction and an intensification of banking activity. However, this overall effect remains moderate, which is partly explained by the heterogeneity of digital services themselves. Indeed, as discussed previously, certain services such as the use of CIB cards (X1) may generate additional costs or be less profitable, which mitigates the positive impact of other more powerful tools such as mobile applications. Thus, although digitalization as a whole tends to improve ROE, the observed net effect strongly depends on the nature and specific profitability of each digital service adopted.

- **Variable X4 : nombre de transaction financière via DAB ET GAB**

Le coefficient négatif, ce qui signifie que l'augmentation des opérations via les distributeurs automatiques de billets (DAB/GAB) est associée à une baisse du ROE en raison de leur infrastructure coûteuse et de faibles marges sur les transactions, souvent gratuites ou peu rémunératrices. Cette dépendance à un canal statique limite la création de valeur et l'interaction client, tout en risquant l'obsolescence technologique des équipements, ce qui affecte négativement l'efficacité du capital investi. Bien que les DAB/GAB restent utiles, ils ne constituent plus aujourd'hui un levier majeur de rentabilité, invitant les banques à optimiser leur déploiement et à accélérer la transition vers des solutions numériques plus performantes

- Analysis of the effect of variables on asset performance (ROA)

diff(Y2) ~ L(X1, 1) + L(X2, 1) + diff(X3) + diff(X4)

Table number (04): Estimation of the coefficients of explanatory variables on the return on assets (ROA)

Variable	Estimate
Intercept	9.47 e-04
L(X1,1)	-2.058 e-06
L(X2,1)	3.918 e-08
Diff (X3)	7.862 e-07
Diff (X4)	3.298 e-07

Source: R software results

- **Variable X1: Number of clients actually using the CIB cards**

The negative and significant coefficient indicates that an increase in the number of bank card users is related to a decrease in ROA. This effect is explained by the fact that the majority of operations carried out (withdrawals, payments) generate little income, yet mobilize many bank assets. Moreover, an increase in the number of users does not guarantee a more profitable clientele, and a saturation of basic uses limits the creation of value. Thus, more used cards add resources without increasing productivity, which reduces asset efficiency and lowers ROA.

- **Variable X2: Number of accounts opened via the mobile app**

The positive and significant coefficient shows that an increase in the number of mobile app users is linked to an improvement in ROA. This result is explained by the automation of interactions, the reduction of operating costs and the increase in the use of banking services, allowing the bank to increase its revenue without mobilizing more assets. Mobile digitalization thus appears as a strategic lever to optimize the profitability of resources and enhance ROA.

- **Variable X3: total number of digitized clients**

The coefficient of variable X3 is positive, which means that the increase in the number of customers using digital services is related to an improvement in the return on assets (ROA).

The positive coefficient associated with variable X3, measuring the use of digital services by customers, reveals a favorable contribution to improving the return on assets (ROA). Technically, this means that increasing adoption of digital tools allows the bank to generate more net results from its total asset volume. This improvement is explained by a better allocation of resources: digital services — especially those with high added value such as the mobile application, instant transfers or online balance consultation— allow to automate a significant part of the back-office operations and reduce the need for physical infrastructure. This optimizes the use of existing assets, including IT systems, service platforms, and even human resources. Consequently, the bank manages to deliver a more efficient performance per unit of assets, which translates into an increase in ROA. However, it should be noted that this effect is highly dependent on the quality and relevance of the services offered: some tools, such as CIB cards, can generate

maintenance costs or operational risks, reducing the overall effect if their use predominates.

- **Variable X4: number of financial transactions via ATM and GAB**

The coefficient of X4 is positive in the ROA model, indicating that an increase in the number of transactions made through ATMs contributes to improving the return on the bank's assets. This relationship is primarily explained by a more regular and optimized use of physical equipment, which are expensive investments: the more their frequency of use increases, the more value the bank derives from it, which translates into increased profitability of assets. Second, the automation of ATM-related services allows for less reliance on staff, thus reducing operating costs while maintaining constant assets. Finally, the continuous operation of ATMs, without significant variable cost, ensures a permanent service where each additional operation lowers the unit cost, further enhancing the overall efficiency of assets and ROA.

3-3- Difference between the results obtained in relation to ROA and ROE:

ROE, which measures profitability relative to equity, is particularly sensitive to financial margins and net profits. However, transactions through ATMs generate little revenue because fees are low or non-existent. Thus, although the increase in these operations optimizes the use of the bank's physical assets, which improves ROA, it does not produce enough net profits to meet shareholder expectations, resulting in a lower ROE. In summary, ATMs enhance asset efficiency but contribute little to capital profitability.

3-4-Economic analysis of econometric results

• Digitalization, through the variables X2 and X3, tends to have a positive effect on the bank's performance, particularly on ROA, which reflects an improvement in efficiency in asset use.

• The actual use of bankcards (X1) has a negative impact on both ROE and ROA, suggesting the need to reassess the pricing strategy and costs associated with this service.

• The variable X4 shows a contrasting effect: negative on the ROE and positive on the ROA, indicating a differentiated profitability of ATMs (DAB/GAB), and highlighting the interest of a more detailed analysis of their economic contribution.

Conclusion

Digital transformation today represents much more than a simple technological modernization: it imposes itself as a deep structural and strategic reconfiguration of the banking sector. This mutation, at the crossroads of technological innovation and changes in user behavior, redefines the foundations of competitiveness and performance in a constantly changing financial universe.

This study focuses on analyzing the influence of digitalization on the financial performance of the BEA, by examining the digital tools deployed and proposing recommendations to improve its profitability indicators.

The econometric analysis carried out as part of this work has helped to highlight several significant results. One of the most striking findings concerns the use of the mobile application 'BEA Mobile', the number of accounts opened via this platform had a favorable influence on the two indicators studied, namely the ROA and the ROE. This improvement can be attributed to the reduction in management costs, the speed of execution of operations, as well as better customer satisfaction, allowing the bank to increase its revenue without mobilizing more resources.

In the same dynamic, the increase in the total number of customers using digital services showed a positive impact, although more moderate, on both performance indicators. This reflects the overall favorable effect of digitalization on banking profitability, especially when it is part of a coherent and well-structured strategy. However, not all digital tools have produced the same effects. The increased use of CIB cards has had a negative impact on both ROA and ROE. This underperformance can be explained by high management costs, limited profit margins, and an often-restricted use to basic operations that are not very profitable. It is not a question of questioning their usefulness, but rather to highlight the need for a strategic reassessment of their role in the banking economic model.

As for transactions via ATMs, they have generated contrasting effects: an improvement in ROA thanks to a better mobilization of material assets, but a decrease in ROE because the net profits from these operations are insufficient to meet shareholders' expectations. This demonstrates that improving the accessibility of banking services does not always translate into an increase in financial performance, highlighting the complexity of the link between digital transformation and profitability.

These results allow to partially confirm the hypotheses formulated. On the one hand, they support the idea that the digitalization initiatives implemented by Algerian banks can have a significant influence on their financial performance (hypothesis 1). On the other hand, they validate that the adoption and use of digital tools can contribute to improving this performance, although this impact strongly depends on the nature of the tool used and its integration into the bank's overall strategy (hypothesis 2)

In sum, this study demonstrates that digitalization constitutes a powerful but complex lever, which requires regular evaluation of the impact of each digital tool on key performance indicators, in order to ensure a profitable digital strategy, efficient and sustainable in the Algerian banking sector.

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