Available online at https://www.asjp.cerist.dz/en/PresentationRevue/85

Economic Researcher Review

ISSN: 2335-1748, EISSN: 2588-235X VOL14,N^{O} 01 (2026), PP258-271

The Impact of Financial Technology on Financial Performance Case study of Algerian Banks for the Period (2011-2023)

***sihem bousba*[1]**
[1] Laboratory of ECOFIMA
University of 20 August 1955 Skikda (Algeria)
✉ **s.bousba@univ-skikda.dz**
ORCID:https://orcid.org/0009-0007-6169-8595

***lazhar sahli*[2]**
[2] Laboratory of SFKE
University of 20 August 1955 Skikda (Algeria)
✉ **l.sahli@univ-skikda.dz**
ORCID:https://orcid.org/0000-0003-0954-7371

Received:11 /03 /2025 ;**Accepted:**05 / 09/2026;**Published:**06/30 /2026

Abstract :

This study examined the impact of financial technology on financial performance in Algerian banks for the period from 2011 to 2023. It has been using multiple linear regression. The study collected data from Central Bank of Algeria, GIE Monetique, Arab Monetary Fund, and World Bank. The results of the study indicate a positive and significant impact of the automated teller machines (ATMs), interbank card (IBC) and Inflation (INF) as well as positive and insignificant impact of gross domestic product (GDP) on return on asset (ROA). On the other hand, it was a negative and significant impact of the total assets of the bank (TA) on return on asset (ROA).

To add more, the impact of automated teller machines (ATMs), interbank card (IBC), and Inflation (INF) on the return on equity (ROE) was positive and not significant. and the effect of gross domestic product (GDP) on the return on equity (ROE) was positive and significant. However, the effect was negative and significant of the total assets of the bank (TA) on the return on equity (ROE).

Keywords: Financial Technology;Financial Performance;Multiple Linear Regression;Algerian Banks.
Jel Classification Codes:C20, G21.

How to cite this article by the APA method:
Bousba.S, Sahli.L,(2026), ***The Impact of Financial Technology on Financial Performance Case study of Algerian Banks for the Period (2011-2023),*** *Economic Researcher Review,* Volume14(01),Algeria: University of skikda, pp258-271

This article is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license

Corresponding author: ***sihembousba, s.bousba@univ-skikda.dz***

1. Introduction

Financial Technology is a major issue that is discussed and studied nowadays by many researchers, and It has received attention from practitioners, policymakers and regulators. The big changes that affected the world, such as the digital transformation, changed the characteristics of economy.

The spread of financial technology among the countries and the use of its techniques by financial institutions transform the traditional methods. Because of financial technology, new products and services were provided to benefit people and organizations such as financing, financial-management, and settlement. Electronic platforms such as mobile payments, point of sales, automated teller machine (ATM), internet payments… therefore, among other financial institution banks are the main beneficiary to the use of financial technology.

The Algerian banks are not far from this revolution, which was taken into consideration, by the use of electronic payment systems, automated teller machine (ATM), and different cards likeInterbank Card (IBC).

1.1. Research main problem

This study investigates the impact of fintech on financial performance. The research question is formulated as follows:

What impact does financial technology on financial performance in Algerian banks during the period (2011-2023)?

1.2. Research Hypothesis

To reach their objectives, researchers developed these hypotheses:

Hypothesis 1

H_0: There is no significant effect of Financial Technology on Return on Assets (ROA) of Algerian Banks.

H_1: There is a significant effect of Financial Technology on Return on Assets (ROA) of Algerian Banks.

Hypothesis 2

H_0: There is no significant effect of Financial Technology on Return on Equity (ROE) of Algerian Banks.

H_1: There is a significant effect of Financial Technology on Return on Equity (ROE) of Algerian Banks.

1.3. Research objectives

The main objective of the study is to recognize how the financial technology impacts the financial performance of Algerian banks. The study has specific objectives include:

- To determine the impact of financial technology on return on assets of Algerian banks.
- To determine the impact of financial technology on return on equity of Algerian banks

1.4. Research importance

The importance of the study stems from the fact that it examines the topic of the era, financial technology, which is considered as one of the new variables that has a profound influence on the financial institutions, especially the banks.

The importance of the study also emerges from the fact that it attempts to understand the impact of financial technology on the financial performance of banks, which enables the latter to search for modern methods and techniques that allow them to improve and enhance their financial performance, and ultimately provide recommendations to policy makers in these banks to make the most of financial technology. Also, it offers many advantages that are reflected in the level of services and products provided by banks and thus on the level of their performance in general and their financial performance in particular.

1.5. Literaturereview

Several studies have addressed the controversial relationship between financial technology and banking financial performance. Here some studies:

(Erëza, 2023) studied the impact of (ATMs) and commercial bank branches (CBBs) on the profitability of banking systems in Kosovo and North Macedonia during the period (2010-2022). The applied study used a set of explanatory variables such as bank capital to total assets (BCA), inflation rate (INF), and gross domestic product growth rate (GDP_G). The generalized moments model (GMM) was employed. The results of the applied study concluded that the use of ATMs has a positive and significant impact on the profitability of banks. The other variables had a positive and significant impact on the profitability of the banks under study. However, the inflation rate and number of bank branches had a significant negative impact on both the (ROA) and (ROE).

(Sukana, Manga, & Abubakar, 2022) examined the impact of inflation rates on the return on equity (ROE) of commercial banks in Nigeria during the period (1999-2018). The study population comprised all the 22 commercial banks in Nigeria that were in operation as of June 30, 2019. The study statistics were obtained from a secondary source that included data on the macroeconomic environment facing commercial banks and their financial performance/profitability records. The study employed the Autoregressive Distributed Lag (ARDL) model. The empirical findings of the study concluded that there was an economically insignificant (non-statistically significant) impact of inflation rates on the return on equity (ROE) of commercial banks in Nigeria.

(Awwad, 2021)explored the role of electronic payments, as an important tools in financial technology, in improving the financial performance of Palestinian banks for the period (2010-2019). The assessment was done through a simple linear regression model, where the study measured the financial performance by three indicators: return on assets (ROA), return on equity (ROE), and earnings per share (EPS). The applied results showed that electronic payment methods have a statistically significant (economically significant) impact on (ROA) and (ROE), which helps decrease costs and thus rise profitability. However, there is no statistically significant impact on the earning per share.

(Alomari, Bashayreh, & Abdelhadi, 2020)investigate the relationship between technical efficiency and the performance of the banks for a sample of 13 commercial banks in Jordan, for the period (2010-2017). In order to estimate the relationship between technical efficiency (wichcalculted by using the non-parametric model using linear programming by Data Envelopment Analysis (DEA) and the performance of the banks (wich measured by (ROA), (ROE), and Tobin's Q) the study used analysis of panel data. The results of the study point out that the pure technical efficiency (PTE) has a positive and statistically significant impact on (ROA), (ROE), and Tobin's Q. Relative technical efficiency (RTE) or scale efficiency (SE) has a significant positive impact on return on assets, return on equity, and Tobin's Q. The same applies to market share and ATMs coverage share, which also had a positive and significant impact on bank performance. Meanwhile, bank size had no significant impact on ROA and ROE, but had a weak positive effect on Tobin's Q.

(Aladwan, 2015) measured the impact of bank size on the profitability of Jordanian commercial banks during the period (2007-2012). These banks divided into three categories according to the bank's assets. While the profitability was measured through the return on equity (ROE). The study was designed to reveal whether there is a statistical difference in profitability according to the criterion of bank size or not. Simple linear regression was applied using dummy variables for the categories to represent the size of assets. The study concluded that there is a significant difference in the profitability of these banks, and that the size of banks affects their profitability significantly and adversely, this means that the larger the size of the bank as measured by total assets, the lower its profitability through the (ROE).

(Tan & Floros, 2012)examine the determinants of bank profitability in China during the period (2003-2009). This study divided these factors into three main groups: bank-specific variables, industry-specific variables, and macroeconomic variables. The two-step generalized moments method (GMM) was applied. The applied results showed a positive and statistically

significant (economically significant) relationship between bank profitability on the one hand and cost efficiency, banking sector development, stock market development, and inflation on the other hand. Finally, the study concluded that the decline in profitability can be explained by the increase in the volume of non-traditional banking activity and the increase in taxes.

(Zhang & Dong, 2011) study the profitability of banks in the banking sector in U.S.A during the period (2000-2008). The applied study used the (OLS) method. The factors determining profitability included bank-related characteristics in addition to macroeconomic factors. The applied results concluded that the specific factors related to the bank, except for the size factor, had a significant positive effect on the performance of the banks, while for the size indicator, the effect depends primarily on the bank's size group. While the results showed that the macroeconomic factors represented by the gross domestic product and the change in interest rates were also important in explaining the profits achieved by banks.

1.6. Gap in literature

Numerous studies have contributed to the field of examining the impact of financial technology (FinTech) on the financial performance of the banking sector. These studies utilize various variables, such as the number of ATMs and electronic payment systems, as tools to measure FinTech, along with return on assets (ROA), return on equity (ROE), earnings per share (EPS), and other variable to measure the financial performance.

In Algeria, few studies have addressed both variables simultaneously. Therefore, this research aims to investigate the impact of FinTech on the financial performance of Algerian banks. The study encompasses all banks operating in the Algerian banking market, employing return on equity and return on assets as dependent variables, and the number of ATMs, number of interbank cards, and total assets as independent variables. Gross domestic product (GDP) and inflation rates as control variables.

2. Theoretical Framework

This part is about giving a theorical overview of financial technology and financial performance, then mentioning the relationship between the two

2.1. Financial Technology (Fintech)

Technology super cycles are accelerating. The investment in digital transformation in financial services has attracted more than $500 billion since 2015. **(Arslanian & Fisher, 2019, p. 26)**

The fintech revolution happened due to several raisons like the changing macroeconomic and regulatory environment, the rapid evolution of technology, and shifting customer expectations **(Shrier & Pentland, 2022, p. 7).**

a- What is Fintech?

There is no unified definition of Financial Technology,we point out that the fintech refers to the use of advanced technology to provide financial services to clients by developing new products, processes, models and applications **(Erik , Natarajan, & Saal, 2023, p. 17).**It involves the use of software, algorithms, and digital platforms to enhance or disrupt traditional financial activities such as banking, payments, investments, and insurance**(Unachkwu, 2026, p. 04)**

As a sector, “Fin-Tech refers to technology startups that are emerging to compete with traditional banking and financial market players, This is through offering a number of services, from mobile payment solutions and crowdfunding platforms to online portfolio management and international money transfers” **(Anyfantaki, 2016, p. 47)**.

b- The Evolution of Fintech:

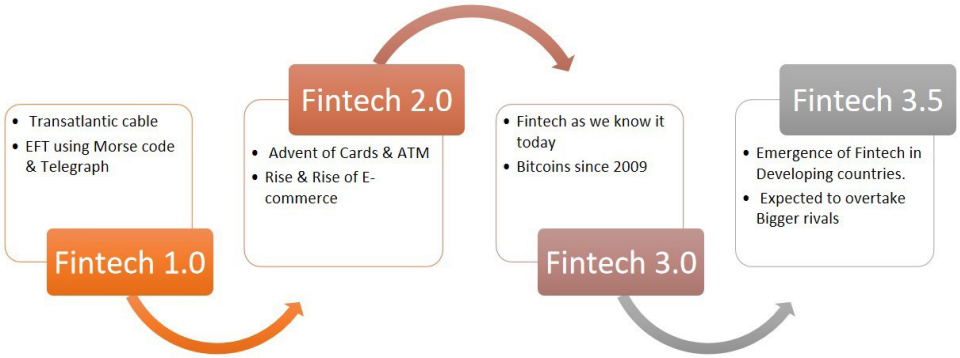
Technology is main component of the financial services sector, It is not easy to pinpoint the beginning of fintech. the following statements shows the evolution of the FinTech sector **(Rubini, 2017, p. 03)**:

- **In the 1950s:** The Emergencyof credit cards as a tool to pay the people purchases;
- **In the 1960s:** the use of ATMs. which decrease the need to visit bank branches for certain transactions;
- **In the 1970s:** Thestart of trade stocks electronically by firms;

- **In the 1980s:** banks started using mainframe computers and other state-of-the-art recordkeeping and data systems;
- **In the 1990s:** E-commerce business models and the internet thrived;
- **Actually,** financial services take the digital form because of the spread of Fintech. This isthrough crowdfunding platforms, roboadvisors for retirement and wealth planning, payment apps, mobile wallets.

According to the figure.1 steps fintech has an important role in accelerating the development of banks from the traditional functions to the modern one, also it helps in the transformation of banks in digital banks or electronic banks, which offers digital financial services.

Fig.1: Historical evolution of financial technology



***Source*: (Zeidy, p. 03)**

2.2. Financial Performance

Organizations have understood that for a constantly changing competitive environment, it is important to know the organization's performance, through a performance measurement and management system **(Diana, 2020, p. 946)**.

The success of an organization mainly focuses on achieving best financial results in a given period. These results attract the attention of the investor, Therefore It makes the financial performance a critical issue to study for researchers in many years.

a- Definition of Financial Performance

Financial performance refers to the ability of an organization to create economic value. It attracts and generates returns for investors **(Tudoce, Rusu, & Avasilcai, 2022, p. 124)**, **"Borba"** pointed that the financial performance is "the maximizing of the owners' wealth" **(Chiarello, Pletsch, Da Silva, & Da Silva, 2014, p. 74)**.

The organization uses the financial results to benchmark and compare the current results with the previous years, this helps the company find its evolution in more than a period.

b- Financial performance Indicators

In order to evaluate the overall financial health of an organization, and make better investment decisions, there are a set of financial indicators which are divided into four types:

- **profitability indicators** The concept profitability consists of two parts, the first one "profit" whichis an important indicator for evaluating performance of an organization, it clarifies the returns that the organization receive for risking its capital **(Diana, 2020, p. 946)**. and The second one "ability", It shows the power of a business to earn profits **(Tulsian, 2014, p. 19)**.So, profitability measures the organization's ability to create profitable sales from its resources **(Kotane & Kuzmina-Merlino, 2012, p. 219)**. There are lot of profitability indicators used, the most important of them can be explained as follows: **(Fabiano & Dario, 2017, pp. 294-295)**

  - Return on Assets (ROA): $$ROA = \frac{\text{Net income}}{\text{Total asset}} X\ 100$$

- Return on Equity (ROE): $$\text{ROE} = \frac{\text{Net income}}{\text{Shareholders' equity}} \text{ X } 100$$
- Net Margin (NM): $$\text{Net margin} = \frac{\text{Net income}}{\text{Net sales}} \text{ X } 100$$

- **liquidity indicators:** liquidityis an indicator used to measure organization's ability to meet its short-term obligations **(Durrah, Abdul Rahman, Jamil, & Ghafeer, 2016, p. 436)**. it measures by using the most following ratio **(Robinson, Henry, Pirie, & Broihahn, 2015, p. 322)** :
  - **Currentratio:** Current assets /Current liabilities
  - **Quick ratio:** Cash + Short-term marketable investments + Receivables/ Current liabilities
  - **Cash ratio:** Cash + Short-term marketable investments/ Current liabilities
- **Activityindicators:**it measures the organization's efficiency in using available resources to acquire assets, the extent of optimal use of these assets, and achieving the largest volume of sales and profits. The following ratios are used to measure the activity of an organization:
  - **Inventory turnover**: Cost of goods sold/ Average Inventory;
  - **Raw Material turnover**: Cost of Raw Material used /Average Raw Material Inventory**;**
  - **Debtors turnover:** Net credit sales /Average trade debtors.
- **solvency indicators:** Itmeasures an organization's ability to meet long-term obligations **(Robinson, Henry, Pirie, & Broihahn, 2015, p. 313)**. These indicators comprise two kinds, dept ratios and coverage ratios **(Robinson, Henry, Pirie, & Broihahn, 2015, p. 327):**
  - **dept ratios:**
    - ✓ **Debt-to-assets ratio:** Total debt [b] /Total assets;
    - ✓ **Debt-to-capital ratio:** Total debt [b] /Total debt b + Total shareholders' equity;
    - ✓ **Debt-to-equity ratio:** Total debt [b]/ Total shareholders' equity;
    - ✓ **Financial leverage ratio:** Average total assets/ Average total equity
  - **Coverage ratios:**
    - ✓ **Interest coverage**: EBIT /Interest payments;
    - ✓ **Fixed charge coverage**: EBIT + Lease payments /Interest payments + Lease payments

2.3. The Relation between Fintech and Financial Performance of Banks

A set of studies mentioned that introducing a financial technology had affected the financial services delivery such as deposits, payments and investments, credit, and capital raising. So financial technology can improve financial performance by reducing transactions costs, increasing access to credit, and enhancing financial management **(Khajar, Dinda Saphira, Anisabanum Salleh, Misnan, & Zakaria, 2025, p. 161)**. To add more it affects the traditional business models in banking sector in two manners. The first manner is through the application of technology among banks and outside of finTech, the second one is through the application of technology to bank-finTech partnerships **(Baker , Kaddumi, Nassar , & Muqattas, 2023, p. 04)**.

Fintech companies can provide financial services at lower costs than traditional bank. In order to achieve this goal, banks can increase their earning buy cooperation with fintech companies.

We mentioned above the positive effects of financial technology on financial performance, but in reality, several studies found a negative effect of financial technology on financial performanceof banks due to the high costs of digitalization especially in small banks, which make the fintech affect negatively the return on assets. As a result, banks' ability to be profitable decreases**(Feifei , 2025, p. 05**).

3. Econometricspecification and methodology

3.1. Econometricmethodology

In examing the impact of Fintech on Financial Performance in the Banks of Algeria during the Period (2011-2023), the study used a multiple linear regression model.

The following equation clarify the relationship between the study variables:

$$Y_i = \alpha_0 + \alpha_1 X_{1i} + \alpha_2 X_{2i} + \ldots\ldots + \alpha_\rho X_{\rho i} + \mu_i$$

3.2. Model specification

In order to measure the impact of financial technology on performance bank in Algeria, linear equations are specified to examine the relationship between the Return On Asset (ROA), the Return On Equity (ROE), The Automated Teller Machines (ATMs), Interbank Card (IBC), Gross Domestic Product (GDP), Inflation (INF) and Total Assets of the bank (TA) as follows

$$ROA_t = \beta_0 + \beta_1 ATMs_t + \beta_2 IBC_t + \beta_3 TA_t + \beta_4 GDP_t + \beta_5 INF_t + \varepsilon_t \ldots\ldots\ldots\ldots(1)$$

$$ROE_t = \beta_0 + \beta_1 ATMs_t + \beta_2 IBC_t + \beta_3 TA_t + \beta_4 GDP_t + \beta_5 INF_t + \varepsilon_t \ldots\ldots\ldots\ldots(2)$$

3.3. Data

Data from 2011 to 2023 for (ROA), (ROE), (ATMs) and Interbank Card (IBC) are obtained from the Central Bank of Algeria, while those for Gross Domestic Product (GDP) and Inflation (INF) are obtained from World Development Indicators database. On the other hand Total Assets of the bank (TA) statistics were obtained from the Arab Monetary Fund database. Table 1 summarizes the dentification and the definition of the variables.

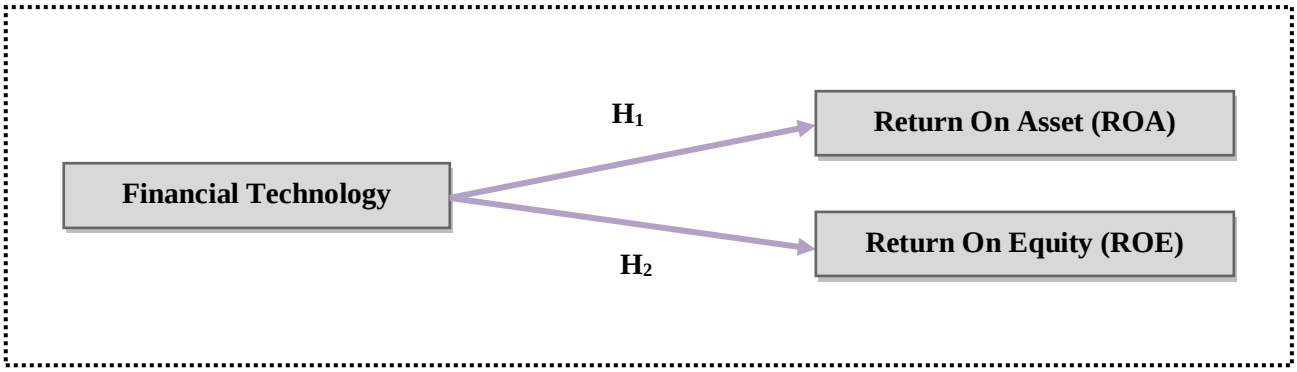
Table 1. The dentification and the definition of the variables used in this study

Variable name	Variable definition	Role	Data sources
Return On Asset (ROA)	ROA is measured by the ratio of net income to total assets.	**Dependent variable**	**Central Bank of Algeria**
Return On Equity (ROE)	ROE is measured as the ratio of net profit after tax to total equity.	**Dependent variable**	**Central Bank of Algeria**
Automated Teller Machines (ATMs)	Automated Teller Machines (ATMs) (per 100,000 adults) An electronic device that allows customers of financial institutions to conduct financial transactions in public places	**independent variable**	**Central Bank of Algeria**
Interbank Card (IBC)	Interbank Card (IBC) is the number of interbank cards in circulation	**independent variable**	**GIEMonetique**
Total Assets (TA)	Total assets include all nonfinancial and financial assets.	**independent variable**	**Arab Monetary Fund (AMF)**
Gross Domestic Product (GDP)	GDP (current LCU) at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current local currency.	**Regulatory variable**	**World Bank**
Inflation (INF)	Inflation, GDP deflator (annual %) %) The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	**Regulatory variable**	**World Bank**

Source: *Authors' computation.*

A conceptual framework is displayed in Fig.2:

Fig. 2. Conceptual Framework



Source: *Authors' computation.*

3.3. Descriptive statistics of study variables

Table No.2 indicates the most important descriptive statistics for the study variables.

Table 2. Descriptive statistics

	ROA	ROE	ATMS	IBC	TA	GDP	INF
Mean	1.803077	18.45923	8.465385	2.048658	15.28651	22.17353	5.395170
Maximum	2.420000	24.58000	11.96000	7.809694	25.39520	33.63826	22.95126
Minimum	1.380000	11.80000	6.100000	0.469500	9.002400	15.92467	-4.986745
Std. Dev.	0.305761	4.302029	1.616068	2.129506	5.164670	5.337671	8.498757
Observations	13	13	13	13	13	13	13

Source: *Authors' computation (extracted from EViews13)*

Return On Asset (ROA): The average (ROA) for all banks was (**1.80%**), while the highest percentage was (**2.42%**) with a standard deviation of (**0.30576**). However, the lowest percentage was estimated at (**1.38%**), these are indicating that none of the banks made a loss during the study period.

Return On Equity (ROE): The average return on Equity for all banks was (**18.46%**), while the highest percentage was (**24.58%**) with a standard deviation of (**4.4302029**), and the lowest percentage was estimated at (**11.80%**), which are statistics indicating that none of the banks made a loss during the study period.

Automated Teller Machines (ATMs) The average Automated Teller Machines is (**8.465385**) with a standard deviation of (**1.616068**), while the lowest value and the highest value were (**6.1**) (**11.96**) respectively, These data prove that there is an expansion in the use of ATMs as part of financial and banking automation strategies which can drive cost reduction and operational improvement regardless of location.

Interbank Card (IBC): The arithmetic mean of the interbank card for all banks was (**2.048658**) with a standard deviation of (**2.129506**), and the lowest value was (**0.469500**), wihle the highest value was (**7.809694**).The difference between the lowest and highest values was significant, indicating a disparity among banks in their reliance on interbank cards. Overall, the results suggest a low level of bank adoption of this type of card

Total Assets of the bank (TA): The arithmetic mean of the total assets for all banks was (**15.28651**) with a standard deviation of (**5.164670**),While the lowest value and the highest value were (**25.39520**) (**9.002400**) respectively, there is also a very high range between the lowest and highest value, which indicates a large discrepancy in the reliance of banks active in Algeria on assets of a technological nature. Overall, Algerian banks rely very little on technological assets.

Gross Domestic Product (GDP): The arithmetic mean of the gross domestic productis (**22.17353**) with a standard deviation of (**5.337671**), While the lowest value and the highest value were (**33.63826**) (**15.92467**) respectively, these results clearly indicate a stable development of the gross domestic product throughout the study period, although the matter seems understandable, It mainly due to the stability of the general economic situation in the country.

Inflation (INF): The average Inflation is (**5.395170%**), The highest percentage was (**22.95126%**) with a standard deviation of (**8.498757%**), and the lowest percentage was estimated at (**-4.986745%**). These data indicate the instability of the inflation index of the Algerian economy during the study period, and this is due to the economic conditions that the country went through, especially the significant and continuous rise in the general levels of prices.

4. Empirical results and analysis

4.1. Results of regression analysis

a. First model

The results of the multiple regression analysis are shown in Table 3

Table-3: Regression results of coefficient of Return On Asset and Financial Technology

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATMS	0.237368	0.065972	3.597995	0.0088
IBC	0.060481	0.024285	2.490476	0.0416
TA	-0.146145	0.037830	-3.863176	0.0062
GDP	0.029701	0.030587	0.971052	0.3639
INF	0.025078	0.007554	3.319598	0.0128
C	1.109923	0.435946	2.546011	0.0383
R-squared	0.886509			
Adjusted R-squared	0.805444			
F-statistic	10.93578			
Prob(F-statistic)	0.003328			
Durbin-Watson stat	1.866320			

Source: *Authors' computation (extracted from EViews13)*

The first model has a statistical significance Prob (F-statistic) of 0.003328, smaller than 0.05. Because the R-squared (R^2) is 0.886509. The change of Return On Asset (ROA) is equal to 88.65% the change of Automated Teller Machines (ATMs), Interbank Card (IBC), Gross Domestic Product (GDP), Inflation (INF) and Total Assets of the bank (TA). As a result, first model can be written as:

ROA = 1.109923 + 0.237368 ATMs + 0.060481 IBC -0.146145 TA + 0.029701 GDP + 0.025078 INF + u

b. Second model

The results of the multiple regression analysis are shown in Table 4.

Table-4: Regression results of coefficient of Return On Equity and Financial Technology

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATMS	1.624290	1.277323	1.271636	0.2441
IBC	0.370430	0.470191	0.787828	0.4566
TA	-2.352462	0.732450	-3.211770	0.0148
GDP	1.187567	0.592207	2.005324	0.0849
INF	0.175514	0.146266	1.199965	0.2692
C	12.63157	8.440566	1.496531	0.1782
R-squared	0.785090			
Adjusted R-squared	0.631583			
F-statistic	5.114353			
Prob(F-statistic)	0.027164			
Durbin-Watson stat	1.903370			

Source: *Authors' computation (extracted from EViews13)*

The second model has statistical significance Prob (F-statistic) of 0.027164, smaller than 0.05. Moreover, because R-squared (R^2) is 0.785090, the change of Return On Equity (ROE) is equal to 78.51% the change of Automated Teller Machines (ATMs), Interbank Card (IBC), Gross Domestic Product (GDP), Inflation (INF) and Total Assets of the bank (TA). As a result, second model can be written as:

ROE = 12.63157 + 1.624290 ATMs + 0.370430 IBC -2.352462 TA + 1.187567 GDP + 0.175514 INF + u

4.2. Diagnostic checking

a. First model

Table-5: Diagnostic checking (first model)

Diagnostic checking	
Breusch-Godfrey Serial Correlation LM Test	**F-statistic=0.984305(p-value=0.4361)** **Chi-Square (2)= 3.672457(p-value=0.1594)**
HeteroskedasticityTest: ARCH	**F-statistic=0.720206 (p-value=0.4159)** **Chi-Square (1)= 0.806185 (p-value=0.3693)**
Ramsey RESET Test	**F=0.337133(p-value=0.5826)**
Jarque-Bera	**χ^2=0.585884 (p-value=0.646065)**

Source: *Authors' computation (extracted from EViews13)*

b. second model

Table-6: Diagnostic checking (second model)

Diagnostic checking	
Breusch-Godfrey Serial Correlation LM Test	**F-statistic=0.698271(p-value=0.5402)** **Chi-Square (2)= 2.838260(p-value=0.2419)**
HeteroskedasticityTest: ARCH	**F-statistic=1.267945 (p-value=0.2864)** **Chi-Square (1)= 1.350321 (p-value=0.2452)**
Ramsey RESET Test	**F=0.118997(p-value=0.7419)**
Jarque-Bera	**χ^2= 0.841751 (p-value=0.656472)**

Source: *Authors' computation (extracted from EViews13)*

The tables-5 and 6 show the results of diagnostic checking for the two estimated models. The Breusch-Godfrey Serial Correlation (LM) test indicates that the two estimated models do not have serial correlation, the ARCH heteroskedasticity test indicates that the random error is stable, the Ramsey RESET test indicates that the functional form of both models is correct, and the Jarque-Bera test affirms that the residuals are normally distributed.

4.3. discussion

This research studied the impact of financial technology on financial performance in Algerian banks for the period 2011 to 2023, This is through using multiple linear regression models. The regression estimation results were as follows:

(1) Firstly, the applied results indicate that the use of Automated Teller Machines (ATMs) has a positive and statistically significant effect at a significance level of 5% (economically significant) on the return on assets (ROA) rate. This latter clearly indicates that the widespread and intensive use of ATMs in banking transactions has a positive effect on increasing the profitability of banks by reducing operating costs, branch maintenance, human capital costs and other various associated costs. This result is consistent with the study of**(Erëza, 2023)**The applied results indicate that the use of Automated Teller Machines (ATMs) has a positive and statistically insignificant effect (economically insignificant) on the return on equity (ROE) rate. This result indicates that the increasing number of ATMs does not contribute to attracting more customers to Algerian banks, as well as to raising stock prices, and therefore does not enhance profitability through the return on equity rate. The results obtained here are not comparable to the results obtained in the study of **(Erëza, 2023)** and the one of **(Alomari, Bashayreh, & Abdelhadi, 2020)**.

(2) Secondly, there is a positive and statistically significant effect at a significance level of 10% (economically significant) for the number of interbank cards on the return on assets (ROA) rate, in commercial banks in Algeria. This means that the revenues generated from these cards exceed the costs associated with them, which led to an improvement in the return on assets rate. This is evidence that commercial banks in Algeria have succeeded in improving operational efficiency and reducing various risks associated with investing in interbank cards. This result is consistent with the findings of the study **(Awwad, 2021)**

(3)Thirds, there is a positive and statistically insignificant effect (economically insignificant) for the number of interbank cards on the return on equity (ROE), which is completely opposite to what is expected, It is assumed that the use of interbank cards indirectly affects the operational efficiency of commercial banks by increasing their revenues resulting from fees and commissions imposed on various transactions. This increases the net income that raises the return on equity rate. The use of this type of cards also contributes to reducing reliance on cash and thus reducing the costs of liquidity management for commercial banks. Although the results of the impact of investment in improving payment systems for commercial banks do not appear in the short term due to the high capital expenditures that reduce the rate of return on equity, they appear strongly in the long term by raising operational efficiency and returns. This result is not consistent with what was reached by the study**(Awwad, 2021)**.

(4) Fourthly, The applied results indicate that the total assets of the bank (TA) have a negative and statistically significant effect on both the (ROA) and the (ROE) ratios. This suggests that the size of the bank expressed by total assets affect its profitability. Through ROE, profitability tends to drop with the increase in the size of the bank's assets, as evidenced by the coefficient that becomes increasingly negative with the increase in the size of the bank (total assets). This result is consistent with the study**(Aladwan, 2015, pp. 217-236)**.

(5) Fifthly, the applied results indicate that the gross domestic product (GDP) has a positive and statistically insignificant (economically significant) impact on the return on assets (ROA). This suggests that GDP has no significant impact on the profits of banks in Algeria, and the reason for this may be due to the small size of the banks, while the GDP is for the national economy as a whole. When banks are small in size, they are usually not greatly affected by the economic conditions in the entire country. This result is agreed with the findings of the study **(Zhang & Dong, 2011)**

(6) sixthly, the applied results indicate that the gross domestic product (GDP) has a positive and statistically significant (economically significant) impact on the return on equity (ROE) ratios. This suggests that GDP has a significant impact on the profits of banks in Algeria, because the increasing the on gross domestic product opens up greater opportunities for banks to lend and thus achieve more income. This result is consistent with the findings of the study **(Hoxha , Bajrami , & Prekazi , 2025)**

(7) seventhly, the applied results indicate that the inflation rate (INF) has a positive and statistically significant effect at a significance level of 5% (economically significant) on the return on assets (ROA). This means that during the study period, inflation is expected to occur, which gives banks the opportunity to adjust interest rates accordingly, which leads to an increase in revenues faster than an increase in costs. Thus, there will be positive effects on the banks' profitability. This result is consistent with the findings of the study **(Tan & Floros, 2012, pp. 675-696)**

(8) Eighthly, the applied results indicate that the inflation rate (INF) has a positive and statistically insignificant effect (economically insignificant) on the return on equity (ROE). This means that during the study period, which was characterized by high and continuously increasing inflation rates, national savings will certainly become lower, and with it, preventive measures and procedures will be taken by limiting the granting of more large-sized loans in order to reduce the risk of inability to repay debts. This result is consistent with the study**(Sukana, Manga, & Abubakar, 2022, pp. 82-96)**

5. Conclusion

The study This research paper attempted to examine the impact of financial technology (measured by ATMs, IBC) on financial performance (measured by ROA, ROE) in Algerian banks during the period (2011-2023). By using multiple linear regression model. The study's results confirm that the use of Automated Teller Machines (ATMs), the number of interbank cards, and inflation have a positive and statistically significant effect on the (ROA) rate, positive and statistically insignificant effect of GDP per capita effect on the (ROA) rate. While the total assets of the bank (TA) has a negative and statistically significant effect on the (ROA). On the other hand, the findings of the study affirm that the use of Automated Teller Machines (ATMs), the number of interbank cards (IBC), and inflation have a positive and statistically insignificant effect on the return on equity (ROE) rate. and positive and statistically significant effect of GDP per capita on the return on equity (ROE) rate. while the total assets of the bank (TA) has a negative and statistically significant effect on the return on equity (ROE) rate.

The study's findings provide valuable insights to policy makers in Algerian banks. By taking into account the constant examination and monitoring of the external environment, and the fact that some macro- economic variables, such as GDP and inflation, have an impact on banks' financial performance. it is necessary to be aware of the digital transformation that has changed the quality and ways of providing financial services, by adding new digital ones that have a positive impact on financial performance, especially on the profitability of these banks.

6. Limitation and future research recommendation

This research is focuses on studying the impact of finanacial thechnology on financial performance in Algerian banks, the study recommends future studies to investigate the same topic in other financial companies, by using an other variabales to measure financial technology like electronic payment,mobile banking, and blockchain, as well as financial performance likeliquidity and solvency indicators.

Also, this study suggest that the future resarchcan examine the factors that motivate the financial companies to impliment finanacial thechnology.

Referrals and references

Arab Monetary Fund (AMF). (2025, April 07). Arab Monetary Fund (AMF). Retrieved from https://www.amf.org.ae/ar

Aladwan, M. (2015, December). The Impact Of Bank Size On Profitability"An Empirical Study On Listed Jordanian Commercial Banks. European Scientific Journal, 11(34), 217-236.

Alomari, M., Bashayreh, A., & Abdelhadi, S. (2020). Jordanian banking system: Analysis of technical efficiency and performance. Financial Studies, ISSN 2066-6071, Romanian Academy, National Institute of Economic Research (INCE), "Victor Slăvescu" Centre for Financial and Monetary Research, Bucharest, 24(3(89)), 23-40.

Anyfantaki, S. (2016). The Evolution of Financial Technology (FINTECH). Economic Bulletin.

Arslanian, H., & Fisher, F. (2019). The Future of Finance - The impact of Fintech, AI, crypton on Financial Servises. Switzerland: Springer Nature.

Awwad, B. (2021, November). The role of e-payments in enhancing financial performance: A case study of the Bank of Palestine. Banks and Bank Systems, 16(4), 114-124. doi:10.21511/bbs.16(4).2021.10

Baker , H., Kaddumi, T., Nassar , M. D., & Muqattas, R. S. (2023). Impact of Financial Technology on Improvement of Banks' Financial Performance. Journal of Risk Financial Management, 16(230). doi:https://doi.org/10.3390/jrfm16040230

Central Bank of Algeria. (n.d.). Central Bank of Algeria. Retrieved April 08, 2025, from https://www.bank-of-algeria.dz

Chiarello, T. C., Pletsch, C. S., Da Silva, A., & Da Silva, T. P. (2014). Revista Galega de Economia / Economic Review of Galicia, 23(4).

Diana, H. I. (2020). Indicators for Measuring the Financial Performance of Economic Entities. "Ovidius" University Annals, Economic Sciences Series, 20(1).

Durrah, O., Abdul Rahman, A., Jamil, S., & Ghafeer, N. (2016). Exploring the Relationship between Liquidity Ratios and Indicators of Financial Performance: An Analytical Study on Food Industrial Companies Listed in Amman Bursa. International Journal of Economics and Financial Issues, 06(02).

Erëza, A. (2023). Effect Of Automated Teller Machines And Bank Branches On The Profitability Of Banking Businesses: Evidence From Kosovo And North Macedonia. Journal of Liberty and International Affairs, 9(3), 154-170. doi:https://doi.org/10.47305/JLIA2393136a

Erik , F., Natarajan, H., & Saal, M. (2023). Fintech and the Future of Finance. Washington: The World Bank Group.

Fabiano, C., & Dario, M. (2017). Business games: evaluating the financial performance of companies using AHP. Research, Society and Development, 05(04). doi:https://doi.org/10.17648/rsd-v5i4.141

Feifei , C. (2025). SHS Web of Conferences. doi:https://doi.org/10.1051/shsconf/202522501008

GIE Monetique. (2025, April 02). GIE Monetique. Retrieved from https://giemonetique.dz

Hoxha , A., Bajrami , R., & Prekazi , Y. (2025). THE IMPACT OF INTERNAL AND MACROECONOMIC FACTORS ON THE PROFITABILITY OF THE BANKING SECTOR. A CASE STUDY OF THE WESTERN BALKAN COUNTRIES. Business: Theory and Practice, 26(01).

Khajar, I., Dinda Saphira, A., Anisabanum Salleh, W., Misnan, N., & Zakaria, Z. (2025). The Role of Financial Technology in Moderating Financial Literacy and Financial Inclusion on Financial Performance of SMEs in Semarang, Central Java,Indonesia. *Advances in Economics, Business and Management Research*(341).

Kotane, I., & Kuzmina-Merlino, I. (2012). Assessment of Financial Indicators for evaluating of businzss performance. European Integration Studies(06). doi:http://dx.doi.org/10.5755/j01.eis.0.6.1554

Robinson, T., Henry, E., Pirie, W., & Broihahn, M. (2015). International Financial Statement Analysis. canada: wiley.

Rubini, A. (2017). FINTECH IN A FLASH; Financial technology made easy. London, United Kingdom: Simtac Ltd.

Shrier , D., & Pentland, A. (2022). Global Fintech - Financial Innovation in the Connected World. London, England: Massachusetts.

Sukana, D., Manga, I., & Abubakar, A. (2022). Inflation Rate And Return On Equity Of Commercial Banks In Nigeria. Nigerian Journal of Accounting and Finance, 14(1), 82-96.

Tudoce, M. B., Rusu, V. a., & Avasilcai, S. (2022). Financial Performance – Determinanats and Interdipendenies between Measurment Indicators. Business, Management and Economics Engineering, 20(1).

Tulsian, M. (2014). Profitability Analysis (A comparative study of SAIL & TATA Steel). OSR Journal of Economics and Finance (IOSR-JEF), 03(02).

Tan, Y., & Floros, C. (2012). Bank profitability and inflation: The case of China. Journal of Economic Studies, 39(6), 675-696. doi:10.1108/01443581211274610

World Bank. (2025, April 09). World Bank. Récupéré sur https://www.albankaldawli.org

Zeidy, I. (n.d.). The Role of Financial Technology (FINTECH) in Changing Financial Industry and Increasing Efficiency in the Economy. Common Market for Eastern and Southern Africa COMESA. Retrieved March 28, 2024

Zhang, C., & Dong, L. (2011). Determinants Of Bank Profitability: Evidence From The U.S Banking Sector. 1-27. Récupéré sur oai:summit.sfu.ca:13065

Appendices

I.Appendix. 1: The study'svariables

T	ATM	ROA	ROE	CIB	TA	GDP	INF	ATM
2011	**6,100**	**2,100**	**24,580**	**0,470**	**9002,400**	**15,925**	**4,524**	**1622,000**
2012	**6,210**	**1,930**	**22,670**	**0,662**	**9654,300**	**17,612**	**8,891**	**1679,000**
2013	**6,510**	**1,670**	**18,970**	**0,649**	**10320,000**	**18,231**	**3,254**	**1790,000**
2014	**7,610**	**1,990**	**23,750**	**0,656**	**11976,400**	**19,254**	**2,917**	**2124,000**
2015	**8,350**	**1,920**	**21,480**	**0,556**	**12508,700**	**18,879**	**4,784**	**2365,000**
2016	**8,570**	**1,830**	**17,980**	**0,796**	**12881,000**	**19,783**	**6,398**	**2463,000**
2017	**9,130**	**2,050**	**18,840**	**0,878**	**14098,400**	**21,072**	**5,591**	**2658,000**
2018	**9,540**	**2,420**	**22,410**	**7,810**	**15514,300**	**22,684**	**4,270**	**2814,000**
2019	**9,330**	**1,510**	**14,080**	**1,141**	**16586,900**	**23,090**	**1,952**	**2789,000**
2020	**9,310**	**1,430**	**11,800**	**2,764**	**16979,700**	**20,902**	**2,415**	**2826,000**
2021	**9,300**	**1,720**	**14,350**	**2,768**	**20495,300**	**25,158**	**7,226**	**2868,000**
2022	**8.13**	**1,380**	**13,470**	**3,461**	**23312,074**	**32,028**	**9,266**	**2532,000**
2023	**11.96**	**1,490**	**15,590**	**4,022**	**25395,200**	**33,638**	**9,322**	**3783,000**

***Source**: Prepared by authors based on:*

- *World Bank data base (https://data.albankaldawli.org/indicator);*
- *Arab Monetary Fund (AMF) (https://www.amf.org.ae/ar);*
- *Central Bank of Algeria. (https://www.bank-of-algeria.dz);*
- *GIE Monetique. (https://giemonetique.dz).*