

IMPACT OF FINANCIAL TECHNOLOGY ON ALGERIAN BANK PERFORMANCE

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Purpose. The aim of this study is to determine the impact of financial technology on the performance of banks in Algeria.

Results. We found that the expansion of the scope of application of financial technology allows banks to gain a prominent position in the banking market, reduce costs, manage risks, predict crises, achieve customer satisfaction, promote and diversify services, which positively affects the development of financial and commercial performance of commercial banks in Algeria. Through the applied study, the authors reached the following results: (1) rejection of the first hypothesis, which states that there is no significant impact of credit card balances on the rate of return on assets; (2) accept the second hypothesis that there is no significant impact of the value of technological assets on the rate of return on assets; (3) rejection of the third hypothesis, which states that there is no significant impact of credit card balances on the rate of return on equity; (4) accept the fourth hypothesis, which states that there is no significant impact of the value of technological assets on the rate of return on equity. In light of the findings, the authors recommend the following: (1) the need to pay attention to financial technology because of its positive impact on the banking sector, perhaps the most important of which is improving the quality of financial services provided to customers in terms of speed and cost; (2) the need for banks to pay attention to financial innovations because of their importance and impact on their financial and competitive position; (3) the need for banks to cooperate with startups in the field of financial technology in order to benefit from these companies in developing their various banking services; (4) the need to improve the ICT infrastructure; (5) the need to develop effective models to reduce the risks associated with financial technology innovations; (6) the need to conduct awareness campaigns for customers about the importance of financial technology and its benefits; (7) the need to spread the culture of using financial technology among customers, especially in light of the Covid-19 crisis.

Scientific novelty. The study identified the factors that influenced the change in the performance of banks in Algeria during the popularization of the use of financial technology: credit cards, return on assets, return on equity, technological assets, growth rate, inflation rate and value at risk. The authors proposed two sets of measures (short-term and long-term) that would promote the use of fintech in order to positively impact the performance of banks in Algeria.

Practical value. The practical significance of this study lies in its potential as a valuable resource and tool to promote the use of financial technology as a powerful catalyst to improve and promote the bank performance, particularly in the area of credit card proliferation and the exploration of financial innovations.

Key words: financial technology, innovations, Algerian banks, bank performance, financial industry.

Introduction. Today, the world is witnessing a very rapid and rapid digital transformation, which has created great momentum and changed many features of the economy that relied on cash to an economy that relies on the Internet (Claessens, 2002), advanced computers, and virtual transactions, which have largely eliminated the need for cash in its physical form. This is attributed to the emergence of financial technology as a modern concept that has cast its shadow on the financial and banking services industry (Andries, 2012), which was sparked by the beginning of the global financial crisis in 2008, but it has recently witnessed rapid developments that have changed many methods and approaches in formulating transactions and financial services.

Financial technology provides products and services that benefit individuals and institutions in a quick and easy way, free of complexity, in addition to being less expensive compared to traditional methods (Fintech news ..., 2020). It is also distinguished by its major role in enhancing financial inclusion, and the possibility of delivering financial services in the field of payments, lending, insurance, savings and investment to a wide segment of financially excluded individuals and institutions (Basel Committee ..., 2018).

The access to and access to financial services is an important step in reducing poverty, inequality and thus to achieve justice (Basar & Zain, 2022). Perhaps this is one of the most important reasons that many have called for from countries to implementing financial inclusion strategies to help billions of people improve their financial situations and reduce poverty, the gap between the rich and the poor, and the gap between males and females. Despite these efforts, it continues the ability of traditional financial institutions is limited to reach poor and marginalized groups in society (Gomber & Kauffman, 2018). With the emergence of the financial technology model as one of the innovations of the Fourth Industrial Revolution, access to financial services has become more possible.

Connecting consumers to financial services and allowing them to save and borrow through Fatah Mobile phone accounts are simpler and less expensive than opening official financial accounts Help enable consumers – especially excluded groups – to access services Finance and restore economic strength to them.

From the above the problem of this research has been formulated in the following main question: *Does financial technology have the ability to improve the performance of banks?*

Review of literature. 1. *Financial technologies (Fintech).* Financial technology has achieved a prominent position in the global economic sector and, despite its modernity, has been able to achieve enormous gains in a short period of time, by gaining an important competitive advantage by providing electronic financial services that are characterized by speed, accuracy, and cost low. This success has allowed it to grow and spread in various countries of the world (Abramovitz, 1995).

Despite this importance, it is difficult to find a consensus on a single definition

of financial technology, given the speed of its development. However, there are many different attempts by researchers and various research organizations to define financial technology (Arner, 2018). It will lead to greater clarity of vision about this contemporary term.

2. *Bank's performance.* Financial performance is defined as: "The extent to which activities contribute to creating value or effectiveness in the use of available financial resources, by achieving financial objectives at the lowest financial costs" (Staikouras et al., 2007). Through this definition, we see that the planned financial objectives can only be achieved by integrating all activities within the bank, and this leads to the optimal utilization of available financial resources (Smirlock, 1985).

Performance evaluation is defined as one of the important links in the comprehensive administrative process, based on the use of a set of indicators and measures to examine the extent to which the economic unit achieves its set objectives (Andries, 2012), identify positive and negative deviations, and know the reasons and propose appropriate treatment.

3. *Ratio analysis of bank performance.* The following ratios we also put into use in analyzing the performance of the decision-making units in question.

The first one is Return on assets (ROA) is calculated by multiplying the profit margin and asset utilization ratios. The profit margin quantifies the bank's efficiency in converting each dollar of revenue into an equivalent dollar of net profits (Benston & Kaufman, 1996).

Salaries constitute a significant portion of non-interest expenses and can pose a challenge if the ratio of non-interest expenses to operating income is excessively high. It would be preferable to have more detailed breakdowns for each component within these categories (Raphael, 2013). If this ratio seems insufficient, the analyst will initially investigate whether the provision for loan losses is excessive.

The second one is Return on equity (ROE) is a financial performance metric that is determined by dividing net income by shareholders' equity (Gabeshi, 2018). ROE is a measure of a company's profitability. Shareholders' equity is the difference between a company's assets and its debt (Molyneux & Thornton, 1992).

ROE is regarded as a metric that measures a company's profitability and its effectiveness in generating profits. A company's management demonstrates greater efficiency in generating income and growth from its equity financing as the Return on Equity (ROE) increases (Spulbăr et al., 2015).

The determination of a "good" return on equity (ROE) will vary based on the specific industry and competitive landscape of the company. The average long-term return on equity (ROE) for the top ten companies in the S&P 500 index has been approximately 18.6 % (Federal Deposit ..., 2023). However, it is important to note that the ROE can vary significantly across different industries, with some industries experiencing higher or lower ROE than the average.

If all other factors remain constant, an industry is expected to have a lower average return on equity (ROE) if it is characterized by intense competition and

necessitates significant assets to generate revenue (Adem, 2011). In contrast, industries characterized by a small number of competitors and requiring minimal assets to generate income may exhibit a higher mean return on equity (ROE).

Materials and methods. The aim of this study is to determine the impact of financial technology on the performance of banks in Algeria.

The present study adopts a systematic approach to examine the conceptual framework of research variables and relevant prior studies pertaining to the research topic. The objective is to identify the existing research gap in the exploration of the influence of financial technology (Fintech) on the financial performance of banks operating in Algeria. This will be achieved by introducing the research variables and their corresponding measures, validating the study's hypotheses through suitable statistical techniques, and subsequently presenting the outcomes of the statistical analysis.

Through our study, we want to determine the extent to which credit cards affect the rate of return on assets and the rate of return on equity, as well as the impact of technological assets on the rate of return on assets and the rate of return on equity. It represents the larger target population from which the sample is drawn. On the other hand, the sample is the study population encompasses all banks that are active in Algeria and have been officially registered with the Central Bank of Algeria. The time frame for this study spans from 2017 to 2021. As per the annual report released by the Central Bank of Algeria in 2021, the total count of banks operating in Algeria in 2021 amounted to 20. The study sample comprised 15 banks that were operational in Algeria during the specified period. Banks that lacked the required data and adequate disclosures for the study were excluded.

Data. This study utilized secondary data obtained from the databases of the World Bank. The data acquired from the databases of the World Bank encompasses the growth rate of the gross domestic product and the inflation rate. Conversely, the data gathered from the financial statements and reports of banks encompasses the remaining data. The study utilized many financial indicators, including the rate of return on assets and equity, card balances, the value of technical assets, the bank's size, the percentage of non-performing loans, the value at risk, and financial leverage. This study focuses on the examination of variables and the methodologies employed to measure them. Based on the comprehensive examination and evaluation of prior scholarly investigations pertaining to the subject matter, the study variables encompassed within the research model that effectively articulate the essence of the research problem can be categorized into three distinct types of variables, as delineated below: 1) the independent variables considered in this study are the balance of credit cards and the value of technological assets; 2) the dependent variables considered in this study are the rate of return on assets and the rate of return on equity; 3) the regulatory variables considered in this study are bank size, non-performing loan ratio, value at risk, financial leverage, gross domestic product rate, and inflation rate.

Hypothesis. Aligned with the inherent character of the issue at hand and the overarching objective of the study, the research hypotheses might be articulated in the following manner:

- The primary hypothesis (H_0) posits that there is no statistically significant impact of financial technology on the financial performance of banks in Algeria.

- Hypothesis 1 (H_1): The relationship between credit card balances and the rate of return on assets is not statistically significant.

- Hypothesis 2 (H_2): The rate of return on assets is not significantly influenced by the value of technological assets.

- Hypothesis 3 (H_3): There exists no statistically significant relationship between credit card balances and the rate of return on equity.

- Hypothesis 4 (H_4): The value of technological assets does not have a statistically significant impact on the rate of return on equity.

The proposed model. Following the establishment of the relationship between the study variables using the prior research model and the formulation of hypotheses, the examination of the relationship between the variables will be conducted using time-series data (panel data). The dataset in question encompasses a combination of time-series and cross-sectional data, with the time-series component specifically pertaining to the analysis of a single bank. During a given time period, time series data focuses on the analysis of a single bank over multiple years, whereas cross-sectional data involves the examination of multiple banks within a single year. Within this particular framework, the investigation was predicated upon a sample of 15 banking institutions that are actively engaged in operations within the Algerian market (cross-sectional series). The study encompassed a temporal span of 5 years (time series). The time-cross-sectional data technique is distinguished by its consideration of both the temporal changes captured by time-series data and the cross-sectional effects. The dissimilarities among the banks being examined are derived from sectoral chain data, as stated by Gujarati (2003). The fundamental structure for representing this particular dataset (Table 1) can be mathematically described by the subsequent equation:

$$Y_{it} = \alpha + \beta X1_{it} + \beta 2 X2_{it} + \beta 3 X3_{it} + \varepsilon_{it} . \tag{1}$$

Table 1

Variables identification

Y	Dependent variable	i	The bank under study
X	Independent variable	t	The year of analysis under study
A	Slope constant	β	Coefficients of independent variables
-	-	ε	Random error

Source: prepared by the authors based on the previous multiple regression equation.

In light of the previous linear regression equation, multiple linear regression models will be formulated in order to test the study hypotheses as follows:

$$ROA_{it} = \alpha + \beta_1 C.Card_{it} + \beta_2 TA_{it} + \beta_3 SIZE_{it} + \beta_4 NPL_{it} + \beta_5 VAR_{it} + \beta_6 LEV_{it} + \beta_7 GDP_{it} + INF_{it} + \varepsilon_{it} \tag{2}$$

$$ROE_{it} = \beta_1 C.Card_{it} + \beta_2 TA_{it} + \beta_3 SIZE_{it} + \beta_4 NPL_{it} + \beta_5 VAR_{it} + \beta_6 LEV_{it} + \beta_7 GDP_{it} + INF_{it} + \varepsilon_{it} \tag{3}$$

Table 2 presents indicators for measuring variables, Table 3 – descriptive statistics of these variables.

Table 2

Indicators for measuring variables

Variables		Measurement indicators
Independent variables	C.Card	Value of credit cards/total loans and customer facilities
	TA	Total technology assets/total bank assets
Dependent variables	ROA	Net profit after taxes/total assets
	ROE	Net profit after taxes/equity loads
Regulatory variables	SIZE	The natural logarithm of total assets
	NPL	Non-performing loans/total loans and customer facilities
	VAR	Logarithm of value at risk with 95% confidence level
	LEV	Core capital/total assets of the bank on and off-balance sheet
	GDP	Annual GDP growth rate
	INF	Annual inflation rate

Source: authors' own study based on data (The World Bank, 2023).

Table 3

Descriptive statistics of study variables

Variables	Mean	Std.Dev	Min	Max
ROA	0.0210596	0.0107845	-0.004370	0.04510
ROE	0.2246018	0.0917611	-0.019200	0.45800
C.Card	0.0109383	0.0134591	0	0.03640
TA	0.0048768	0.0033426	0.0004454	0.01270
SIZE	25.142990	0.7841724	23.439080	26.82291
NPL	0.0497522	0.0323562	0.0056601	0.125576
VAR	24.256580	1.3662550	22.243210	27.28186
LEV	0.0750755	0.0248164	0.036800	0.13220
GDP	0.0460000	0.007440	0.036000	0.05600
INF	0.1299000	0.0587121	0.050000	0.22450

Source: authors' research.

From this Table it becomes clear to us the following:

First: dependent variables. In the study sample, the average return on bank investments was 2.1%, with the lowest value (-0.43 %) and the highest value (4.5 %), indicating an increase in the range between the lowest and highest values. The lowest result (-0.43 %) implies that one or more banks in the study group have lost money. These results indicate that some of the research sample banks need to improve asset utilization to raise asset returns. The average return on equity for the sample banks was 22.5 percent, and it ranged from -0.0192 percent to 45.8 %. The lowest score of (-0.0192 %) shows that one or more banks in the study group are losing money. These statistics indicate that some study banks need to improve their performance.

Second: independent variables. The mean credit card balance (C.Card) is 1.09373 % with a standard deviation of 0.0134591. This suggests that, on average, the sample banks rely on credit cards for approximately 1.1 % of the total value of customer loans and facilities. The lowest value observed was 0, indicating that some banks in the sample do not depend on credit cards. The highest value observed was

3.6 %, indicating a significant range between the lowest and highest values. This suggests that there is an imbalance among the banks included in the study sample when it comes to their dependence on credit cards.

The mean value of technological assets (TA) is 0.478767 % with a standard deviation of 0.0033426. This suggests that, on average, the sample banks rely on technological assets for approximately 0.49 % of their total assets, which is the lowest average and standard deviation among the variables in the study. The range between the lowest value (0.04454 %) and the highest value (1.28 %) is quite high, indicating a significant disparity in the reliance on technological assets among the banks in the sample. Overall, these findings suggest a decrease in the dependence of banks on this type of asset.

Third: regulatory variables.

- The arithmetic mean of the bank size (SIZE) is (25.14299) with a standard deviation of (0.7841824), and the lowest value and the highest value were (23.43908) (26.82291) respectively, and these data indicate in their entirety a decrease in the range between the lowest value and the highest value, due to the dependence on the natural logarithm of the total assets.

- The arithmetic mean of the ratio of non-performing loans to total loans (NPL) (4.97522 %) with a standard deviation of (0.323562), and the lowest value and the highest value were (0.56601) (12.55759) respectively, and these data indicate in their entirety the increase in the range between the lowest value and the highest value, which means high credit growth rates in some banks in the study sample and low in others.

- The arithmetic mean of the value at risk (VAR) is (24.25658) with a standard deviation of (1.366255), and the lowest value and the highest value were (21.24321 %) (27.28186 %) respectively, and it is clear from these data that the range decreases between the lowest value and the highest value, due to the dependence on the natural logarithm of the values at risk.

- The arithmetic mean of the leverage ratio (LEV) is (7.50755 %) with a standard deviation of (0.024164), and the lowest value and the highest value were (3.68 %) (13.22 %) respectively, which may indicate that the sample banks (7.5 %) on average, which is higher than the rate determined by the Central Bank of Algeria (3 %), and the lowest value (3.68 %) is higher than the prescribed percentage of leverage (3 %).

- The arithmetic mean of the GDP growth rate is (4.6 %) with a standard deviation of (0.00744), and the lowest value and the highest value were (3.6 %) (5.6 %) respectively, and these data indicate a decrease in the standard deviation of the GDP growth rate, and a decrease in the range between the lowest value and the highest value, which means that there is no fluctuation in the GDP growth rate during the period under study, and this is due to the gradual improvement of economic conditions in the Algerian environment.

- The arithmetic mean of the annual inflation rate (INF) is (12.99 %) with a

standard deviation of (0.058121), and the lowest value and the highest value were (5 %) (22.45 %) respectively, and these data indicate a rise in the range between the lowest value and the highest value, which means that there is a fluctuation in the annual inflation index during the period under study, and this is due to the conditions that occurred in the Algerian environment during that period, including the floating of the dinar, and the continuous rise in price levels.

Hypothesis test. 1.1. Test the first hypothesis (H₀₁) and the second hypothesis (H₀₂). To test the first hypothesis (H₀₁), which states that there is no significant impact of credit card balances (C.Card) on the rate of return on assets (ROA), and the second hypothesis (H₀₂), which states that there is no significant impact of the value of technological assets (TA) on the rate of return on assets (ROA), the regression analysis of the first model was conducted by studying the OLS method, and the following Table shows the results of the regression analysis of the first model.

Table 4 presents the results of regression analysis of the first model by study using the OLS method for hypothesis (H₀₁) and hypothesis (H₀₂).

Table 4

Results of regression analysis for the first model by study using the OLS method of hypothesis (H₀₁) and hypothesis (H₀₂)

Variables	Dependent variable: ROA		
	Coefficient	T-Test	
		T	Significant
C.Card	0.3559686	3.88	0
TA	0.0414780	0.10	0.921
SIZE	-0.0018015	-0.87	0.386
NPL	0.0466214	1.27	0.208
VAR	0.0007846	0.85	0.397
LEV	0.0927232	1.98	0.050
GDP	0.3204134	3.55	0.001
INF	0.2254060	1.60	0.113
Constant	0.0160681	0.34	0.735
Prob> F		0.0001	
R-squared		0.2932	
Adj R-squared		0.2304	

Source: authors' own study based on STATA V. 14.

It is clear from the previous Table that:

First: the morality of the model. The results of the regression analysis of the first model indicate the possibility of relying on the model as a whole due to the decrease in the probability of (F-Statistic) from (5 %), where it reached (0.01 %).

Second: the explanatory ability of the model. The results indicate that the value of the coefficient of determination (R²) and the coefficient of determination (Adjusted R²) amounted to (29.32 %, 23.04 %) respectively, and these results indicate that the variables of the model (independent and controlling) can in their entirety explain

about (23.04 %) of the behavior of the dependent variable, and this means that credit card balances, the value of technological assets, the size of the bank, the ratio of non-performing loans, the value at risk, leverage, GDP growth rate, inflation explain (23.04 %) of the change in (ROA).

Third: moral test of variables (T-Test) and regression coefficients. The results indicate that the regression coefficients for each of the credit card balances, the value of technological assets is positive and amounted respectively to (0.355, 0.041), and this indicates a positive relationship between the previous independent variables and the rate of return on assets, and this relationship is significant for credit cards, where the level of moral is zero, and non-significant for technological assets, where the level of moral (0.921) at the level of confidence (95 %).

Based on the above, the first hypothesis H_01 can be rejected by imposing nothingness, which states that there is no positive moral impact of credit card balances (C.Card) on the rate of return on assets (ROA), and accepting the alternative hypothesis that there is a positive moral impact of credit card balances (C.Card) on the rate of return on assets (ROA), while the second hypothesis (H_02) is accepted by imposing nothingness, which states that there is no significant impact of the value of technological assets (TA) on the rate of return on Assets (ROA).

1.2. Test the third hypothesis (H03) and the fourth hypothesis (H04). To test the third hypothesis (H_03), which states that there is no significant impact of credit card balances (C.Card) on the rate of return on equity (ROE), and the fourth hypothesis (H_04), which states that there is no significant impact of the value of technological assets (TA) on the rate of return on equity (ROE), a regression analysis of the second model was conducted by studying the least squares method, and the following Table shows the results of the regression analysis of the second model.

Table 5

Results of regression analysis for the second model by study using the OLS method of hypothesis (H03) and hypothesis (H04)

Variables	Dependent variable: ROA		
	Coefficient	T-Test	
		T	Significant
C.Card	2.801601	3.20	0.002
TA	1.572743	0.39	0.695
SIZE	-0.016754	-0.86	0.393
NPL	0.424755	1.21	0.229
VAR	0.007398	0.80	0.426
LEV	-1.065341	-2.30	0.024
GDP	2.532645	2.67	0.009
INF	0.155578	1.07	0.289
Constant	0.347481	0.79	0.432
Prob> F		0.0003	
R-squared		0.2714	
Adj R-squared		0.2067	

Source: authors' own study based on STATA V. 14.

It is clear from the previous Table that:

First: the moral of the model. The results of the regression analysis of the first model indicate the possibility of relying on the model as a whole due to the decrease in the probability of (F-Statistic) from (5 %), where it reached (0.03 %).

Second: the explanatory ability of the model. The results indicate that the value of the coefficient of determination (R^2) and the coefficient of determination (Adjusted R^2) amounted to (27.14 %, 20.67 %) respectively, and these results indicate that the variables of the model (independent and controlling) can in their entirety explain about (20.67 %) of the behavior of the dependent variable, and this means that credit card balances, the value of technological assets, the size of the bank, the ratio of non-performing loans, the value at risk, leverage, GDP growth rate, inflation explain (20.67 %) of the change in (ROE).

Third: moral test of variables (T-Test) and regression coefficients. The results indicate that the regression coefficients for each of the credit card balances, the value of technological assets is positive and amounted respectively to (2.801, 1.572), and this indicates a positive relationship between the previous independent variables and the rate of return on equity (ROE), and this relationship is significant for credit cards (C. Card), where the level of moral is zero, and non-significant for technological assets, where the level of moral (0.002), and non-significant for technological assets (TA), where the level of moral (0.695) at the level of confidence (95 %).

Based on the above, the third hypothesis H03 can be rejected by imposing nothingness, which states that there is no significant impact of credit card balances (C. Card) on the rate of return on equity (ROA), and accepting the alternative hypothesis that there is a positive moral impact of credit card balances (C.Card) on the rate of return on equity (ROE), while the fourth hypothesis (H04) is accepted by the null imposition, which states that there is no significant impact of the value of technological assets (TA) on the rate of return on equity (ROE).

Discussion of the results of statistical analysis. The aim of discussing the results of the statistical analysis reached through the applied study is to provide explanations and logical justifications that support those results, in addition to making a comparison between these results and the results of previous studies to determine the extent of their agreement or conflict, and to clarify the reasons for the differences, if any, through the following points:

The relationship between credit card balances and banks' financial performance. With regard to the first hypothesis (H01) the effect of credit card balances (C.Card) on the rate of return on assets (ROA), the third hypothesis (H03) the impact of credit card balances (C.Card) on the rate of return on equity (ROE), the results of the applied study showed a positive moral impact of credit card balances (C.Card) on both the rate of return on assets (ROA), and the rate of return on equity (ROE), and therefore both the first and third hypothesis (null hypotheses) were rejected. And accept the alternative hypothesis that there is a positive moral impact of credit card balances (C.Card) on Ka of (ROE, ROA) and the researcher believes that

credit cards are an easy tool to use, spread and increase reliance on them leads to an increase in customer loans and facilities, which is the main pillar of the work of banks and one of the most important sources of profits, and therefore the greater the reliance on them the more this leads to an improvement in the profitability of banks, and the result of the current study is consistent with the result of the study (Mutisya & Atheru, 2019), while this result differs with the result of the study (Haris et al., 2019). The main reasons for the differences:

- 1) the different application environment;
- 2) the difference in the sample size;
- 3) the difference in the period of study.

The authors believes that the different application environment may be the reason for the different results of the study, as this study was in an advanced environment, unlike the Algerian environment, which is a developing environment, and therefore differs significantly from the developed environment in terms of cultural structure, technical infrastructure of the state, technical infrastructure of banks. In addition to legal and regulatory frameworks and the risks of applying financial technology and other various factors between the developed environment and the developing environment, which can affect banks, customers or both in either environment and therefore may lead to different results of studies that are prepared in this field. The reason may be the difference in the size of the sample, as that study relied on a sample that the authors sees as small and does not accurately reflect the study population, as the sample consisted of 21 banks from five countries. The third reason is the difference in the study period, as the authors believes that the Covid-19 crisis may be a reason to stimulate financial technology in light of the distancing measures imposed on the world.

The positive relationship between credit card balances and the financial performance of banks has been supported by the signal that increased reliance on credit cards is a positive signal for banks that increasing reliance on financial technology leads to more customers, and this increase would increase reliance on the services and products of various banks, which contributes to increasing the profitability of banks.

The relationship between the value of technological assets and the financial performance of banks. With regard to the second hypothesis (H02) the impact of the value of technological assets (TA) on the rate of return on assets (ROA), and the fourth hypothesis (H04) the impact of the value of technological assets (TA) on the rate of return on equity (ROE), and the rate of return on equity (ROE), and therefore both the second and fourth hypothesis (null hypotheses) were accepted that there is no significant impact of technological assets (TA) on each of (ROA, ROE), and the authors believes that the lack of impact of technological assets on performance The financial of banks may be due to the significant expansion in terms of banks in relying on this type of asset in recent years in light of the spread of the Covid-19 crisis, and therefore its cost may still be greater than its returns.

Conclusions. Based on the empirical investigation, the authors obtained the subsequent findings:

1. The first hypothesis, which posits that credit card balances have no significant impact on the rate of return on assets, has been rejected.
2. Support the second hypothesis that the value of technological assets does not have a significant impact on the rate of return on assets.
3. The third hypothesis, which posits that credit card balances do not have a significant impact on the rate of return on equity, has been rejected.
4. Support the fourth hypothesis, which asserts that the value of technological assets does not have a significant effect on the rate of return on equity.

Based on the results, the authors suggest the following:

1. It is crucial to prioritize financial technology due to its significant influence on the banking industry, particularly its ability to enhance the speed and cost-effectiveness of financial services provided to customers, thereby improving their quality.
2. Banks must prioritize their attention towards financial innovations due to their significant importance and profound impact on their financial standing and competitive position.
3. Banks must collaborate with fintech startups to leverage their expertise in enhancing their diverse banking services.
4. The imperative to enhance the ICT infrastructure.
5. The imperative to create efficient models for mitigating the risks inherent in financial technology innovations.
6. The necessity to carry out awareness campaigns targeting customers regarding the significance of financial technology and its advantages.
7. The imperative to disseminate the adoption of financial technology among customers, particularly in the context of the Covid-19 pandemic.

Based on the research constraints already presented, future steps for this study can be foreseen, as described below:

First, the additional research may apply the same methodological approach used in this study to analyze the impact of fintech on the performance of banks, including customers and potential users of this new model, not only in Algeria but also in economies on the path to growth.

Moreover, other methodological approaches may be used to deepen the understanding of the fintech concept and its impact on the traditional financial sector, such as inventive problem-solving maps.

Last, another avenue for future research is to assess the impact of fintech on the financial inclusion of the unbanked, not only in Algeria, but also in other emerging economies.

As explained above, the Algerian experience with fintech implementation can be seen as a proxy for emerging markets that have high financial exclusion coexisting with a large number of fintech operating in the financial sector in frank and open

competition with large traditional banks. However, in doing so, the legal frameworks in place in these countries need to be understood so that regulatory frameworks are developed, implemented, and enforced accordingly. In essence, we hope to have shown the novelty of this work through a better definition and consolidation of the fintech construct. We aim that future research on the subject, developed in emerging markets, can further deepen the understanding of this new paradigm of the financial sector.

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