

Smartphone Applications as a Mechanism for Improving Digital Performance in the Algerian Banking Sector

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Abstract

This research paper aims to examine one mechanism for improving digital performance in the Algerian banking sector, namely smartphone applications. To this end, we conducted a field study involving a sample of 85 customers of several banks operating in M'Sila Province. To analyze the study data and test its hypotheses, we used the JASP statistical software, version 0.19. The study found a statistically significant effect of smartphone applications on improving digital performance in the Algerian banking sector.

Keywords: smartphone applications; digital performance; Algerian banking sector.

Introduction

Smartphone applications are among the most prominent instruments of digital development and have brought about a qualitative transformation in the way financial and banking services are delivered. They are among the fastest-growing technologies worldwide, with a vast user base connected through the digital networks of the financial and business world. They have increasingly contributed, efficiently and effectively, to overcoming most of the gaps associated with traditional banking methods. Through them, broader financial inclusion can be achieved and temporal and geographical barriers can be overcome, in addition to many other benefits. The Algerian banking sector is working to adopt this technology more extensively, facilitate access to it, and promote intensive use of it in order to overcome many challenges and open future prospects for a more flexible and developed Algerian banking sector. Accordingly, the research problem of this study can be formulated as follows:

Statement of the Research Problem

- Do smartphone applications contribute to improving digital performance in the Algerian banking sector?

Based on the research problem, the following questions arise:

- Does the Banxy smartphone application contribute to improving digital performance in the Algerian banking sector?

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- Does the Mobile Banking smartphone application contribute to improving digital performance in the Algerian banking sector?

- Does the M-Pay smartphone application contribute to improving digital performance in the Algerian banking sector?

Research Hypotheses

- Main hypothesis: Smartphone applications have a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

- Sub-hypotheses:

Based on the main hypothesis, the following sub-hypotheses are proposed:

- The Banxy smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

- The Mobile Banking smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

- The M-Pay smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

Objectives of the Study

- To provide a conceptual framework for smartphone applications used in the banking sector.

- To highlight the role and importance of smartphone applications in improving, developing, and digitalizing the Algerian banking sector.

- To examine the reality of digitalization in the Algerian banking sector.

Significance of the Study

- The significance of this study stems from the importance of the topic itself. Smartphone applications are receiving increasing attention in the digital world, particularly in the fields of finance and monetary affairs.

- To raise awareness among individuals and banking institutions of the need to use smartphone applications in view of their many advantages.

Methodology

To achieve the objectives of the study, we used the descriptive approach, which is appropriate for the topic of this paper. The descriptive approach is one of the most widely used approaches for studying phenomena. It explains the existing situation of a phenomenon or problem by identifying its conditions and dimensions and describing the relationships among them, with the aim of reaching a comprehensive and accurate scientific description of the phenomenon or problem under investigation.

I. Theoretical Framework of the Study

Definition of Smartphone Applications

Smartphone applications are defined as “a wireless means of communication through which users can access news and many other diverse items by subscribing to an Internet service” (Cheguer, 2014, p. 84).

They are also defined as “applications designed for smartphones that comprise two aspects: the first relates to electronic publishing, while the second relates to their use in providing services” (Omrane, 2019, p. 2631).

For the purposes of this study, smartphone applications refer to a set of applications designed for the banking sector and compatible with smartphone operating systems, enabling users to access and benefit from various banking services digitally.

Smartphone Applications Used in the Algerian Banking Sector

- Banxy smartphone application: Banxy was the first mobile banking application on the Algerian banking scene. It has been available since 2018, is secured according to international standards and the latest technologies, and is designed for the iOS and Android operating systems. It can be downloaded free of charge from Google Play and the Apple App Store. This banking application provides added value and high-quality services to the banking sector in Algeria. It enables users to simplify their daily lives and enjoy a better banking experience through a variety of features without having to visit a bank. Users can remotely manage their bank accounts, open or close an account, view balances, request checkbooks and bank cards, make instant transfers and cash payments, deposit funds, obtain loans, save and invest, access international services, and use other banking services (Banxy, 2025).

- Mobile Banking smartphone application: Mobile Banking is an electronic banking service offered by several Algerian banks, such as the Banque du Crédit Populaire d’Algérie (CPA Mobile) and the Banque Extérieure d’Algérie (BEA Mobile). It can be accessed through mobile phones or tablets designed for the iOS and Android operating systems and downloaded free of charge from Google Play and the Apple App Store. The service can be used by subscribing to electronic banking services (e-Banking) and then enrolling in CPA Mobile or BEA Mobile by signing a specific agreement at the bank branch where the customer’s account is held. The application provides a range of electronic services, including locating bank branches and identifying the precise route to reach them when necessary, managing bank accounts, checking balances, making payments, withdrawals, and transfers, downloading bank identification statements, viewing bank share prices, and accessing other banking services (Banque du Crédit Populaire d’Algérie, 2025).

- M-Pay smartphone application: M-Pay is the product of 100% Algerian youth who founded SSI (Smart Solutions and Innovation). It is a smartphone payment application that allows consumers with bank balances in Algeria to pay amounts owed to merchants without an Internet connection, using a QR code generated by merchants and linked to a unique number for each merchant. The application complies with international security recommendations and standards. It can be downloaded from the following platforms: Play Store, mpay.dz, giemonetique.dz, bitakati.dz, and satim.dz. Its main digital services include transferring money from one phone to another, requesting account statements, receiving notifications through mobile text messages, and other banking services (M-Pay, 2025).

Definition of Digital Banking Performance

Digital banking performance is defined as “the digitalization of traditional banking activities and services through digital means and technologies in order to facilitate access and improve the customer experience” (Webb & Kumbirai, 2010, p. 35).

It is also defined as “the integration and deployment of digital technologies in the banking sector” (Popović-Pantić et al., 2019, p. 5).

In this study, digital banking performance refers to a bank that uses a digital infrastructure based on the latest digital technologies, including artificial intelligence, digital automation, advanced encryption using the latest technologies, big-data analytics, and other advanced digital services provided to consumers.

Requirements for Digital Banking Performance

Digital banking services delivered via the Internet began in the 1990s. Simple browser-based tools made it possible to access a number of digital banking services, such as money transfers, account statements, bill payments, and buying and selling. As digital technological development in the banking sector accelerated, these limited digital services became traditional. Accordingly, digitally performing banks are expected to meet several basic criteria, including the following (Lipton, Shrier, & Pentland, 2017, pp. 11-13):

- An innovative information-technology infrastructure, including several digital banking products such as electronic cards, robo-advisory services, and digital payment devices; human resources specialized in digitalization and information technology; and the provision of digital devices, among other requirements.
- Database designs based on banking information technology and the latest technological developments.
- Credit models based on artificial intelligence and intelligent big data.
- The expansion of digital commissions and fee-based services.
- Digital payments, digital sales, and other digital banking services.
- Security and confidentiality in accordance with international standards.

II. Empirical Framework of the Study

Study Sample

The study sample consisted of 85 customers of several banks operating in M'Sila Province. We successfully retrieved all questionnaires and verified their suitability for statistical processing and analysis.

Reliability of the Study Instrument

Reliability of a questionnaire means obtaining at least approximately similar results if the questionnaire is administered more than once under the same conditions. To verify reliability, we used Cronbach's alpha. For the study instrument to be considered reliable, Cronbach's alpha coefficient must exceed the minimum threshold of .60 (Al-Jaafari & Al-Taher, 2020, p. 285).

Table 1

Cronbach's Alpha Test Results

Study data	Items	Cronbach's coefficient	alpha
	Items 1-18	.873	

Source: JASP output.

The Cronbach's alpha correlation coefficient for all questionnaire items is higher than the standard test value of .60, which is the minimum threshold. It is therefore an appropriate value that meets the objectives and purposes of the study. The overall questionnaire value confirms its reliability, equivalent to 87.30%.

Coding of Responses from the Study Sample

Weight	Response	Weighted mean	Interpretation
1	Strongly disagree	1.00–1.79	Very low level of agreement and acceptance
2	Disagree	1.80–2.59	Low level of agreement and acceptance
3	Neutral	2.60–3.39	Moderate level of agreement and acceptance
4	Agree	3.40–4.19	High level of agreement and acceptance
5	Strongly agree	4.20–5.00	Very high level of agreement and acceptance
Class width = 0.80, calculated by taking the range between the scale points ($5 - 1 = 4$) and dividing the result by 5.			

Table 2

Coding of Responses from the Study Sample

Source: Prepared by the researchers.

We used the Kolmogorov-Smirnov test because the sample size was greater than 50 participants (Abu Duqqa & Al-Safi, 2013, p. 33).

Table 3

Kolmogorov-Smirnov Test Results

Tests of Normality		Statistical value	df	Significance level (Sig.)
Independent variable: Smartphone applications		1.122	85	.052
Dependent variable: Digital banking performance		1.119	85	.065

Source: JASP output.

The p-values of the Kolmogorov-Smirnov test for the two study variables are higher than the significance level adopted in the study (.05). Therefore, the study data follow a normal distribution, which permits the use of parametric tests to analyze the data and test the study hypotheses.

Opinions and Attitudes of the Study Sample Regarding the Study Variables

Table 4

Descriptive Results for the Study Sample's Opinions and Attitudes Regarding Smartphone Applications

Smartphone applications dimension	Mean	Standard deviation	Rank	Interpretation
Banxy smartphone application items	3.227	.914	—	Moderate
The Banxy smartphone application is easy to use.	3.22	1.106	2	Moderate
You conduct various banking transactions through the Banxy smartphone application without having to visit the bank.	3.27	1.073	1	Moderate

Smartphone applications dimension	Mean	Standard deviation	Rank	Interpretation
The Banxy smartphone application is sufficient for your various banking needs.	3.19	1.118	3	Moderate
Mobile Banking smartphone application items	2.827	.770	—	Moderate
The Mobile Banking smartphone application helps reduce your time and effort.	2.86	1.125	2	Moderate
The Mobile Banking smartphone application incorporates modern technologies.	2.74	1.146	3	Moderate
You use the Mobile Banking smartphone application routinely.	2.88	1.117	1	Moderate
M-Pay smartphone application items	2.886	.852	—	Moderate
The M-Pay smartphone application is available at all times.	3.02	.926	1	Moderate
The M-Pay smartphone application responds quickly	2.87	.923	2	Moderate

Smartphone applications dimension	Mean	Standard deviation	Rank	Interpretation
to your various digital problems.				
The M-Pay smartphone application is safe to use.	2.76	.987	3	Moderate
Smartphone applications dimension	2.980	.668	—	Moderate

Source: JASP output.

The table above presents the descriptive results for the study sample's opinions and attitudes regarding the smartphone applications dimension. The following observations can be made:

- Banxy smartphone application: All standard-deviation values for the Banxy smartphone application items are greater than the critical value of 1, indicating that the responses of the study sample to these items are neither close nor homogeneous. In terms of rank, Item 2 came first, with a mean of 3.27, placing it in the moderate range of agreement and acceptance. Item 1 came second, with a mean of 3.22, also in the moderate range, while Item 3 came third, with a mean of 3.19, likewise in the moderate range. Overall, the Banxy smartphone application received a moderate level of agreement and acceptance, with a mean response of 3.227. This indicates that the study sample places only moderate importance on the digital use of the Banxy smartphone application.

- Mobile Banking smartphone application: All standard-deviation values for the Mobile Banking smartphone application items are greater than the critical value of 1, indicating that the responses of the study sample to these items are neither close nor homogeneous. Item 6 ranked first, with a mean of 2.88, placing it in the moderate range of agreement and acceptance. Item 4 ranked second, with a mean of 2.86, also in the moderate range, and Item 5 ranked third, with a mean of 2.74, likewise in the moderate range. Overall, the Mobile Banking smartphone application received a moderate level of agreement and acceptance, with a mean response of 2.827. This indicates that the study sample places only moderate importance on the digital use of the Mobile Banking smartphone application.

- M-Pay smartphone application: All standard-deviation values for the M-Pay smartphone application items are below the critical value of 1, indicating that the responses of the study sample are close and homogeneous. Item 7 ranked first, with a mean of 3.02, placing it in the moderate range of agreement and acceptance. Item 8 ranked second, with a mean of 2.87, also in the moderate range, while Item 9 ranked third, with a mean of 2.76, likewise in the moderate range. Overall, the M-Pay smartphone application received a moderate level of agreement and acceptance, with a mean response of 2.886. This indicates that the study sample places only moderate importance on the digital use of the M-Pay smartphone application.

- Overall evaluation of smartphone applications: The standard deviation for the smartphone applications dimension is below the critical value of 1, indicating that the responses of the study sample

are close and homogeneous. The dimension received a moderate level of agreement and acceptance, with a mean response of 2.980. This indicates that the study sample places only moderate importance on the digital use of smartphone applications.

Table 5

Descriptive Results for the Study Sample's Opinions and Attitudes Regarding Digital Banking Performance

Digital banking performance items	Mean	Standard deviation	Rank	Interpretation
The bank provides you with several digital channels that eliminate the need to visit the bank.	3.22	1.004	1	Moderate
You are satisfied with the digital services provided by the bank.	2.80	1.111	5	Moderate
The bank provides digital services around the clock.	3.09	.996	2	Moderate
The bank's digital performance reflects a noticeable digital transformation.	2.59	1.072	8	Low
You prefer digital services to traditional services.	2.85	.932	4	Moderate
The bank has an adequate digital infrastructure.	2.65	1.110	7	Moderate
The bank continuously	2.56	1.052	9	Low

Digital banking performance items	Mean	Standard deviation	Rank	Interpretation
develops its digital services.				
The bank provides you with digital reports of all your digital transactions.	2.92	.966	3	Moderate
Using digital channels reduces traditional errors.	2.72	1.130	6	Moderate
Digital banking performance dimension	2.822	.635	—	Moderate

Source: JASP output.

The table above presents the descriptive results for the study sample's opinions and attitudes regarding the digital banking performance dimension. All standard-deviation values are greater than the critical value of 1, indicating a lack of homogeneity in the data for this dimension and a lack of convergence in the study participants' views regarding its items, with the exception of Items 12, 14, and 17, whose standard deviations are below the critical value of 1. According to the ranking of the items in this dimension, Item 10 ranked first, with a mean of 3.22, placing it in the moderate range of agreement and acceptance. Items 12 and 17 ranked second and third, respectively, with means of 3.09 and 2.92, both in the moderate range. Item 16 ranked ninth and last, with a mean of 2.56, placing it in the low range of agreement and acceptance. Overall, the digital banking performance dimension received a moderate level of agreement and acceptance, with a mean response of 2.822. This indicates that the study sample viewed digital banking performance as only moderate.

5. Testing the Study Hypotheses

Testing the First Sub-Hypothesis

The first sub-hypothesis states:

The Banxy smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

To test the first sub-hypothesis, we used a simple linear regression test. The following table presents the results.

Table 6

Results of Testing the First Sub-Hypothesis

R² = .256	R = .506				
F = 28.557, significance = .000	Mean squared error (MSE) = .304				
Independent variable	Regression coefficient b	Std. Error	Beta β	t value	Significance of t
Regression constant	1.688	.221	—	7.654	.000
Banxy application	.351	.066	.506	5.344	.000

Source: JASP output.

The following statistical analysis can be drawn from the table above:

- The coefficient of determination, $R^2 = .256$, indicates that 25.60% of the variance in the dependent variable, digital banking performance, is explained by the independent sub-variable, the Banxy application. The remaining 74.40% is attributable to other factors. The bivariate correlation coefficient between the two variables, $R = .506$, indicates a moderate positive relationship.

- The significance of the model, assessed using the Fisher distribution test, was $F = 28.557$ with a significance level of .000. This indicates that the simple linear regression model explains a substantial portion of the data. The mean squared error of the residuals, $MSE = .304$, is small, indicating a small random error. This confirms the statistical explanatory power of the simple linear regression model and indicates that it is an appropriate model for predicting digital banking performance from the effect of the independent sub-variable, the Banxy application.

- The slope coefficient, $b = .351$, at a significance level of .000, indicates a positive effect between the two variables. Thus, a one-unit increase or improvement in the independent sub-variable, the Banxy application, corresponds to an increase of .351 in the dependent variable, digital banking performance.

- The simple linear regression equation for digital banking performance, denoted by Y , and the Banxy application, denoted by x_1 , is:

$$Y = 1.688 + .351x_1$$

According to the decision rule, the calculated significance level of .000 is lower than the significance level adopted in the study, .05. Therefore, we accept the alternative hypothesis proposed in the study, which states:

The Banxy smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

Testing the Second Sub-Hypothesis

The second sub-hypothesis states:

The Mobile Banking smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

To test the second sub-hypothesis, we used a simple linear regression test. The following table presents the results.

Table 7

Results of Testing the Second Sub-Hypothesis

$R^2 = .268$		$R = .526$			
F = 31.801, significance = .000		Mean squared error (MSE) = .295			
Independent variable	Regression coefficient b	Std. Error	Beta β	t value	Significance of t
Regression constant	1.596	.225	—	7.081	.000
Mobile Banking application	.434	.077	.526	5.639	.000

Source: JASP output.

The following statistical analysis can be drawn from the table above:

- The coefficient of determination, $R^2 = .268$, indicates that 26.80% of the variance in the dependent variable, digital banking performance, is explained by the independent sub-variable, the Mobile Banking application. The remaining 73.20% is attributable to other factors. The bivariate correlation coefficient between the two variables, $R = .526$, indicates a moderate positive relationship.

- The significance of the model, assessed using the Fisher distribution test, was $F = 31.801$ with a significance level of .000. This indicates that the simple linear regression model explains a substantial portion of the data. The mean squared error of the residuals, $MSE = .295$, is small, indicating a small random error. This confirms the statistical explanatory power of the simple linear regression model and indicates that it is an appropriate model for predicting digital banking performance from the effect of the independent sub-variable, the Mobile Banking application.

- The slope coefficient, $b = .434$, at a significance level of .000, indicates a positive effect between the two variables. Thus, a one-unit increase or improvement in the independent sub-variable, the Mobile Banking application, corresponds to an increase of .434 in the dependent variable, digital banking performance.

- The simple linear regression equation for digital banking performance, denoted by Y, and the Mobile Banking application, denoted by x_2 , is:

$$Y = 1.596 + .434x_2$$

According to the decision rule, the calculated significance level of .000 is lower than the significance level adopted in the study, .05. Therefore, we accept the alternative hypothesis proposed in the study, which states:

The Mobile Banking smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

Testing the Third Sub-Hypothesis

The third sub-hypothesis states:

The M-Pay smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

To test the third sub-hypothesis, we used a simple linear regression test. The following table presents the results.

Table 8

Results of Testing the Third Sub-Hypothesis

$R^2 = .258$		$R = .508$			
F = 28.839, significance = .000		Mean squared error (MSE) = .303			
Independent variable	Regression coefficient b	Std. Error	Beta β	t value	Significance of t
Regression constant	1.730	.212	—	8.157	.000
M-Pay application	.379	.070	.508	5.370	.000

Source: JASP output.

The following statistical analysis can be drawn from the table above:

- The coefficient of determination, $R^2 = .258$, indicates that 25.80% of the variance in the dependent variable, digital banking performance, is explained by the independent sub-variable, the M-Pay application. The remaining 74.20% is attributable to other factors. The bivariate correlation coefficient between the two variables, $R = .508$, indicates a moderate positive relationship.

- The significance of the model, assessed using the Fisher distribution test, was $F = 28.839$ with a significance level of .000. This indicates that the simple linear regression model explains a substantial portion of the data. The mean squared error of the residuals, $MSE = .303$, is small, indicating a small random error. This confirms the statistical explanatory power of the simple linear regression model and indicates that it is an appropriate model for predicting digital banking performance from the effect of the independent sub-variable, the M-Pay application.

- The slope coefficient, $b = .379$, at a significance level of .000, indicates a positive effect between the two variables. Thus, a one-unit increase or improvement in the independent sub-variable, the M-Pay application, corresponds to an increase of .379 in the dependent variable, digital banking performance.

- The simple linear regression equation for digital banking performance, denoted by Y, and the M-Pay application, denoted by x_3 , is:

$$Y = 1.730 + .379x_3$$

According to the decision rule, the calculated significance level of .000 is lower than the significance level adopted in the study, .05. Therefore, we accept the alternative hypothesis proposed in the study, which states:

The M-Pay smartphone application has a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

Testing the Main Hypothesis

The main hypothesis of the study states:

Smartphone applications have a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

To test the main hypothesis, we used a multiple linear regression test. The following table presents the results.

Table 9

Results of Testing the Main Hypothesis

R² = .422		R = .649			
F = 19.694, significance = .000		Mean squared error (MSE) = .242			
Independent variable	Regression coefficient b	Std. Error	Beta β	t value	Significance of t
Regression constant	.977	.246	—	3.971	.000
Banxy application	.208	.066	.299	3.151	.002
Mobile Banking application	.235	.084	.285	2.792	.007
M-Pay application	.177	.077	.237	2.314	.023

Source: JASP output.

The table above shows that all slope coefficients, b, for the various independent sub-dimensions are positive. This indicates a positive effect between the independent variables representing smartphone applications and the dependent variable, digital banking performance. Thus, a one-unit increase in or improvement of any independent sub-dimension corresponds to a certain increase in the dependent variable, digital banking performance.

The beta values, β , allow us to rank the relative effects of the independent sub-variables representing smartphone applications on the dependent variable, digital banking performance, as follows:

1. Banxy application, with an effect size of .299.
2. Mobile Banking application, with an effect size of .285.
3. M-Pay application, with an effect size of .237.

The multiple linear regression equation for predicted digital banking performance, denoted by Y , where the Banxy application is x_1 , the Mobile Banking application is x_2 , and the M-Pay application is x_3 , is:

$$Y = .977 + .208x_1 + .235x_2 + .177x_3$$

Based on the foregoing and the decision rule—comparing the calculated significance level with the significance level adopted in the study, .05—if the calculated significance level is lower, we reject the null hypothesis and accept the following alternative hypothesis proposed in the study:

Smartphone applications have a statistically significant effect on improving digital performance in the Algerian banking sector at a significance level of $\alpha \leq .05$.

Conclusion

In light of the digital development taking place worldwide, smartphone applications used in the Algerian banking sector are among the most prominent forms of digital transformation. They contribute effectively to achieving digital performance and strengthening banks' ability to provide digital banking services that are more efficient and effective than traditional services. These applications have enabled customers to access comprehensive digital financial services, thereby eliminating geographical and temporal barriers and allowing them to manage their bank accounts easily. This saves them the inconvenience of traveling, as well as time and effort, and reduces many costs, including transportation costs. In addition, these applications promote transparency and accountability and help eliminate various forms of corruption, including the embezzlement of funds from bank accounts. They have also expanded the scope of use of advanced technologies, such as artificial intelligence and big-data analytics, which help us understand customer behavior and, on that basis, develop innovative financial solutions.

In view of the foregoing, smartphone applications used by banks have become more than a necessity; they are now a central element in supporting, strengthening, and improving digital banking performance and a mechanism for driving growth and development in the Algerian banking sector. Their importance is expected to increase as reliance on smarter and more streamlined digital technologies grows. Through our field study of customers of several banks operating in M'Sila Province, we found a statistically significant effect of smartphone applications on improving digital performance in the Algerian banking sector. Based on our field results, we can offer several recommendations.

Recommendations

- Increase investment in digital banking technologies and cybersecurity.
- Further improve digital banking infrastructure.

- Pay greater attention to educating customers about the use of banking smartphone applications and intensify such efforts.
- Ensure continuous updates of mobile banking applications.
- Integrate artificial intelligence technologies to improve digital services.
- Strengthen cooperation and communication with technology companies specializing in banking digitalization.

References

- Banxy. (2025, April 17). Banxy au quotidien. <https://www.banxybank.com/ar/banxy-au-quotidien>
- Lipton, A., Shrier, D., & Pentland, A. (2017). Digital banking manifesto: The end of banks? Massachusetts Institute of Technology.
- M-Pay. (2025, April 18). <https://www.mpay.dz/>
- Popović-Pantić, D., et al. (2019). The influence of digital transformation on business performance: Evidence from women-owned companies. *Ekonomika Preduzeća*, 67(7-8), 405.
- Webb, R., & Kumbirai, M. (2010). A financial ratio analysis of commercial bank performance in South Africa. *African Review of Economics and Finance*, 2(1), 35.
- Al-Jaafari, A., & Al-Taher, H. (2020). The role of self-awareness in the effectiveness of administrative leaders' behavior: A case study of the University of Khartoum. *Arab Journal of Educational and Psychological Sciences*, 4(13).
- Banque du Crédit Populaire d'Algérie. (2025, April 18). <https://www.cpa-bank.dz/index.php/ar/r>
- Abu Duqqa, S. I., & Al-Safi, S. K. (2013). Practical applications using the Statistical Package for the Social Sciences (SPSS) in educational and psychological research (1st ed.). Islamic University, Palestine: Al-Afaq Library.
- Cheguer, A. K. (2014). New media and social networking sites (Vol. 30). Jordan: Osama Publishing and Distribution House.
- Omrane, S. H. (2019). The use of smart applications in electronic publishing: An analytical study. p. 2631.