

The impact of Digital Transformation on commercial Banks performance- Algerian banks employees as a sample-

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Received:29/01/2024

Accepted:05/08/2024

Published:01/09/2024

Abstract:

The study aims to measure the connection between digital transformation and banks' performance in the first place, then to evaluate the impact of digital transformation and its dimensions: digital infrastructure, digital offices, and digital services on banks' performance in Algeria, on the grounds that digital transformation has become a sine qua non for all organizations generally and financial institutions, such as banks specifically, for their activities and performances in a world depending on technology and digital nowadays.

Relying on quantitative study targets Algerian bank employees, to assess the impact, a questionnaire was distributed to them, 51 forms were collected, and analyzed using the SPSS version 26 programs, resulting in the findings that digital transformation has a positive effect on bank performance.

Keywords: digital transformation, commercial banks, performance.

JEL Classification: O33; G21

Introduction

The world today witnesses a rapid spread of information and technological development in all fields, especially the economic and financial sectors.

Countries all over the world race towards a digital economy, which gave organizations the urge to keep pace with the latest technological innovations in the face of current economic challenges, namely the fourth industry revolution. And Algeria is one of the nations that it is making efforts to support digital transitions.

On the other hand, it has become necessary for financial institutions to adopt digital transformation, shift their business model, keep up with competitors, and then take advantage of digital technologies.

In particular, commercial banks must make a change from brick-and-mortar services to digital solutions in their business to decrease workload, in view of the fact that they are characterized by their numerous operations, which basically they concentrate on short-term products and services, serving individuals and organizations, in both the private and local sectors.

The study intends to evaluate the effect of digital transformation, with its dimensions on the banks' performance, to assess the impact, and to identify its tendency.

Accordingly, we pose the following research problem: Is there a relation between digital transformation on Algerian banks' performance?

To answer the principal problematic, we formulate the following

Hypotheses:

H0: there is no statistical effect of digital infrastructure on banks' performance.

H1: there is statistical effect of digital infrastructure on banks' performance.

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In order to answer the main question, and test the hypotheses, a descriptive analytical approach was conducted, the descriptive approach to present each of digital transformation, its advantages, and bank performance, and descriptive analytical approach precisely quantitative

research to measure the impact of digital transformation on commercial banks performance.

1- Literature reviews:

The study (AL ACHARI & HATTAB, 2023) aimed to determine the impact of digitalization on financial performance of banks, it relied on, choosing literature reviews with different criteria like date, revue, research methodology, objectives, and bibliography, presenting and analyzing them. the study based on three principal objectives, defining digitalization and historical development, also defining performance in banking, and the casual connection between digital and banks' performance, concluded that digital technologies contribute to attaining profitable financial performance, promote the financial inclusion, and construct a secured and regulated digital strategic and digital organizational.

Besides, the study (التابعي الذنون، 2022) examines the effect relation between digital transformation on the ability of Egyptian banks in improving their financial performances, by conducting an analytical descriptive approach through interviews with executive department staff such as CEOs, CFOs, COOs, and their assistants at Egypt bank agencies in Cairo, Alexandria, and Damietta to identify digital transformation's most important mechanisms and benefits, that improve financial performance at Egyptian bank and to also label its impact on human resources. The study proved the link between digital transformation and the financial performance of organizations, especially banks, also it ameliorates financial performance, as demonstrated by crisis challenges like the covid-19 pandemic, and the central bank played a primordial role in banks' digital transformation.

In addition, the study (Trang, Ha An, Eleftherios, & Hoang , 2022) focuses on assessing the effect of digital transformation on commercial banks' performances with different sizes in Vietnam using quantitative research, applying the GMM system and the Blundell and Bond estimators, and synthesizing the data of 13 joint-stock Vietnamese commercial banks from 2011 to 2019. As a result, digital transformation has a positive effect on Vietnamese commercial banks' performance, as well as its efficiency depends on bank scale. Plus, the largest bank has the greatest effect, and vice versa.

The studies above discussed the impact of digital transformation on the general performance and financial performance of banks. They had intersected at one common point: that there's a positive effect of digital on banks since the business world is in its digital era and financial institutions are progressively implementing digital technologies in their functions. In

this study, the impact is measured at Algerian banks, specifically commercial banks.

2- Conceptual framework:

2-1- Digital transformation as a concept:

Digital transformation is defined as a traditional organization's process shift to one that relies on digital technologies to innovate products and services, create new revenue channels, and seize opportunities to increase value (راهب و شابي، 2023، صفحة 723).

Digital transformation, as well, is defined as the adaptation of an organization's business model to digital innovations with the purpose of creating value. It requires change in all aspects, starting with infrastructure, and it also touches all the organization intermediaries (Zaoui, Boudaoud, & Hasseb, 2021, p. 501).

Furthermore, digital transformation in the banking sector is defined as performing organizations' activities through innovative business models with solid information technology and internet infrastructure, accompanied by digital technologies, to achieve their goals and ensure their continuity (قرزیز، زيدان، و القطان، 2022، صفحة 378).

To recapitulate, digital transformation can be defined as changing the business model of an organization to a progressive model that maintains digital innovations in the business world in order to realize short term and long-term objectives, such as competitive advantages.

And it can be concluded that, one of the most important digital transformation characteristics is: (جابر، 2022 & زروالي، p. 364)

- ❖ Reliance on intangible assets, specifically digital assets, for instance, software, algorithms, and platforms, to supply services and products, and to generate profit.

2-2- Definition of banks' performance:

An organization's performance is generally defined as a complete system of an organization's state, position, and interaction with its internal and external environment; including its strengths and weaknesses, opportunities, and threats. It is also defined as the organization's ability to rationally use available resources in order to produce or provide services (حمادة، 2022، صفحة 57).

While banks' performance indicates their ability to achieve sustainable profitability, considering that profits are their red line against unexpected losses. Moreover, cognizing a bank's performance is cognizing bank's progress achievement, goals achievement ability, and fair image

clarification, for the purpose of detecting obstacles, finding them solutions, and avoiding them in the future (528-527 الصفحات، 2023، المرسي و موساوي،).

2-3- Digital transformation dimensions at Banks:

Digital transformation dimensions can be summarized into three principal dimensions, mentionable:

2-3-1- Digital infrastructure:

It is considered a foundation for creating an appropriate environment for digital transformation. Infrastructure is one of the most important pillars that permits the building of a digital system in a bank, and it can be represented by purchasing hardware, software, devices, and machines (تخريين و بوخرص، 2022، صفحة 154).

2-3-2- Digital offices:

Digital administration refers to a new method, rational utilization, and a positive investment, in Its, TICs, and digital technologies to exercise basic function of management, to be more efficient (بودي، 2011، صفحة 59).

2-3-3- Digital services:

It represents the process of transforming all traditional bank activities into digital, for instance, deposits, withdrawals, and transfers from smartphones, apps, the internet, and ATM (بللعماء و سيد اعمر، 2023، صفحة 62).

2-4- Benefits of digital transformation in Banking:

Digital transformation provides to financial institutions in general, and to commercial banks in particular, a package of benefits, mentioning: (مرسي و موساوي، 2023، صفحة 525)

- ✓ Customer satisfaction;
- ✓ Profit growth;
- ✓ Deposit growth;
- ✓ Operational costs reductions;
- ✓ Competition improvement;
- ✓ Competition improvement;
- ✓ Time and effort savings;
- ✓ Financial inclusion sustainable development;
- ✓ Efficient process;
- ✓ Transparency and information security;
- ✓ Revenue growth and market share growth.

3- Research method and tool:

The population of this study targeted Algerian commercial banks employees, 55 questionnaire forms were distributed, 51 were collected, and 94 percent were suitable for the study.

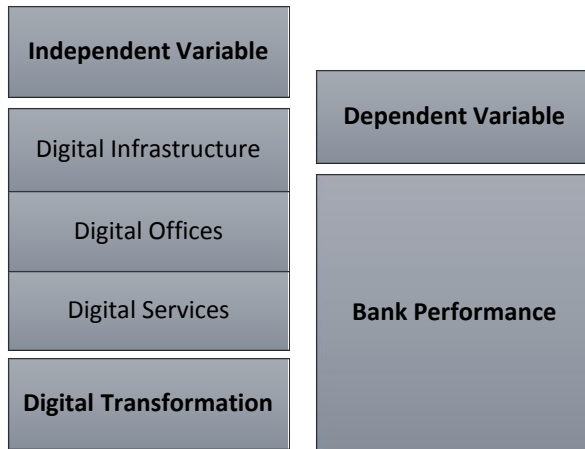
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The questionnaire started with demographic questions with “5 items”, then it was divided into two axes with “34 items”, “39 items” in total. The first axis is related to the independent variable “digital transformation” with “24 items”, itself divided into three dimensions: digital infrastructure “9 items”, digital offices “8 items”, and digital services “7 items”, and the second one is related to bank performance with “10 items”.

It's important to note that the items were examined by three reviewers to avoid errors that could affect the results.

The questionnaire's data were uploaded to the SPSS 26 version program, analyze them, test the hypothesis, and conclude.

Figure number (01): Variables and dimensions of the study



Source: Prepared by the researchers

4- Results and findings:

4-1- Reliability:

Alpha Cronbach coefficient:

As it's remarkable from the following table, Cronbach's alpha for the questionnaire sections was successively 0.936 and 0.909; the total was 0.954, which is higher than the minimum acceptable range of 0.60. As a result, the study is reliable and highly credible.

Table number (01): Reliability test

Axe	Number of items	Cronbach's Alpha
Digital transformation	24	0.936
Bank performance	10	0.909
Total	34	0.954

Source: SPSS outputs

4-2- Descriptive statistics:

Table number 03 shows that most respondents have a bachelor's degree, master's degree, or higher education degree with almost equal rates of 25.5%, 37.3%, and 25.5%, and less of them have a professional degree rated at 11.8%.

It also indicates that most of the respondents occupy finance titles with 68.8%, followed by administrative titles with 25.5%, and accountants and IT professionals are the least titles, which explain the financial activities of banks.

The table below demonstrates that half of the respondents have less than 5 years' experience, which reveals the majority of them are young people. It concludes that banks work on employing youth new graduates.

Most of the respondents are employees at domestic banks (BDL, CNEP, BNA, BEA, and CPA) with 74.5% and the others work at foreign banks (AL SALAM BANK, TRUST BANK, and ABC BANK) with 25.5%.

Table number (02): demographics information

/	Characteristic	Percentage	Frequency
Education	Bachelor	25.5	13
	Master	37.3	19
	Advanced degrees	25.5	13
	Professional degree	11.8	06
Occupation	Office manager	25.5	13
	Accountant	03.9	02
	Finance manager	68.6	35
	IT professional	02	01
Experience	Less than 5 years	52.9	27

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	From 5 to 10 years	21.6	13
	More than 10 years	25.5	11
Bank type	Domestic	74.5	38
	Foreign	25.5	13

Source: Survey outputs

5- Data analysis:

The questionnaire was prepared based on five-point Likert scale (table number 03), in order to analyze and determine general attitude of respondents' answers, arithmetic mean and standard deviation were calculated for each of the axis's independent variable and dependent variable, then the general one according to the table number 04.

Table number (03): five-point Likert scale

Likert Scale description	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Likert scale interval	1.00-1.80	1.80-2.60	2.61-3.40	3.41-4.20	4.21-5.00

Table number (04): descriptive analysis results

variables	Items	Mean	Std. deviation	Results
Digital infrastructure	09	4.125	0.615	Agree
Digital office	08	3.875	0.733	Agree
Digital services	07	3.792	0.791	Agree
Digital transformation	24	3.955	0.618	Agree
Banks performance	10	4.064	0.629	Agree

Source: SPSS 26 outputs

From the table above, all of the answers were from 3.41 to 4.20 Likert scale interval while Standard deviations' were low, as a result, each of digital infrastructure, digital office, and digital services for the first axe agreed on

“Agree”, which indicates the existence of digital transformation and its technology in banks institutions, similarly to the second axe, the result was “Agree”, which means that the majority of the banks are efficient, productive and profitable.

5-1- Analysis the correlation between variables:

H0: There is no significant correlation between digital transformation and bank performance.

H1: There is a significant correlation between digital transformation and bank performance.

The table below illustrates that coefficients took positive values, from 0.687 and 0.613 to 0.719, with p value 0.000 at the significance level 0.01 which is less than 0.05, as a consequence the null hypothesis is rejected, the correlation is different from 0, which means there is a significantly correlation between each of independent variable dimension and dependent variable in particular, and there is significant correlation between digital transformation and bank performance.

Table number (05): Pearson correlation coefficients

Dimension/independent variable		Digital infrastructure	Digital office	Digital services	Digital transformation
Dependent variable					
Correlation coefficient	Bank Performance	0.687	0.613	0.719	0.768
Significance level (0.01)		0.000	0.000	0.000	0.000

Source: SPSS 26 outputs

5-2- Hypotheses testing:

5-2-1- First hypothesis:

H0: there is no statistical effect of digital infrastructure on banks’ performance.

H1: there is statistical effect of digital infrastructure on banks’ performance.

Table number (06): simple regression to test 1st hypothesis

Dimension	R	R ²	F	Sig	β	T	Sig
Digital	0.687	0.472	43.820	0.000	0.702	6.620	0.000

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infrastructure							
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Source: SPSS 26 outputs.

- The value $R=0.687$ indicates that there's a positive relation between the dimension and the dependent variable as it mentioned earlier.
- Any change in the independent variable represents 47.2% of changes in the dependent variable.
- The results show that there's evidently a positive effect of digital infrastructure on bank performance, with the value of the coefficient $\beta=0.702$.
- The test $T=6.620$ at a level of significance of 0.000, which is less than 5%, then the null hypothesis is rejected.
- The first one is accepted, there is a statistical effect of digital infrastructure on bank performance.

5-2-1- Second Hypothesis:

H0: there is no statistical effect of digital office on banks' performance.

H1: there is statistical effect of digital office on banks' performance.

Table number (07): simple regression to test 2nd hypothesis

Dimension	R	R²	F	Sig	β	T	Sig
Digital offices	0.613	0.376	29.465	0.000	0.526	5.428	0.000

Source: SPSS 26 outputs.

- The value $R=0.613$ indicates that there's a positive relation between the dimension and the dependent variable.
- Any change in the independent variable represents 37.6% of changes in the dependent variable.
- The results show that there's evidently a positive effect of digital offices on bank performance, with the value of the coefficient $\beta=0.526$.
- The test $T=5.428$ at a level of significance of 0.000, which is less than 5%, then the null hypothesis is rejected.
- The first one is accepted, there is a statistical effect of digital offices on bank performance.

5-2-3- Third hypothesis:

H0: there is no statistical effect of digital services on banks' performance.

H1: there is no statistical effect of digital services on banks' performance.

Table number (08): simple regression to test 3rd hypothesis

Dimension	R	R²	F	Sig	β	T	Sig
Digital services	0.719	0.517	52.448	0.000	0.572	7.242	0.000

Source: SPSS 26 outputs.

- The value R=0.719 indicates that there's a positive relation between the dimension and the dependent variable.
- Any change in the independent variable represents 51.7% of changes in the dependent variable.
- The results show that there's evidently a positive effect of digital infrastructure on bank performance, with the value of the coefficient $\beta=0.572$.
- The test T=7.242 at a level of significance of 0.000, which is less than 5%, then the null hypothesis is rejected.
- The H1 is accepted, there is a statistical effect of digital services on bank performance.

Conclusion

Overall, the study obtained the following results:

- Digital transformation is considered as the future for all organizations and for financial institutions.
- Digital transformation contributes in improving banks effectively.
- Algerian commercial banks whether domestic or foreign are making effort to adopt digital technologies.
- Banks performance is significantly related to digital transformation.
- There is a positive impact of digital infrastructure on banks' performance, which validates the importance of implementing a digital base to expand banks.
- There is a positive impact of digital offices on banks' performance. Front-and back-end technologies facilitate management, such as administrative tasks and financial operations.
- There is a positive impact of digital services on banks' performance. The result confirms that digital services play a significant role in

improving banks' functions, which ameliorates their financial situation.

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