

Reality of digital transformation in Algerian banks after e-government project - case study of the Bank of Algeria

واقع التحول الرقمي في البنوك الجزائرية بعد مشروع الحكومة الالكترونية –دراسة حالة بنك الجزائر

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Abstract: Digital transformation has become an imperative in the banking sector to meet customers' aspirations and provide more efficient and easy banking services. Therefore, the Bank of Algeria has developed a comprehensive strategy after the e-government project to promote modern technology in the banking sector, Development of telecommunications infrastructure and support for the development of digital applications and Internet banking. The Bank of Algeria ' However, the sector still faces many challenges, most notably the lack of robust infrastructure that supports the technological transformation in place. Therefore, the hardware and software needed to improve internal and external communications must be updated to achieve a smooth flow of information and data and provide appropriate training for employees to understand, assimilate and effectively apply digital

Keywords: Digital transformation, e-government project, Bank of Algeria, Algerian banks.

JEL Classification Codes : G21

ملخص: أصبح التحول الرقمي ضرورة حتمية في القطاع المصرفي لتلبية تطلعات العملاء وتقديم خدمات مصرفية أكثر كفاءة وسهولة، لذا قام بنك الجزائر بوضع استراتيجية شاملة بعد مشروع الحكومة الإلكترونية لتعزيز التكنولوجيا الحديثة في القطاع المصرفي، كتطوير البنية التحتية للاتصالات وتوفير الدعم اللازم لتطوير التطبيقات الرقمية والخدمات المصرفية عبر الإنترنت، وهذا ما أثبتته التقارير والإحصائيات في العشر سنوات الأخيرة والصادرة عن بنك الجزائر والمجمع النقدي والشبكة النقدية ما بين البنوك، و لكن رغم ذلك لا يزال القطاع يواجه العديد من التحديات أبرزها عدم وجود بنية تحتية قوية تدعم التحول التكنولوجي القائم، لذا لا بد من تحديث الأجهزة والبرامج اللازمة لتحسين

الاتصالات الداخلية والخارجية لتحقيق تدفق سلس للمعلومات والبيانات و توفير التدريب المناسب للموظفين لفهم واستيعاب التقنيات الرقمية وتطبيقها بفعالية.

الكلمات المفتاحية: تحول رقمي، مشروع الحكومة الإلكترونية، بنك الجزائر، بنك جزائرية.

تصنيفات JEL: G21

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1. INTRODUCTION

Algerian banks have experienced remarkable digital transformation in recent years, thanks to the e-government project to improve and facilitate banking services for citizens and companies. For many years, Algerian banks have been operating in traditional ways, such as visiting bank branches and filling out paper forms. However, the Algerian government acknowledged that the transition to a more advanced digital system is a need to better develop the banking sector and serve citizens, so the e-government project was launched to improve and develop the country's financial services sector. An important initiative of this project is Algerian banks' commitment to providing their services through the Internet and mobile applications.

•Problematic study:

Through this paper we will try to answer the following fundamental question:

What is the reality of digital transformation in the Bank of Algeria after the e-government project?

This question includes a series of sub-questions:

- What does digital transformation have to do with e-government?
- What are Algeria's electronic interlocutors?
- Are the Bank of Algeria's efforts and strategies to digitize banks sufficient to implement the concept of e-government?

•Study hypotheses: One of the sub-questions can formulate the following hypotheses:

- **First hypothesis:** E-government is an essential part of the digital transformation process.

- **The second hypothesis:** the e-government plan is centred around thirteen main axes, and falls under each of the objectives.

- **Third hypothesis:** The Bank of Algeria's efforts and strategies are sufficient to apply the concept of e-government in the banking sector.

•**Objectives of the study:** Research seeks to achieve a number of objectives that can be limited to:

- Recognize the concepts of digital transformation and e-government;
- To know the extent to which Algerian banks are keeping up with the digital transformation after the e-government project;
- Addressing the Bank of Algeria's efforts to digitize banking services in banks following the e-government project.

•**The importance of the study:** With the development of technology and digital transformation in all sectors, Algerian banks are endeavouring to keep abreast of this transformation and its application in their banking operations and to understand the importance of the reality of digital transformation in Algerian banks.

•**Study curriculum:**

In our study, we drew on the descriptive curriculum using the tool of analysis in order to arrive at a precise concept of digital transformation and e-government and drop it on the Bank of Algeria's experience to keep pace with this transformation.

nd conveniently, without the need to visit actual banks.

2. Entrance to digital transformation in banks and e-government

Digital transformation in banks and e-government is an essential step in achieving progress and urbanization in any country.

2.1 The concept of digital transformation in banks

Digital transformation in banks is one of the key steps to be taken to maintain the bank's competitiveness and financial performance.

2.1.1 Definition of digital transformation in banks: is a process of change and transformation in banking and financial institutions technologies in line with modern technological development, in order to achieve business objectives and meet customer needs. (Maher, 2023)

The digital banking transformation also reflects doing business in banks through innovative business models based on strong communication infrastructure with the availability of the Internet and digital technology technologies to achieve various goals and ensure continuity .(Mohamed Zidane, 2020, p. 378).

The digital transformation refers to the process by which banks apply digital technology and innovation in their services and operations, in order to improve the customer experience and provide more efficient and easy banking services through the use of modern technologies such as internet banking applications, electronic

payment, artificial intelligence, in order to improve banks' efficiency and reduce costs and increase productivity.

2.1.2 Digital transformation techniques in banks: The use of modern technologies in banks is one step that will improve the efficiency of banking operations and facilitate banking procedures.

- a. Electronic banking:** Which means the various financial processes taken by technology and digitization tools to provide innovative and diversified banking services by using ATMs through withdrawal and payment cards, or using applications offered by banks from mobile phones.increase productivity.
- b. Blockchain:** is known as the blockchain, which is the cornerstone of many successful innovations in the financial sector. system ", a special type of distributed record based on an ad hoc technical basis, It creates an immutable record and maintains a decentralized network and all records are unanimously adopted using algorithms to allow users to access the data in a transparent manner and sharing with other parties as well as fast and efficient tracking and completion of transactions, thereby reducing the cost and risk of transactions.
- c. Cryptocurrency:** Issued by a central bank or a monetary authority and not accompanied by any local or global currency, which can be converted and stored electronically. It is a legal unit that has no physical presence or tangible physical entity. Its issuance is done by sophisticated computers. Its circulation depends on complex cryptocurrencies that allow the use of digital ledger books.
- d. Artificial intelligence:** an intelligence shown by machines and software that simulates human intellectual abilities such as the ability to learn, infer and react, which means the machine's ability to simulate the human mind, and can be used in financial services by assessing clients' creditworthiness and enterprise performance and communicating with clients through Chat Bot. (Ben Azza Hicham, 2022, p. 210)
- e. Big Data** is an enormous amount of complex data that achieves high levels of distribution, large quantum data sources, and outweighs the ability of traditional software and computers to store, process and distribute them. (Abdul Ghani Al-Aqel, 2021, p. 44)

f.Cloud computing: It is a technology based on the transfer of processing and the storage space of the computer, a server device accessed by the Internet, and its

infrastructure relies on sophisticated data centers, which offer large storage spaces for users as well as some software as services for users .(Ali, 2001, p. 03).

2.1.3 The impact of digital transformation on improving banking:

Banking is influenced by digital transformation through two dimensions:

- a. Digital Customer Service:** a digital platform that enables customers to access their accounts and perform their financial transactions including an interactive website and digital applications for mobile phones, Although these services are considered digital, they do not necessarily reflect a digital shift in banking services. digital transformation of customer service and digital design, as well as service development by digital focal points.
- b. Digitally transform banking operations:** This is through a radical change in the organization's strategies and structure, through a complex process involving many dimensions that the Bank develops and studies to maintain its position and market competition, which includes digitally automating operations, making real-time data-based decisions and creating innovative business models. (The Most Gracious, 2022, pp. p581-p582)

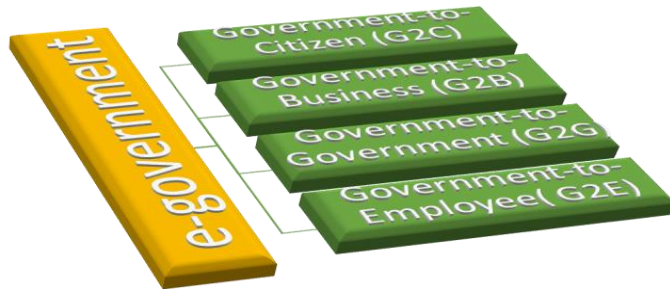
2.2. E-Government Concept

Which is a positive development of the system of traditional government, organizations and bodies have varied in their definition, and one of the most important definitions is to mention. (Péter, 2020, p. 02)

2.2.1 Definition of e-government: According to the United Nations Organization, "Governments' use and application of ICT in the public sector, aiming to effectively manage data and information, expand participatory communication channels and provide more advanced services, reliable information and knowledge to all citizens". According to the World Bank, government agencies use information technologies such as the use of large-scale networks, Internet and mobile computing, through mutual relationships between citizens, institutions and government agencies, which will achieve a range of objectives, including improving government services to citizens, improving interaction with business and industry, and reaching a more efficient government administration" (Daria, 2017, p. 04) .From the foregoing, the notion of e-government refers to a shift in the way services are delivered and mechanisms are changed from traditional paper and bureaucracy to accuracy, speed, security and low cost.

E-government business models include four clusters shown in the following figure:

Figure 1: E-Government Business Model



Source: Gustova Daria, **The Impact of E-Government Strategy On Economic Growth and Social Development**, Dissertation submitted as partial requirement for the degree of Master in Economics, ISCTE Business School, Lisboa, 2017.p04

By analyzing terminology related to e-government, dealing "From government to citizen" provides him with qualitative rights to freely research, receive, transfer, produce and disseminate information on important issues such as the budget. "From government to business", it means interaction between government and the private sector in several areas such as taxation, documentation of customs clearance. "Intergovernmental engagement" improves the efficiency of public authorities and local governments due to the application of electronic information management systems between departments and the development of new administrative workflows that reduce costs, as a process works "From government to employee" to improve and develop the labour market and support transactions such as salary plans, pensions and others.

- By addressing the concepts of digital transformation and e-government, the following points can be inferred:
- Digital transformation includes the use of technology and digital media to improve the quality of services and improve efficiency in all aspects of government;
- Digital transformation aims to provide government services in an electronic manner, more effective and easy for citizens;

E-government relies on the use of digital technology such as the Internet and smartphone applications to improve its services and enhance communication with citizens.

3. Algeria's e-government project

Algeria's e-project can be summarized as follows.

3.1 Introduction to the Algeria E-Project 2013

Algeria's e-Project 2013 is part of the development initiatives adopted by the Algerian Government to achieve sustainable development in various aspects of life. To be part of the emergence of Algerian science and knowledge society, which aims to create a comprehensive and advanced electronic system, and mainstreaming the use of modern technologies through the upgrading of ICT in telecommunications sectors and banks, public administration and education sectors that make them better and simpler to serve citizens by making their services available on the Internet for citizens' benefit; Companies and administrations become interactive means of communication between government and civil society. (Magnani, 2012)

3.2 Algeria E-axes 2013

This action plan is centred around thirteen main pillars. An inventory of the situation for each pillar has been prepared with key objectives and specific targets to be achieved over the five years from 2008 to 2013, including: (Algeria, 2008, p. 23)

- Accelerate the use of information and communication technologies in public administration and in companies;
- To promote the development of the digital economy by creating the conditions for the intensive development of the information and communication technologies industry;
- Enhance fast and high-speed communications infrastructure, secure and high-quality services;
- Developing human competencies, through the development of concrete actions in the field of good composition and framing;
- To regulate the level of the national legal framework, taking into account past experience and all perceived shortcomings and difficulties;
- Evaluation and follow-up mechanisms, by keeping abreast of all stages of the process of preparation, implementation and realization of processes that will allow the realization of the objectives of the "Algiers E" strategy.

3.3 Objectives of Algeria's e-government project

The main objective of Algeria's e-project is: :(Belarabi Abdelkader, 2012)

- Ensure that citizens' government services are effective and accessible to all by facilitating and streamlining administrative stages through which they seek documents or information;
- Coordination between the various ministries and official bodies and the fight against bureaucracy, which constitutes a curb to the country's development;
- Improving the quality of services provided to citizens in various areas and protecting society from the scourge of organized crime.

4. The reality of digital transformation in the Bank of Algeria after the e-government project

Bank of Algeria seeks to achieve complete digital transformation and provide sophisticated and secure banking services that meet customers' needs through its adoption of a national strategy to digitize the banking sector

4.1 Overview of the Bank of Algeria

The Central Bank of Algeria was established by Act No. 62-144, which was voted upon by the Constituent Assembly on 13 December 1962, to establish and define the statute of the Central Bank. Amendments were made during the 1970s and early 1980s, with Act No. 86-12 of 19 Ott 1986 on the banking system marking the beginning of the comprehensive reform of Algeria's banking system. The Monetary and Banking Act No. 09-23 of 3 Dhullahjah 1444 of 21 June 2023 aims to adapt the legal and regulatory system to respond to technical and technological changes and allow openness to new economic actors. The Bank of Algeria, the Monetary and Banking Council, the Banking Commission, Banks and Financial Institutions provide for enhanced governance. (Algeria b.)

4.2 Organization of the Bank of Algeria

. It consists of:

- a. **The Board of Directors of the Bank of Algeria:** Under the provisions of the Monetary and Banking Law, the Bank of Algeria administers a Board of Directors appointed by a decree of the President of the Republic on the basis of their competence in economic and monetary matters
- b. **The Monetary and Banking Council:** Act No. 23-09 of 3 Dhullah of 1444 of 21 June 2023, containing the Monetary and Banking Law, establishes the Monetary and Banking Council with Monetary Authority, defining monetary objectives, establishing accreditation conditions and establishing banks and financial institutions, enacting regulations on standards and ratios applicable to banks and financial institutions, and the publication of regulations in the Official Gazette.
- c. **Banking Commission:** Act No. 23-09 of 3 Dhu 'jah of 1444 of 21 June 2023, containing the Monetary and Banking Law, establishes a body

called the Banking Commission charged with monitoring banks' and financial institutions' compliance with applicable legislative and regulatory provisions and punishing imbalances. The Banking Committee is chaired by the Governor of the Bank of Algeria (Algeria A., 2016)

4.3 Bank of Algeria's functions include

- Issuance and printing of banknotes and minerals;
- Banking supervision of Algerian and foreign banks and financial institutions;
- Achieving and ensuring price stability through monetary policy;
- Monitor and ensure the proper functioning, efficiency and security of payment systems and determine the rules applicable to them;
- Regulation of the exchange market within the framework of the exchange policy adopted by the Monetary and Banking Board, in line with Algeria's international obligations.

4.4 Bank of Algeria digital transformation strategy after e-government project

Which can be summarized as follows:

4.4.1 Establishment of bodies responsible for the conduct of Algerian electronic transactions: in order to develop the banking system in order to keep pace with global transformations and to ensure the introduction and dissemination of electronic transactions in Algerian banks, the Bank of Algeria has initiated a number of measures and measures to improve the conduct of monetary transactions among Algerian banks, improve the banking service and diversify the means of payment.

4.4.2 Automated Inter-Bank Monetary Corporation (SATIM) :Automated Monetary Corporation and Automatic Interbank Relations, an enterprise made up of eight Algerian banks) Algerian National Bank, Alfalha Bank for Rural Development, Protected Development Bank, Algerian External Bank, Algerian Baraka Bank, National Savings and Reserve Fund, Algerian People's Loan and National Agricultural Cooperation Fund (, created in 1995, is one of the technical tools accompanying the program of developing and modernizing banks, especially the promotion of payment cards

- 4.4.3 The Inter-Bank Cash Network (RMI):** The SATIM Foundation was founded in 1995 and oversees the Inter-Bank Cash Processing Centre, and works to connect distribution centres to the disappearance of institutions involved in the withdrawal function. The Centre connects the automated distributor with the provision of service via national network lines and a card intercept centre) Lost or forged (withdrawal requires a licence addressed to the agency's licensing centre) Acceptance or rejection (application). In case of acceptance, the centre shall monitor the permissible ceiling of each customer. (Kamel Ait Zayan Kamal, 2007, pp. 3-6)
- 4.4.4 Economic Interest Group for Electronic Banking in Algeria (GIE Monétique Dz):** The establishment of an effective electronic payment system is one of the Algerian public authorities' priorities Economic Interest Group for Electronic Banking in Algeria in June 2014 and this regulator is responsible for clarifying the functions and characteristics of participants in the electronic banking system, This will enable the establishment of an integrated electronic banking system between banks by engaging Algerian post and ensuring openness to the world through Visa and MasterCard <https://giemonetique.dz> (GIE Monétique)
- 4.4.5 Introduction of modern payment systems in the Algerian banking system:** Algeria's banking system has witnessed the interdependence of national and international efforts to develop and modernize the means of payment, including through the establishment of a system of instant gross settlement, the system of electronic clearing between banks ATCI, as well as banking over the line, or the so-called Algeria electronic banking service AEBS.
- a. Algeria's Total Immediate Adjustment System (ARTS):**" The lump sum adjustment system at a real time when transfers are made continuously and immediately without postponement and on an aggregate basis (Hamid, 2016, p. 12) . It is also defined as: "An interbank payment system for large or urgent amounts in excess of JD 50 million, with real-time transfer orders executed, (Nabil bin Marzouq, 2017, p. 3) the system of immediate gross settlements has many functions including monitoring waiting orders and Settle orders according to their nature, allocate clearing amounts, and process at the end of the day. (Media Bank, p. 32). Algeria ' This has had a positive impact on the banks' treasury, a system for all inter-bank payments equivalent to or greater than 1 million dinars and urgent payments. They also consist of transfers to banks, financial

institutions and the Post Instrument Centre involved in this system.
(Algeria A., 2016)

**Table 01: ARTC Processed Transfers for 2013-2023 - Volume in
Millions of Operations**

Years						
	2013	2014	2015	2016	2017	2018
Daily average (252 days)	253	1243	1313	1314	1346	1432
Number of operations completed	290418	314357	334749	328404	339227	360919
Growth rate (%)	7,7	5,6	6,5	4,6	3,30	6k39
Years	2019	2020	2021	2022	2023	
Daily average (252 days)	1403	1306	1450	1573	1784	
Number of operations completed	353455	331672	363894	396343	449686	
Growth rate (%)	-2,07	-6,16	9,72	8,92	13,46	

Source: Prepared by the two researchers on the basis of the Bank of Algeria's annual reports from 2013-2023, available at the following link: <https://www.bank-of-algeria.dz/ar/%D8%A7%D9%84%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1-%D8%A7%D9%84%D8%B3%D9%86%D9%88%D9%8A%D8%A9>

From the table we note that 2013, the eighth year of ARTC, according to the Bank of Algeria reports, This ratio reflects the relationship between the actual operation of the system measured by hours and the nominal opening period of the system for making transactions, i.e. 8 hours per working day. In 2016, the processing process decreased slightly by 1. The decline in operations is explained by the decline in monetary policy and operations among participants, In 2023, which is the year of repairs for the bank, a daily average of 1,784 transfers of 397 billion dinars were recorded, compared to 1573 billion dinars last year.

b. Electronic clearing system between banks in Algeria: Banking institutions, Algiers Post Offices and public treasury bodies were introduced on May 15, 2006. The system is based on automated digital data entry and cheque images on the scanner. One of the preconditions for the operation of an information system in Algeria's banking system is that:

- To appoint a leadership committee to establish a future electronic clearing house and to oversee all modernization projects structured for the banking and financial sector;
- Entrusting the leadership committee to the Bank of Algeria and establishing its own branches;
- The establishment of a new banking company for services that operates this system. (Noal Shisha, 2011, p. 11)

Table 02: Payments processed through ATCI - Volume in Millions of Operations

Years						
	2013	2014	2015	2016	2017	2018
Total processed processes	19.470	20.750	20.8	21	22.946	25.030
Years	2019	2020	2021	2022	2023	
Total processed processes	26.815	34.629	48.018	55.156	74.776	

Source: Prepared by the two researchers on the basis of the Bank of Algeria's reports from 2013-2023.

The electronic clearing system, which entered into production in May 2006, involves the exchange of all means of payment for payments to the wider public (instruments, commercial papers, transfers, automatic deductions, transactions on cards), where the volume of transactions was known as a strong rise and the dominance of payments through transfers. In 2017, the system dealt with an average daily volume of 91,419 transactions with a total value of JD 74.7 billion, compared to 82,296 transactions with a value of JD 69.2 billion in 2016. Transactions using cards and processed transfers in 2021 were the most used at rates equal to 49.70% and 33.94% of the total volume of mutual payments, according to Bank of AlgAlgeria reports. during 2023, cash withdrawals via ATMs accounted for 85.3% of the total volume of electronic payment transactions between banks and 93.1% of the total value.

- c. **ATM services:** It is an electronic payment method that allows the customer to withdraw instantly 24/24 hours and within 7 days at low costs, and helps facilitate transactions, without the need to view traditional windows, namely:
 - **Automated distributor of DAB banknotes:** are automatic machines that allow the customer to withdraw his money by electronic card with his PIN, without resorting to the bank.
 - **Automatic windows of GAB banknotes:** Automatic machines similar to automated dispensers of banknotes, but in addition to the cash withdrawal service, other services are offered: cheque issuance, account-to-account conversion, as well as a range of services up to 80 services in the so-called "GAB.Multifonction 80".

Table 03: Number of DAB and GAB and withdrawals in Algerian banks-unit in millions

Years	ATM withdrawals	Number of ATMs
2013	-	1.155
2014	-	1.227
2015	-	1.286
2016	6868031	1.341
2017	8310170	1.387
2018	8833913	1.421
2019	9929652	1.386
2020	58428933	1.564
2021	87722789	1.655
2022	128035361	1.755
2023	174415895	1.614

Source: Prepared by the two researchers on the basis of cash pool data and Bank of Algeria reports.

Through the table it is clear to us that the number of ATMs used by various Algerian public and private banks is increasing as well as the number of withdrawal transactions via ATMs Cash services in 2023 consisted of 53,191 distributors or ATMs, an increase of 15% compared to 2022, which was placed at the disposal of bank card holders and approved traders, i.e. an average of 4,292 cards issued to the ATM, according to the Bank of Algiers report for 2022 and 2023.

- **Electronic payment terminal TPE:** or the so-called electronic point of sale final, this technology allows payment of customer purchases by credit cards, passed by the point of sale employee on the electronic reader connected with the bank computer that deducts the value from the customer's balance and adds it to the store account balance.

Table 04: Online Payment Activity TPE in Millions of Operations

Years	2013	2014	2015	2016	2017	2018
Total number of active payment stations	2986	2737	3035	5049	11985	15397
Years	2019	2020	2021	2022	2023	
Total number of active payment stations	23762	33945	37561	46263	53191	

Source: Prepared by the two researchers on the basis of the Bank of Algeria's reports for 2013-2014-2015 and the cash pool reports

Through the table, the evolution in the integration of vendor terminals into traders is evident. The number of such devices reached 3,035 compact devices in 2015 compared to 2,986 in 2013, while in 2020 the average value of payment through electronic payment stations was 6,648,88 dinars for the operation, It saw a rise of 27, 959 billion dinars compared to 18, 578 billion dinars in 2022.

- d. **Card Payment System:** Bank cards were first introduced in Algeria in 1989 by three public banks: "The Algerian External Bank, the National People's Loan and the Algerian National Bank", and the real start-up was after the establishment of a company "Satim", where I worked on the creation of the interbank payment card, which was introduced in 1997 to circulate the interbank debit card across the entire national territory in 2007, is:

- **Local Bank Cards:** These cards are used to withdraw from ATMs or pay and are valid only in Algeria, with an estimated validity of two years, and are automatically renewable:
 - **Regular card:** granted to the category of customers whose income is more or equal to 10000 dz;
 - **Gold card:** awarded to the category of customers whose income is more or equal to 45000 dz;
 - **Corporate Card:** Issued in favour of companies and institutions with a higher monthly income of 200.000 dz

- **International Bank Card:** Cards used abroad for withdrawal and payment, intended for customers with open accounts in hard currency, including:
 - **Visa Classic:** Customers with a greater or equal hard currency balance of 1,500 euros, with more than four withdrawals per day;
 - **Visa Gold Card:** This type of card is offered to customers who have a balance of hard currency greater or equal to 5,000 euros, with withdrawals not exceeding seven times per day.

Table 05: Volume of card transactions in Algeria in millions of transactions

Years	2013	2014	2015	2016	2017	2018
Number of transactions with bank cards	4.570	4.562	3,1	2,2	2,994	9.2
Growth rate (%)	15.6	-0.2	-32.2	-28.9	13.05	53.58
Years	2019	2020	2021	2022	2023	
Number of transactions with bank cards	10,41	12,920	23.876	29.173	46.436	
Growth rate (%)	15.4	-	84.73	22.23	58.91	

Source: Prepared by the two researchers on the basis of the Bank of Algeria's annual reports from 2013-2023, available at the following link: <https://www.bank-of-algeria.dz/ar/%D8%A7%D9%84%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1-%D8%A7%D9%84%D8%B3%D9%86%D9%88%D9%8A%D8%A9>

Through the table, we note that the volume of transactions by bank card increased by 15.6% compared to 2012, representing 23.5% of the total volume of payments, while in 2016, the volume of transactions decreased significantly again after 2015, by) 28.9 The statistics provided by the Center for Prior Bank Clearing as an ATCI user show that card payments recorded a significant increase of 26.5%, while in 2023 it moved to 21285800 cards, an estimated activity rate of 74.4%.

e. Online Banking in Algeria (Algeria Electronic Banking Service) AEBS:

Electronic: AEBS (one of the most important payment systems in the Algerian banking system and banking over the line, or so-called Algeria Algeria E-service banking, a company created in 2004, resulted from a partnership agreement between French software leader DIAGRAM EDI and three Algerian enterprises,

MAGACT MULTIMEDIA and ANGINING SOFT, and SMINERING Research Center for Scientific Media and Technology. "Algeria Electronic Banking Services", this company provides its services related to remote banks, and conducts the exchange of financial data for all banks and financial institutions. (Kamel Ait Zayan Kamal, 2007, p. 17)

Table 06: Online Payments in Algerian Banks

Years	2013	2014	2015	2016	2017	2018
Total number of active payment stations	2986	2737	3035	7366	100,182	163,627
Years	2019	2020	2021	2022	2023	
Total number of active payment stations	202480	459360	7821346	9048125	708212	

Source: Prepared by the two researchers on the basis of the Bank of Algeria's reports from 2013-2023.

Through the table, it is clear to us that the number of payments increases from year to year. In 2017, 24 online traders were licensed to start the activity. accessible ", where it was widely received and promoted by card holders thanks to the facilities provided by remote payment, In 2021, 153 online traders were approved, compared to 71 at the end of 2020, with an estimated rise of 115,49%. 510 online traders were also approved for 291 at the end of 2022, or 75.3%. Although this increase is perceived to be far from the targets of government authorities through the enactment of an e-commerce law in May 2018

- f. Mobile Payment System:** is an exchange of funds or payment between individuals or businesses using mobile payment applications or digital bank services to perform payments And one of its advantages is convenience and speed, it enables individuals to make their financial transactions quickly and easily without the need to carry paper money or bank cards The security factor also protects financial transactions from fraud and theft, as well as traceability and documentation (S, 2024, p. 24). The number of mobile payments in Algeria reached more than 12.5 million during the first tripartite of 2024, compared with approximately 7.6 million during the same period in 2023, an increase of 71 per cent. According to data posted by the GIE Monétique Automated Cash Pool on its website and the Authority's data indicate that the value of mobile payments exceeded 9.3 billion DZD

during the first three months of the year, Compared to about 5.5 billion DZD during the first trio of last year, as for mobile money transfers (Customers of the same financial institution) During the same period, more than 7.2 million transactions, worth more than 106 billion DZD, saw an increase of 140 per cent and 187 per cent respectively year-on-year. The interoperability of mobile payments between customers of different banks and financial institutions, having been applied among customers of the same bank or financial institution, was recently launched.)Algerian(2024 ‘

Table 07: Mobile Payment Transactions 2022 - 2023 – 2024

Years	2022	2023	September 2024
Total number of mobile payment transactions	4185121	39283478	42039131

Source: Prepared by the researchers on the basis of cash pool data available on the following website:<https://giemonetique.dz/activite-paiement-par-mobile/>

According to the latest reports from the GIE Monétique Electronic payment through TPE electronic payment devices, Online or through mobile 993,59 billion DZD between Janhvi and Joan 2024, Compared to 113.38 billion DZD during the same period of 2023, This is an increase of 41,57%, the biannual tally data showed an increase in the number of online payments made by 82,63% year-on-year, reaching 257,20bn DZD, and the telecommunications sector remains (Payment of invoices and refill at telephone operators and Internet providers) controls the online payment sector, with 71.4 million transactions out of 6.62 million transactions in this sector

4.5 Analysis and evaluation of the e-government and digital transformation project in Algerian banks

After the 2013 e-government project, Algerian banks underwent a significant shift in the field of digital transformation within the framework of a multisectoral plan known as the E-Government Strategy 2013. The digitization of the banking sector was not relied upon in a particular way, but the electronic banking was included in a phased manner. The first bank card appeared in Algeria in 1989 by three public banks: "Algerian External Bank, National People's Loan and National Bank of Algeria", Then automated media programs were circulated to all banking operations in 1993 SATIM was established in 1995 and entered into a contract between SATIM and the French company Ingenico Data System for the circulation

of cash. SATIM was tasked with managing the interbank payment system, issuing the first international payment card and introducing the electronic clearing system in 2006. But after the inclusion of the e-banking project in the e-government program, the system of immediate gross reconciliation was applied almost entirely in banks and achieved the highest number of completed transactions, as shown by Table No.) (01), moving from 290418 to 449686 million operations, and this is also confirmed by growth rates that went from 7.7% in 2013 to 13.0% in 2014 and 46% in 2023.

The volume of card transactions varied, with a strong decline in the three years (2016-2014) After rising in 2013, the rise again, especially in 2019, is due to the health crisis experienced by the country, which was a key factor in the spread of e-culture among customers and this is confirmed in 2023 The number of transactions across bank cards exceeded 46 million. This is what has been noted for Internet and mobile payments has risen significantly in this period.

Despite these efforts by the Bank of Algeria and the Government, the technological gap between public banks and foreign counterparts remains significant, owing to the absence, shortage or weakness of a set of requirements for digitizing banking services at the Algerian bank level.

4.6 Challenges and constraints of digital transformation in Algerian banks

Among the most prominent of these challenges are:

- Changing enterprise and staff culture and adopting the concept of digital transformation, employees may find it difficult to adapt to new technology and learn to use it effectively.

- Provide security and privacy by providing strong safeguards to protect customers' data and confidentiality of sensitive financial information.

- Poor adequate infrastructure and advanced technology. It can be difficult for the Bank to appropriately refresh and update its existing systems and programs.

5. Conclusion:

After the e-government project, Algerian banks were able to provide more easy and fast banking services to their customers through the development of apps and websites, It has become more secure and protective of customers' personal and financial data, and the latest technology for preventing hack and fraud has been adopted and ensured by SATIM In spite of the challenges facing Algeria's banking sector, Algeria's digital transformation is a step in the right direction towards improving banking services and providing a positive customer experience. This shift is expected to continue in the coming years to meet consumers' needs and improve the quality of banking services.

- **Hypothesis Test:** Through our study of this subject and familiarity with most aspects of it can be tested for its hypotheses:
- **First hypothesis:** E-government is an essential part of digital transformation (a valid premise), and this has been achieved as e-government is an essential part of digital transformation
- **The second hypothesis:** the e-government plan is centred around thirteen main axes, and falls under each of the objectives.(Correct hypothesis), where an inventory of the situation for each pillar has been prepared with key objectives and specific targets to be achieved over the five years from 2008 to 2013, including: accelerating the use of information and communication technologies in public administration and in companies and enhancing high-speed, fast-flowing communications infrastructure, secure and high-quality services.
- **Third hypothesis:** The Bank of Algeria's efforts and strategies are sufficient to apply the concept of e-government in the banking sector. An erroneous hypothesis (which was reached through the analysis and evaluation of the government project and the digital transformation of Algerian banks due to the absence, shortage or weakness of a set of requirements for digitizing banking services at the level of Algerian banks, the most important of which is the weakness of the necessary infrastructure in communication and information technology; Efficient human framing, research, development and forward-looking studies, and finally the necessary legislation to facilitate the spread of electronic banking.
- ❖ **Findings:** One of the most notable findings from this study is:
 - The Bank of Algeria has undertaken considerable efforts in the field of digital transformation that have allowed customers to access their banking services easily through applications and websites, thereby reducing the need to visit branches.
 - Digital services have helped attract a larger segment of clients including young people who prefer digital transactions, which has contributed to broadening the customer base;

- One of the most important challenges facing the Algerian banking sector is the lack of a basic base for building digital transformation. While there are advanced technical platforms and tools that help implement digital banking operations, these tools may not be well integrated with the current bank system, as a result of the lack of adequate infrastructure that supports technological transformation.

❖ **Recommendations:**

- Banks must ensure that robust and secure digital infrastructure facilitates digital transformation, updates the necessary hardware and software, improves internal and external communication to achieve a smooth flow of information and data;
- Provide appropriate training for employees to understand, assimilate and effectively apply digital technologies, and specialized companies can be used to provide training and workshops necessary to improve employees' skills and sensitize them to the importance of digital transformation;
- Banks should expand the range of electronic services they provide to customers, including providing online banking services and developing a mobile smartphone app, so that the design is user-friendly and compatible with different operating systems to ensure customer accessibility;
- Attention to information security by tracking best practices to protect customers' sensitive information and personal data, where adequate protection must be provided to apps and websites and security audit procedures applied on a regular basis;
- Collaborate with IT and innovation companies to share knowledge and experiences in digital transformation, to achieve development and success in these respects.

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