How to Cite:
Samir, O., & Mohammed, K. (2024). Digitization of Algerian financial institutions: transformation challenges and security risks. *International Journal of Economic Perspectives*, *18*(11), 2200–2229. Retrieved from https://ijeponline.org/index.php/journal/article/view/710

Digitization of Algerian financial institutions: transformation challenges and security risks

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***Abstract*---**This research aims to study the digitization of financial institutions in Algeria. and explore the challenges of this transition and associated security risks in addition to the extrapolatory approach to extrapolating results, The questionnaire was also used as an initial data collection tool. The sample of the study consisted of 52 employees of banks and insurance companies of the Chlef State based on the intended sample. The study found a statistically significant impact between transformation challenges, security risks and digital transformation and results showed no statistically significant differences at the indicative level (α ≤0.05) Digital transformation attributable to variables (cybersecurity, digital transformation challenges) and the study recommends the need to overcome challenges and risks by investing in infrastructure development, improving legislation, enhancing manpower skills and adopting comprehensive cybersecurity strategies. The research also emphasizes the importance of cooperation between the public and private sectors to achieve a secure and sustainable digital transformation.

***Keywords*---**digitization, financial institutions, digital transformation, cybersecurity, security risks.
Jel Classification Codes: C01, C5, G2

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Submitted: 18 September 2024, Revised: 27 October 2024, Accepted: 10 November 2024

1-Introduction

In light of rapid technological progress and global economic transformations, digitization has become an inevitable necessity for financial institutions, especially in developing countries such as Algeria, digital transformation is a crucial step to enhance the efficiency of operations, enhance transparency and innovation, improve customer experience, and increase competitiveness in the financial market. However, this transformation faces a range of challenges ranging from technical and organizational to cultural and managerial, which pose obstacles to the successful implementation of digitization.

In addition, the security risks associated with digital transformation are one of the most prominent challenges facing financial institutions, with the increasing reliance on digital technology, cybersecurity has emerged as a vital issue, as cyber threats increase that may lead to huge financial losses, leakage and theft of sensitive data, and security breaches represent significant threats that can negatively affect the confidence of customers and investors in financial institutions, in this context, the need becomes urgent to understand these challenges and risks in depth and develop effective strategies to deal with them.

The Algerian government is seeking to promote digitalization in the financial sector as part of its broader strategy to achieve sustainable economic development. However, this transformation faces several challenges, including a lack of technological infrastructure, lack of awareness among users, as well as laws and regulations that may be inadequate to support innovation.

In this paper, we will explore the challenges of digital transformation in Algerian financial institutions and highlight the security risks associated with this transformation. By analyzing these aspects, we seek to provide valuable insights that support decision-makers in developing effective strategies to achieve safe and sustainable digital transformation .

The main question can therefore be formulated as follows: **to what extent are cyber risks and challenges associated with digital transformation affected in Algerian financial institutions?**
In order to address and analyze the main question and to reach a clear understanding of it, the following sub-questions were asked:
- What is the reality of digital transformation in Algerian financial institutions? - Is there a statistically significant impact at the level of ($\alpha \leq 0.05$) of cyber risks on the success of digital transformation in Algerian financial institutions?
- Is there a statistically significant impact at the level of significance ($\alpha \leq 0.05$) of the challenges faced by financial institutions in Algeria to promote digital transformation?

2- **Hypotheses of the study**: In order to answer the main question, the following hypotheses were developed:

-The first main hypothesis (H1): There is a statistically significant impact at the level of significance ($\alpha \leq 0.05$) of cyber risks on the success of digital transformation in financial institutions in Algeria.

-Key hypothesis 2 (H2): There is a statistically significant impact at the level of significance (α≤0.05) of the challenges faced by financial institutions in Algeria to promote digital transformation.

3- The importance of the study: The topic of digitization in financial institutions is important for several vital reasons, as the topic of digitization in financial institutions in Algeria has become not just an option, but a strategic necessity to achieve progress and sustainability in the financial sector, the importance of the study is due to providing a comprehensive and integrated vision on the digitization of Algerian financial institutions, which contributes to supporting digital transformation effectively and safely, and enhances the ability of financial institutions to face future challenges and take advantage of available opportunities.

4- Study methodology: The deductive approach was relied on through the description tools in the theoretical side and analysis in the applied side, in addition to the inductive approach to extrapolate the results of the field study.

5- Previous studies:

- A study (Peers of Siham, Boukasa Salima) entitled: Requirements, obstacles and challenges of applying electronic administration and digital transformation in economic institutions - higher education institutions - local administrations - banks - hospitals in Algeria: This study aimed to shed light on the requirements, obstacles and challenges facing Algerian institutions in light of digital transformation and electronic management, the study concluded that there is a weakness in the digital infrastructure in Algeria, the lack of technical culture and the resistance of some individuals and institutions to change, so it is necessary to study All the requirements are carefully defined, the necessary investments are provided and the focus is on training and awareness by the Algerian authorities to overcome these obstacles.
- A study (Sanaa Raheb, Halima Cheb) entitled: The impact of digital transformation on the job performance of workers in Algerian commercial banks - a case study of commercial banks by Wali El Tarf: The study aims to highlight the impact of digital transformation in its third dimensions (the use of digital technologies, digitization of bank employees, digitization of customers and their relationships) on the job performance of workers in Algerian commercial banks, and the study population consisted of all employees in commercial banks in the state of El Tarf, and the study reached a set of results, the most important of which is that digital transformation affects job performance For workers, where there is no impact of the use of digital technologies on the job performance of workers, while there is a positive impact of customer digitization and digitization of workers on the job performance of workers at a level of 5.% morale
- A study (Youssef Boushi and Jamila Salaimi, 2019) entitled: Digital transformation between necessity and risk: This study addresses the topic of digital transformation as an imperative necessity to achieve progress and development in various sectors, with a focus on the challenges and risks that accompany it, and the study concluded that digital transformation is necessary to achieve innovation and sustainability in institutions, but it requires careful planning and effective risk management to achieve full success.

6- The scientific gap of this study: This study is distinguished from previous studies reached on this subject by three research gaps, the first is the time gap, through which the study examines the impact of the challenges associated with the application of digitization and cyber risks on financial institutions operating in Algeria during this year (2024), by explaining the modern Algerian experience in opening up to digitization and its technologies, the second spatial gap is concerned with financial institutions operating in Algeria in the state of Chlef in particular, and the third basic gap, which is the scientific gap that It gives clear results to the impact of the digital transformation of these institutions in terms of their ability or inability to withstand cyber risks and the challenges of continuous openness.

The first axis: the basic concepts of digitization and cybersecurity

1- What is digital transformation

1-1- Definition of digitization: It means applying digital transformation techniques and moving the services provided by government sectors to an innovative business model.
Digitization is one of the most important achievements of digital information technology and means the removal of barriers between the different symbol formats, including texts, sounds, melodies, and still and moving images, and the transformation of these formats into digital strings of zero and one in order to be compatible with the binary number system, which is the basis of computer work (Abdel Kafi Abdel Fattah Ismail, 2004, p. 102).

1-2- Definition of digital transformation: Digital transformation is "an organized transition process from the traditional approach to new ways of working and thinking using digital, social, movement and emerging technologies. It involves changing leadership, thinking differently and promoting innovation and new economic models that combine asset digitization and increased use of technology to improve the experience of employees, customers, suppliers, partners and company stakeholders (Fayon, D and Tartar, M, 2019).

It is the process of converting information sources of various forms into a readable form by automated calculation techniques through the binary system (Bykes), which is the basic information unit of the information system, based on automatic calculations and converting information into a set of binary numbers, and this process is carried out thanks to a group of specialized agencies (Talaq Awadallah Al-Sot, 2022, page 652).

By the above definitions and others, digital transformation in financial institutions refers to the process in which these institutions adopt digital technology and digital solutions to improve efficiency, modernize internal processes, and provide better financial services to customers.

*1-3- Forms of digital transformation***:** Digital transformation has multiple forms and degrees, and institutions differ among themselves in a manner and degree of transformation according to the nature of their activity and the technology they need, which are (Shorouq Hadi Abd Ali, 2020, page 40):

1-3-1- Smart phone applications: It is the most present and used technology at the present time, where institutions can create their own applications to manage their activities and facilitate their services to both members and beneficiaries.
1-3-2- Cloud computing**:** It is all computer resources and systems available on demand via the network, which are a number of integrated computer services, and these services include providing space for storing data, performing backup and self-synchronization, in addition to software processing capabilities, task touring, e-mail management, printer and remote viewing.
1-3-3- Internet of Things**:** It is a network of financial devices, vehicles, household appliances and other electronic devices, computers and communication, and these electronic devices can communicate and exchange data among themselves.
1-3-4- Artificial intelligence**:** It is the ability of computer programs and systems to simulate human behavior and human mental abilities, especially the ability to learn, as these programs and systems require their surrounding environment and contribute to finding solutions to the problems they face.
1-3-5- Blockchain**:** A decentralized digital ledger, in which financial transactions are recorded by allowing the distribution of digital information but without copying or changing it, data packets "blocks" are stored in linear chains. This technology was originally designed for the digital currency Bitcoin but today offers other potential uses (Manta, O, 2019).
1-3-6- Big Data**:** Big data represents information assets characterized by high volume, speed and diversity that require specific technology and analytical methods to convert them into value (De Mauro and A., & al, 2015, p. 103).

*1-4- Digital transformation services**:*** Digital transformation depends on innovation to improve the quality of financial services through financial technology, as its technologies are competitive and easy to use, digital transformation provides several financial services to customers, the most important of which are:
1-4-1- Banking**:** Fintech startups were seen as a threat to banks, with the ability to weaken customer loyalty by providing them with more privacy, transparency and engaging experiences, but the banking industry responded to these changes by finding their own solutions and protecting their position in the market. However, the entry of many players obliged them to embrace these technologies in an attempt to modernize their ecosystem and stay relevant to developments in their activities (Wahiba Abdel Rahim and Zahra Okassem, 2019, p. 354).
1-4-2- Digital Insurance (Insurtech): It means transforming all insurance services provided by insurance companies to all customers into digital services, as this requires the customer to serve himself by himself through automated and mutual interaction between the service applicant and the provider through an intermediary (technology) (Mohamed Abdellatif Azid et al., 2019, pp. 193-194), startups have created new ways to provide insurance services in addition to advanced methods of data collection that lead to better identification of risks and corresponding measures Therapeutic (Layan Farid Habib, 2019, p. 52) with the aim of reaching customer segments who are not attracted to conventional insurance.

2- The concept of cybersecurity

*2-1- Definition of cybersecurity**:*** According to the National Cybersecurity Authority, cybersecurity is defined as: "securing all existing and networked cyberspace from

the information technology infrastructure, which includes the Internet, communication networks, computer systems and devices connected to the Internet, along with processors and associated control devices (National Cybersecurity Authority, 2022)".

The National Institute of Standards and Technology defines it as: "the protection and restoration of computer systems, electronic communication systems, electronic communication services, telecommunications and electronic communications, including the information contained therein; to ensure their availability, integrity, authentication, confidentiality and non-infringement" (Hamidi Hayat and Tayeb Nassima, 2022, p. 5).
Therefore, cybersecurity is a vital element of any digital strategy, as it contributes to protecting information and systems from the increasing cyber threats in the digital age.

2-2- Types of cybersecurity threats: It is difficult to limit cybersecurity threats, as they are diverse and increasing in terrible forms and can be divided into four main categories: (Ashraf Sabry and Mahmoud Tarek, 2020):
- Security threats to the computer network;
- security threats aimed at hacking computers to destroy the programs and data available in them;
- security threats that use computers;
- security threats that enable the unauthorized exploitation of data stored in computers.

Among the crimes that threaten cybersecurity most require protection through specialized programs and mechanisms, such as phishing, ransomware, Internet mercenaries and social engineering.

The second axis: Algeria and the trend towards digitization
Algeria, like many other countries, is making great efforts towards digitization in various sectors, this trend reflects the desire to enhance efficiency, improve public services, and facilitate access to information and services for citizens.

1- The reality of digitization in Algerian financial institutions
1-1- The current state of financial institutions in Algeria (overview of the financial services sector in Algeria)
The Network Readiness Index (NRI) is one of the leading global indicators of the application and impact of information and communication technologies (ICTs) in economies around the world. The NRI report maps the network-based readiness landscape for 134 economies based on their performance in four different pillars: technology, people, governance, and impact. Each of these pillars consists of three sub-pillars that have been filled with a total of 58 variables.

Table 1: Arab and Global Ranking of Algeria by Digital Network Index for 2023

Rank in Arabic	Country	Index value	World Rank
01	UAE	62.33	30
02	Saudi Arabia	56.14	42
03	Qatar	54.15	46
04	Bahrain	52.48	51
05	Oman	52.10	54
06	Kuwait	48.36	64
07	Jordan	47.29	68
08	Morocco	45.43	77
09	Egypt	44.07	81
10	Tunisia	42.25	88
11	Lebanon	39.70	96
12	Algeria	37.52	103
13	Mauritania	23.73	131

Source: Portulans Institute, The Network Readiness Index Algeria, 2023

We note that Algeria has been ranked very late, whether globally or in the Arab world, and through the report issued by the Portulans Institute for the year 2023, which measures the level of readiness of countries for digital transformation, it appears that Algeria ranks 12th out of 13 Arab countries classified in the index, lagging behind the countries that have made progress in achieving digital transformation in their institutions, and ranks penultimate in the Arab world and 103rd out of 134 countries in the index with a total of 37.52, which is This indicates that Algeria, despite efforts to improve its ICT infrastructure, still faces significant challenges in reaching an advanced level of readiness for digital transformation. This reflects the need for additional improvements in several key areas.

1-2- Analysis of the Digital Retina Readiness Index by Technology Pillar in Algeria for the year 2023

The Digital Retina Readiness Index by Technology Pillar is used to assess the ability of countries to benefit from information and communication technologies (ICTs).

Table 02: Situation of Algeria by technology pillar in 2023

Technology Pillar Elements	Rank	Result
1- Access	**101**	**49.33**
- Mobile phone definitions	76	57.75
- Mobile phone prices	104	30.61
- Fiber Optic Internet Subscriptions for Buildings	72	26.39
- Number of population covered by at least 3G mobile network	75	99.36
- International Internet Bandwidth	36	76.49
- Internet access in schools	79	05.39
2- Content	**92**	**17.83**

Technology Pillar Elements	Rank	Result
- Domain registration	115	0.32
- Mobile Application Development	102	50.98
- Scientific publications on artificial intelligence	28	19.05
3- Future technologies	**91**	**27.19**
- Adopting emerging technologies	65	47.15
- Investing in emerging technologies	86	34.00
- Robot density	-	-
- Spending on computer software	126	0.43

Source: Portulans Institute, The Network Readiness Index Algeria, 2023

The results of measuring the technology index for the year 2023 show that Algeria still occupies the lagging ranks among 134 classified countries, and this indicates the weakness and inadequacy of technological infrastructure, both in terms of its employment and availability in economic institutions, which made Algeria rank 97 out of 134 countries on the basis of the technology pillar, where we note that few indicators in which Algeria recorded some progress, such as increasing the high and global flow network (deployment of optical fiber and the fourth generation of the phone) and linking Rural areas to get them out of digital isolation, as well as increasing investment in the technological field to meet part of the local demand for modern technology, which led to the improvement of sub-indicators of access and content, it ranked 28th globally in terms of scientific publications on artificial intelligence, and 36th globally in terms of Internet frequency bandwidth, as well as an improvement in the rest of the sub-indicators due to the increase in government spending on infrastructure and the increase in the number of dealers in Algeria.

Similar to the phone price index, in which Algeria recorded a value of 30.61, ranked 101 globally, and the spending index on computer programs, which recorded a value of 0.43, ranked 126 globally, which indicates Algeria's inability to keep pace with the rapid development in the adoption of modern technology as a result of several factors, including economic, political and cultural, from an economic point of view, there may be difficulties in providing the necessary financing for modern technological infrastructure, including the necessary networks and equipment, and politically, Political stability and government changes affect a country's ability to absorb and invest in modern technology effectively, but culturally, there may be challenges in adapting to rapid technological changes due to cultural and social differences.

1-3- The reality of financial technology in Algeria

Fintech in Algeria is witnessing gradual growth, as many startups have started to enter this sector to provide innovative financial solutions. Although the Algerian market is still in its initial stages compared to some other countries, there are a range of factors that point to great potential for growth and expansion in the future, here is an overview of the reality of financial technology in Algeria:

E-commerce

Jumia
Ouedkniss

Services: E-commerce platforms that integrate with electronic payment solutions to facilitate online purchases. These companies offer services that include inventory management, secure payment, and delivery services.

E-Payment & Digital Wallets

CIB

Services: Providing solutions for online payment, money transfer, and mobile payments. Digital wallets allow users to store funds and make payments easily and securely.

International Money Transfers

Western Union
MoneyGram

Services are platforms that facilitate international money transfers at the lowest cost and fastest possible time, with a focus on security and transparency (through local partnerships).

Mobile Payments

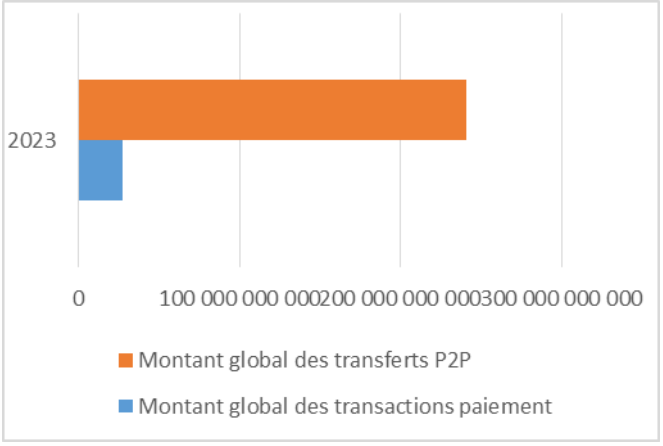
BaridiMob (A service provided by Algeria Post)

Services: Solutions for bill payment, money transfer, and mobile payments. These services allow users to easily make financial transactions from anywhere.

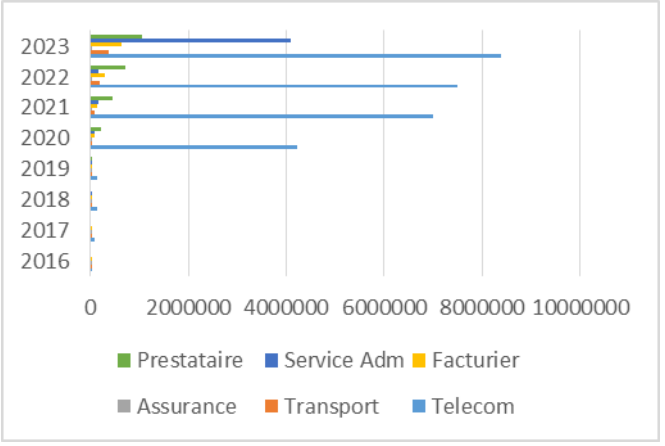
Figure 02: Fintech companies in Algeria in 2023

Figure 03: Indicators of digital development in Algeria

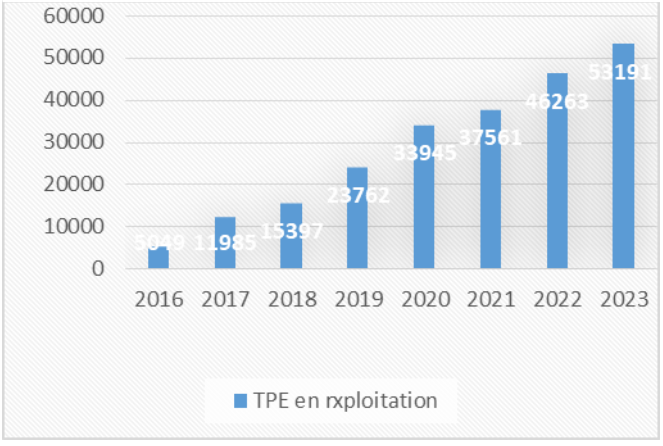
Mobile payment



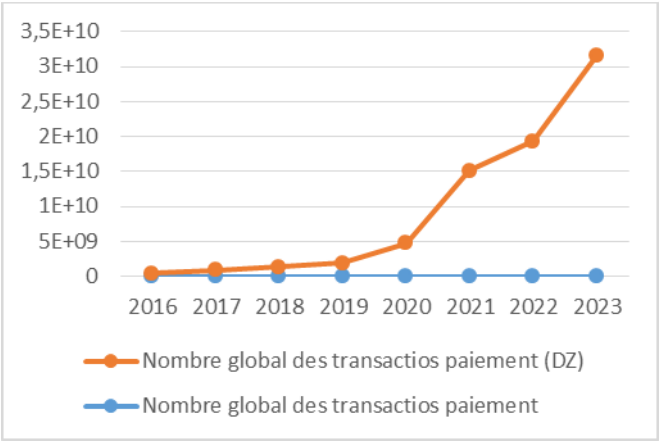
Pay online



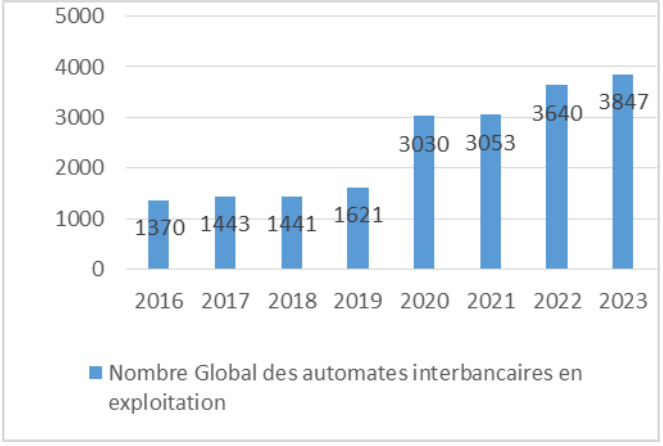
Total number of TPE



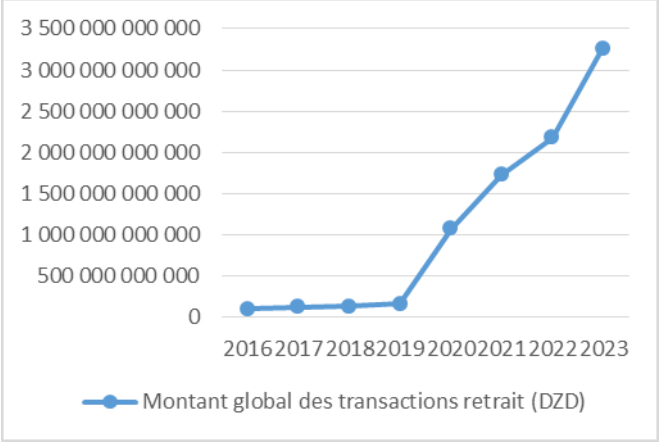
Total amount of payment transactions (DZD) via TPE devices



Total number of interbank ATMs operating



Total amount of withdrawals (DZD)



Source: Based on https://giemonetique.dz/activite-paiement-par-mobile/

In 2023, Algeria witnessed a remarkable growth in the use of online and mobile payments compared to previous years, this increase was driven by many factors such as the increased penetration of smartphones, improved access to the Internet, the launch of several digital services such as "BaridiMob" and "Edahabia" that allow users to pay and transfer money online, and government efforts to promote financial inclusion and digital transformation contributed to the increased reliance on electronic payment. However, the rate of use of digital payments in Algeria remains lower compared to some advanced Arab countries in this field, such as the UAE and Saudi Arabia, where the Arab Gulf countries lead in the adoption of digital payment, with penetration rates of nearly 90%, while the penetration rate in Algeria ranges between 65% and 70%, reflecting Algeria's focus on enhancing trust and awareness of digital security to support continuous growth.

In 2023, the total number of electronic payment machines (TPE) in Algeria reached about 53,000 machines, while the number of ATMs reached 3,847 machines, this represents an increase compared to the previous year, where there were about 46,263 TPE machines and 3,640 ATMs, this continuous growth in the electronic payments infrastructure reflects a growing interest in strengthening digital financial services in the country, which shows remarkable growth in this area.

In 2023, total payment transactions via electronic payment devices (TPE) in Algeria amounted to about 31.5 billion Algerian dinars, reflecting a significant increase in the use of these devices for daily financial transactions. ATM withdrawals exceeded 3.262 billion Algerian dinars in the same year. This growth shows a marked shift towards the use of digital tools to facilitate financial transactions, although Algeria is still working to improve and expand these services compared to some of the more developed Arab countries in this field.

1-4- Legislative and regulatory environment:

In Algeria, there is a set of laws and policies that regulate the process of digitization and the development of digital technology, where Algeria is witnessing major transformations in this field, and seeks to promote digitization in various sectors, and the most important laws and digital policies in Algeria are:

- Law No. 09-04 of 14 Shaaban 1430 corresponding to August 5, 2009, containing special rules for the prevention and combating of crimes related to information and communication technologies (Law No. 04-09, 2009, p. 5): This law regulates the monitoring of electronic communications and the obligations of electronic service providers.
- Law No. 18-04 of 24 Shaaban 1439 corresponding to May 10, 2018, laying down the general rules relating to posts and electronic communications (Law No. 18-04, 2018, page 3): This law regulates various aspects of post and telecommunications, including Internet and electronic communications services, with the aim of improving the quality of services and promoting competition.
- Law No. 18-05 of 24 Shaaban 1439 corresponding to May 10, 2018, on electronic commerce: This law defines the general rules related to electronic commerce of goods and services, the requirements related to electronic

commerce practices and the definition of crimes and penalties (Law No. 18/05, 2018, page 4).
- Law 18-07 on the Protection of Personal Data: This law aims to protect the personal data of individuals and ensure the confidentiality of information. It includes how we collect, store and use personal data.

The Algerian legislator, through Law No. 15/04, which defines the general rules relating to electronic signature and certification, and Law No. 18/07 on the protection of natural persons in the field of processing personal data, has provided a number of guarantees and measures to protect the confidentiality and security of personal data of those dealing with electronic certification bodies by imposing a set of obligations on these bodies, up to the point of imposing penal sanctions for acts that violate information privacy (Sofiane Soualem, 2022, p. 399).
- National Digitization Strategy: It includes the Algerian government's plan to promote digitization in various fields, including education, health, and public administration. The strategy seeks to improve digital infrastructure and provide integrated electronic services.
- Government policies related to e-commerce: It aims to develop an environment conducive to e-commerce by providing legal frameworks that contribute to protecting consumer rights and enhancing security in electronic transactions.
- Government digitization projects: such as "e-government" that aims to improve and facilitate access to online government services.
- The first is related to the National Authority for the Protection of Personal Data, which is the device that is based on ensuring the protection of the private lives of individuals, and the confidentiality of correspondence and communications, and not to prejudice them no matter what, except by judicial order. The second is the "High Governorate of Digitalization", which was previously announced by the President of the Republic, Abdelmadjid Tebboune, in his recent meeting with representatives of the national media, and aims to add transparency and profitability to the Algerian economy, especially in light of the criticism directed at it regarding the bureaucracy of the administration and the weight of administrative transactions (Abdelnasser Hanno, 2023).

These laws and policies aim to enhance digital security, protect personal data, and stimulate growth in Algeria's digital technology sector.

2- Challenges facing digital transformation

Despite efforts in digital transformation, especially in the financial sector, Algeria is still among the lagging countries, and this is due to many obstacles facing the digital transformation process in various Algerian institutions, most notably (Peers of Siham and Boukasa Salima, page 13):
- The weakness of the infrastructure of the technical sector in Algeria necessary for the application of modern technology, such as fast Internet networks;
- The absence of political management to support digital transformation and convince administrative authorities of the need to apply technology and keep pace with the digital revolution;
- The lack of a legal environment to protect electronic management programs and prevent hacking websites by setting deterrent penalties for perpetrators;

- Lack of awareness of workers in Algeria, which stands out against the application of modern technologies out of fear for their positions and future careers;
- Weak financial resources allocated to digital management projects, In addition to the high costs of technical maintenance in Algeria;
- the high costs of equipping digital management infrastructure, which limits the progress of digital transformation projects in Algeria;
- The incompatibility of Algerian government legislation and policies with the digital transformation process;
- Lack of confidence among the public in digital transactions in Algeria;
- The low quality of internet service and the high prices of mobile phones;
- The lack of digital expertise among individuals and their lack of sufficient knowledge of digital transformation technologies and lack of understanding of the available services;
- The problem of cyber risk, cyberattacks may lead to operational disruptions, financial losses, systemic risks, and may become a crippling restriction unless information security frameworks are strengthened (Karneeb Hadeel, 2019).

3- Security risks associated with the digitization of Algerian

financial institutions Digitization in financial institutions can provide significant benefits such as improving efficiency and expanding access to services, but it also brings a set of risks and challenges that must be effectively addressed, and the main risks that financial institutions may face as a result of digital transformation (Loubna Hammoud, 2024):

3-1- Cybersecurity threats: Cybersecurity threats are one of the most important risks of digital transformation, as they are often a major concern for organizations while undergoing digital transformation, and as organizations rely heavily on digital technologies, they may be exposed to an increased risk of cyber-attacks such as malware and data breaches, which lead to negative consequences including physical losses and legal liabilities, and this risk is likely to continue to evolve in the new year as these threats become more complex.
3-2- Data management challenges: As organizations produce and collect increasing and large amounts of data, they may face one of the risks of digital transformation, which is related to problems in storing, analyzing and managing this data, which leads to problems in data quality, in addition to that, these organizations may face problems related to data security and privacy.
3-3- Integration with old systems: Digital transformation often requires merging old systems with modern systems to complement each other, which can be a complex and time-consuming process, which leads to work stoppage, disruption of operations, and negatively affecting production.
One of the risks of digital transformation is also if the integration process with the old system is not done correctly, it can lead to data loss and system crashes, and this process is not without high cost, as there may be a risk of exceeding the budget for this institution.
3-4- Disrupt traditional business models: This shift is likely to disrupt traditional business models, leading to the loss of employees who do not have enough skills to adapt to new roles, creating problems in losing employees, and disrupting business processes.

3-5- Increased reliance on external service providers: Failure or failure of these service providers will lead to significant risks in terms of the work of this organization, and relying on unreliable service providers will pose a risk to data privacy and security, so that they can access sensitive data.

The third axis: field study and analysis procedures

1-the population and sample of the study

The study population is represented by the employees of banks and insurance companies in the state of Chlef, and the random sample was selected for the purpose of achieving confidence in the results, as the sample was estimated at 52 employees.

-Measurement tool**:** The questionnaire was relied upon, which in turn was divided into 24 items distributed over 3 axes.

2-The validity and reliability of the study tool

The validity and consistency of the questionnaire are two of the main factors that affect the quality and reliability of the data collected through the questionnaires.

2-1- Stability of the questionnaire tool

Stability refers to the consistency and reliability of the results produced by the questionnaire when used multiple times in the same conditions.

2-1-1- Test the stability of the questionnaire using the method of Cronbach-Alpha coefficient**:** To measure the stability of the questionnaire, the Alpha Cronbach test was used, and its results were as in the following table:

Table 3: Cronbach alpha coefficient for measuring the stability of the study instrument

Form axes	Number of phrases	Cronbach's alpha coefficient
Axis 1: Use of digital financial services (digitization in financial institutions)	08	0.905
Axis II: Challenges and obstacles facing financial institutions in implementing digital technologies	07	0.904
Axis III: Digitization and Cybersecurity	09	0.939
Overall reliability of the questionnaire	24	0.931

Source**:** Prepared by the researcher based on the outputs of the SPSS27 program

It is clear from Table (3) that the general stability coefficient of the study axes is high, reaching (0.931) for the total twenty-four paragraphs of the questionnaire, while the axes' coefficients ranged between 0.90 as a minimum and 0.94 as a maximum, and this indicates that the questionnaire has a high degree of stability that can be relied upon in the field application of the study according to the Nanley scale, which adopted 0.70 as a minimum for stability.

2-1-2- Validity of internal consistency**:** The validity of the internal consistency of the questionnaire was verified by calculating the Pearson correlation coefficient between the scores of each of the three paragraphs of the three axes and the total degree of the axis to which the paragraph belongs, and the following table shows the correlation coefficients between each paragraph of the first axis and the total degree of the axis.

Table (4): Correlation coefficients between the degree of each paragraph and the degree of the first axis

Axis paragraphs	Correlation coefficient	Sig. value
The institution has laws and regulations that regulate the relationship between it and customers in its digital transactions.	**0.762	0.001
The customer gets financial services with ease and comfort, and it does not take much time.	**0.800	0.001
The institution provides its services via the Internet or mobile phone applications.	**0.748	0.001
The institution provides customers with the ability to pay and transfer money electronically at an acceptable cost.	**0.804	0.001
The bank offers bank cards and has an electronic platform with multiple uses.	**0.729	0.001
The institution has the necessary infrastructure to implement financial technology.	**0.771	0.001
The organization relies heavily on digital technology programs to manage its services.	**0.807	0.001
The institution updates its electronic services to meet the needs of customers and achieve their satisfaction.	**0.790	0.001

**. La corrélation est significative au niveau 0.01 (bilatéral)

From the results of the previous table, we find that all Pearson's correlation coefficients between the paragraphs of the first axis and the total degree of the first axis are statistically significant at the level of 0.01, where the minimum correlation coefficients were 0.729, while the upper limit was 0.807, and therefore all paragraphs of the first axis are internally consistent with the axis to which they belong, which proves the sincerity of the internal consistency of the paragraphs of the first axis.

Table (5): Correlation coefficients between the grade of each paragraph and the degree of the second axis

Axis paragraphs	Correlation coefficient	.Sig value
There are challenges in updating policies and regulations to keep pace with technological developments and properly implement fintech technologies.	**0.755	0.001
Employees and customers may be resistant to change and the transition to new technologies.	**0.720	0.001
Having strong protection for data and systems from cyber-attacks is one of the biggest challenges for an organization, especially with the increasing complexity of attacks.	**0.792	0.001
The constant need to innovate and provide new and advanced services can be a challenge, especially in light of the rapid development of technology.	**0.850	0.001
The organization is under pressure to integrate sustainable practices into its operations, which can add complexity to adopting resource-intensive digital technologies.	**0.875	0.001

Axis paragraphs	Correlation coefficient	.Sig value
Building trust among customers in using digital financial services can be a challenge, especially in societies that prefer traditional transactions.	**0.857	0.001
Challenges include protecting and ensuring customer data privacy, the costs of implementing new technology, training employees to use new systems effectively, and adapting to rapid changes in technology.	**0.751	0.001

**. La corrélation est significative au niveau 0.01 (bilatéral)

From the results of the previous table, we find that all Pearson's correlation coefficients between the paragraphs of the second axis and the total degree of the second axis are statistically significant at the level of 0.01, where the minimum correlation coefficients were 0.720, while the upper limit was 0.875, and therefore all paragraphs of the second axis are internally consistent with the axis to which they belong, which proves the sincerity of the internal consistency of the paragraphs of the second axis

Table (6): Correlation coefficients between the degree of each paragraph and the grade of the third axis

Axis paragraphs	Correlation coefficient	.Sig value
Digital tools allow continuous monitoring of networks and systems to detect potential threats.	**0.714	0.001
Digitization helps in developing training and awareness programs for employees on the importance of cybersecurity and how to identify threats.	**0.820	0.001
Digitization facilitates the development and implementation of effective contingency plans to counter cyber attacks.	**0.888	0.001
Digitization enables the automation of many cyber incident response procedures, reducing response time and limiting the impact of attacks.	**0.861	0.001
Digitization enables periodic audits and assessments to ensure that security systems are operating effectively.	**0.883	0.001
Digitization helps build a culture of security within financial institutions by spreading awareness and enhancing commitment to cybersecurity measures.	**0.919	0.001
The organization uses multiple authentication technologies and applications to protect users from fraud and identity theft.	**0.786	0.001
Digital banks rely on advanced cybersecurity technologies such as encryption and identity and access management to ensure customer information is protected.	**0.860	0.001
The institution relies on security protocols such as advanced SSL and TLS to ensure that financial transactions are conducted securely.	**0.669	0.001

**. La corrélation est significative au niveau 0.01 (bilatéral)

From the results of the previous table, we find that all Pearson's correlation coefficients between the paragraphs of the third axis and the total degree of the third axis are statistically significant at the level of 0.01, where the minimum

correlation coefficients were 0.669, while the upper limit was 0.919, and therefore all paragraphs of the third axis are internally consistent with the axis to which they belong, which proves the sincerity of the internal consistency of the paragraphs of the third axis.

Therefore, through the results of internal stability and consistency in the previous tables, it becomes clear to us the stability of the study tool (questionnaire) to a high degree and the sincerity of its internal consistency, which makes us apply it to the entire sample.

3-Statistical analysis methods used

3-1- Descriptive analysis of the results of the questionnaire
3-1-1- Analysis of the results related to demographic questions: In this table, the personal characteristics of the sample members will be presented as shown in terms of gender, age, years of experience, academic qualification and job, and this can be clarified through the following table:

Table 7: Personal characteristics of sample members

Variables		**number**	**(%) Percentage**
sex	male	40	76.9
	feminine	12	23.1
the age	18 years - 30 years	11	21.2
	31-45 years old	27	51.9
	More than 45 years	14	26.9
Academic qualification	University Applied Studies Certificate	1	1.9
	Bachelor's degree	10	19.2
	Master	14	26.9
	Master's degree	1	1.9
	Ph.D	24	46.2
	Other qualifications	2	3.8
Professional experience	Less than 5 years	20	38.5
	5 to 10 years	7	13.5
	More than 10 years	25	48.1
Job	Bank Manager	4	7.7
	Insurance company manager	4	7.7
	Deputy Bank Manager	2	3.8
	Head of Bank Service	6	11.5
	Internal Auditor	3	5.8
	framework	21	40.4
	Other administrative/technical position	8	15.4
	Another position	4	7.7

Source: Researcher preparation based on SPSS27

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It is clear from Table (7) that 40 of the study members represent 76.9% of the total study sample members, and they are the most male group of study

members, while 12 represent 13.1% females and their ages were from 31 to 45 years (51.9%), followed by 26.9% of the total study sample members aged more than 45 years, followed by 21.2% of the total study sample members aged from 18 to 30 years, and the academic qualification of the sample members was The study is high by 46.2% PhD, followed by 26.9% with a master's degree, followed by a category with bachelor's and master's qualifications with 19.2%, 1.9% Ali Al-Tawali, their professional experience was more than 10 years by 48.1%, followed by 38.5% of the total members of the study sample with professional experience of less than 5 years, followed by 13.5% with professional experience from 5 to 10 years, they occupied jobs, most of which were cadres for the study sample members by 40.4%, followed by 15.1% of the total individuals The study sample occupies the position of administrative/technical position, followed by 11.5% of the total members of the study sample whose positions are head of department in the bank, followed by the positions of bank manager, insurance company manager and internal auditor with percentages of 7.7%, 7.7%, and 5.8% respectively, and these results are shown in the following figure

3-1-2- Digitalization in financial institutions

Table 8: Descriptive statistics of the use of digital financial services (digitization in financial institutions)

Questions		Strongly opposed	Oppo setion	neutral	agree	Strongly agree	mean	Standard deviation	Classi fication	General trend
The institution has laws and regulations that regulate the relationship between it and customers in its digital transactions.	N	1	3	9	31	8	3.80	0.84107	3	Agree
	%	1.9%	5.8%	17.3%	59.6%	15.4%				
The customer gets financial services with ease and comfort, and it does not take much time.	N	2	7	5	29	9	3.69	1.03920	6	Agree
	%	3.8%	13.5%	9.6%	55.8%	17.3%				
The institution provides its services via the Internet or mobile phone applications.	N	2	1	8	32	9	3.86	0.86385	2	agree
	%	3.8%	1.9%	15.4%	61.5%	17.3%				
The	N	3	2	7	32	8	3.76	0.96234	4	agree

institution provides customers with the ability to pay and transfer money electronically at an acceptable cost.	%	5.8%	3.8%	13.5%	61.5%	15.4%				
The bank offers bank cards and has an electronic platform with multiple uses.	N	1	2	11	21	17	3.98	0.93914	1	agree
	%	1.9%	3.8%	21.2%	40.4%	32.7%				
The institution has the necessary infrastructure to implement financial technology.	N	0	10	13	23	6	3.48	0.93914	8	agree
	%	0	19.2%	25%	44.2%	11.5%				
The organization relies heavily on digital technology programs to manage its services.	N	3	6	12	23	8	3.51	1.07540	7	agree
	%	5.8%	11.5%	23.1%	44.2%	15.4%				
The institution updates its electronic services to meet the needs of customers and achieve their satisfaction.	N	0	5	14	21	12	3.76	0.92069	5	agree
	%	0	9.6%	26.9%	40.4%	23.1%				
Weighted average of the first axis							3.61			agree

Source: Researcher preparation based on SPSS27 program

Table (8) shows the frequencies and percentages of the responses of the study members on the first axis "the use of digital financial services (digitization in financial institutions)", where the paragraph that states (the bank provides bank cards and owns an electronic platform with multiple uses) came in first place with a standard deviation of 0.939 and the highest arithmetic average of 3.98, which corresponds to the trend "OK" in the estimated balance of the five-pointed Licart

scale, and in second place came the paragraph that states (the institution provides its services via the Internet or applications). mobile phones) with an average value of 3.86 corresponding to the trend "OK" and a standard deviation of 0.863.

In last place came the paragraph that states (the institution has the necessary infrastructure to apply financial technology) with a standard deviation of 0.939, and an arithmetic mean of 3.48, which corresponds to the "OK" trend in the estimated balance of the Likert five-point scale.

It is clear from the table above that the weighted mean of the first axis was 3.61 with a standard deviation of 0.606, which corresponds to the balance of estimates of the five-pointed Licart scale "OK."

3-1-3- Challenges and barriers facing financial institutions in implementing digital technologies

Table 9: Descriptive statistics of challenges and barriers facing financial institutions in the application of digital technologies

Questions		Strongly opposed	Oppo setion	neutral	agree	Strongly agree	mean	Standard deviation	Classi fication	General trend
There are challenges in updating policies and regulations to keep pace with technical developments and apply fintech technologies correctly	N	1	0	10	27	14	4.01	0.80417	5	Agree
	%	1.9%	0%	19.2%	51.2%	26.9%				
Employees and customers may be resistant to change and switch to new technologies	N	0	3	6	31	12	4.00	0.76696	6	Agree
	%	0	5.8%	11.5%	59.6%	23.1%				
Having a strong protection for data and systems from cyber-attacks is one of the biggest challenges,	N	1	2	10	18	21	4.07	0.96703	3	agree
	%	1.9%	3.8%	19.2%	34.6%	4.04%				

especially with the increasing complexity of attacks										
The constant need to innovate and provide new and advanced services can be a challenge, especially in light of the rapid development of technology	N	0	1	5	30	16	4.17	0.67798	2	agree
	%	0%	1.9%	9.6%	57.7%	30.8%				
The organization is under pressure to integrate sustainable practices into its operations, which could further complicate the adoption of resource-intensive digital technologies	N	1	2	12	25	12	3.86	0.88625	7	agree
	%	1.9%	3.8%	23.1%	48.1%	23.1%				
Building trust among customers in the use of digital financial services can be challenging, especially in societies that prefer traditional transactions.	N	1	0	8	28	15	4.07	0.78830	4	agree
	%	1.9%	0%	15.4%	53.8%	28.8%				
Challenges include protecting customer data and	N	0	3	3	28	18	4.17	0.78519	1	agree
	%	0%	5.8%	5.8%	53.8%	34.6%				

ensuring its privacy, the costs of implementing new technology, training employees to use new systems effectively, and adapting to rapid changes in technology.										
Weighted average of the first axis							**3.75**			agree

Source: Researcher preparation based on SPSS27 program

Table (9) shows the frequencies and percentages of the responses of the study subjects on the second axis, "Challenges and Obstacles Facing Financial Institutions in the Application of Digital Technologies", where the first place was the paragraph that states (challenges include protecting customer data and ensuring its privacy, the costs of implementing new technology, training employees to use new systems effectively, and adapting to rapid changes in technology) with a standard deviation of 0.785 and the highest arithmetic average of 4.17, which corresponds to the trend "OK" in the estimated balance of the Licart scale. In second place came the paragraph that states (the continuous need for innovation and the provision of new and advanced services that can pose a challenge, especially in light of the rapid development of technology) with an average value of 4.17, which corresponds to the "OK" trend and a standard deviation of 0.677.

In last place was the paragraph that states "The organization is facing pressure to integrate sustainable practices into its operations, which can increase the complexity in adopting resource-intensive digital technologies" with a standard deviation of 0.886, and an arithmetic mean of 3.86, which corresponds to the "OK" trend in the estimated balance of the Likert five-point scale.

It is clear from the table above that the weighted mean of the second axis was 3.75 with a standard deviation of 0.600, which corresponds to the balance of estimates of the Licart five-point scale "OK."

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3-1-4- Digitization and Cybersecurity

Table 10 : Statistiques descriptives de la numérisation et de la cybersécurité

Questions		Strongly opposed	Opposetion	neutral	agree	Strongly agree	mean	Standard deviation	Classification	General trend
Digital tools enable continuous monitoring of networks and systems to detect potential threats.	N	1	3	11	26	11	3.82	0.90144	7	Agree
	%	1.9%	5.8%	21.2%	50.0%	21.2%				
Digitization helps develop training and awareness programs for employees on the importance of cybersecurity and how to identify threats	N	0	3	7	27	15	4.03	0.81557	3	Agree
	%	0%	5.8%	13.5%	51.9%	28.8%				
Digitalization facilitates the development and implementation of effective contingency plans to counter cyber attacks	N	1	2	8	21	20	4.09	0.93431	1	agree
	%	1.9%	3.8%	15.4%	40.4%	38.5%				
Digitization enables the automation of many cyber incident response procedures, reducing response time and reducing the impact of attacks	N	0	3	9	25	15	4.00	0.84017	5	agree
	%	0%	5.8%	17.3%	48.1%	28.8%				
Digitization allows periodic audits and evaluations to ensure that security systems are functioning	N	1	2	7	25	17	4.05	0.89472	2	agree
	%	1.9%	3.8%	13.5%	48.1%	32.7%				

effectively										
Digitalization helps build a culture of security within financial institutions by spreading awareness and enhancing compliance with cybersecurity measures	N	1	4	7	22	18	4.00	0.99015	4	agree
	%	1.9%	7.7%	13.5%	42.3%	34.6%				
The organization uses multiple applications and verification technologies to protect users from fraud and identity theft	N	2	5	9	23	13	3.76	1.05933	8	agree
	%	3.8%	9.6%	17.3%	44.2%	25.0%				
Digital banks rely on advanced cybersecurity technologies such as encryption, identity management and access to ensure the protection of customer information.	N	0	4	10	27	11	3.86	0.84084	6	agree
	%	0%	7.7%	10%	27%	11%				
The organization relies on security protocols such as advanced SSL and TLS to ensure that financial transactions are conducted securely.	N	1	1	24	15	11	3.65	0.90499	9	agree
	%	1.9%	1.9%	46.2%	28.8%	21.2				
Weighted average of the first axis							3.98			agree

Source: Researcher preparation based on SPSS27 program

Table (10) shows the frequencies and percentages of the responses of the study subjects on the third axis "digitization and cybersecurity", where the paragraph that states (digitization facilitates the development and implementation of effective

contingency plans to confront cyber-attacks) came in first place with a standard deviation of 0.934 and the highest arithmetic average of 4.09, which corresponds to the trend "OK" in the estimated balance of the Licart five-point scale, and in second place came the paragraph that states (digitization allows periodic audits and evaluations to ensure that security systems are working). effectively) with an average value of 4.05 corresponding to the trend "OK" and a standard deviation of 0.894.

In last place came the paragraph that states (the institution relies on security protocols such as SSL and advanced TLS to ensure that financial transactions are conducted securely) with a standard deviation of 0.904, and an arithmetic mean of 3.65, which corresponds to the "OK" trend in the estimated balance of the Likert five-point scale.

It is clear from the table above that the weighted mean of the third axis was 3.98 with a standard deviation of 0.627, which corresponds to the balance of estimates of the Licart five-point scale "OK."

3-2- Analysis and discussion of the results of the study

3-2-1- Testing the hypotheses of the study

- Analysis of the results of multiple regression
- Hypothesis zero H0: The regression model is not significant, that is, the independent variables (challenges related to digital transformation and cybersecurity) do not affect the dependent variable (digital transformation).
- Alternative hypothesis H1: Significant regression model That is, independent variables (challenges related to digital transformation and cybersecurity) affect the dependent variable (digital transformation).

Table (11): Variance Amplification Coefficients

Variables	**Tolerance**	**VIF**
Challenges	0.712	1.405
Cyber Security	0.712	1.405

Source: Prepared by Bakhtain based on spss27 program embarrasses

The previous table shows the value of the variance inflation coefficients (VIF): VIF=1/Tolerance, which shows that there is no problem of linear multiplicity between variables, as the inflation coefficients were less than 3.

Table (12): Multiple Regression Results

Dependent variable	**Explanatory variables**	**(R)**	**(R^2)**	**(F)**	**indication (F)**	**(β)**	**(t)**	**indication (t)**	**(VIF)**
Digital transformation	**Challenges**	0.638	0.407	16.805	0.001	0.311	2.342	0.023	1.405
	Cyber Security					0.406	3.217	0.002	1.405

Source: Researcher preparation based on SPSS27 program

Figure (4) shows the moderation of the distribution of the remainders, and Figure (5) shows the aggregation of data about the straight line, so the residuals follow the normal distribution and is one of the conditions for the correctness of performing multiple regression analysis.

Figure 5: Data distribution

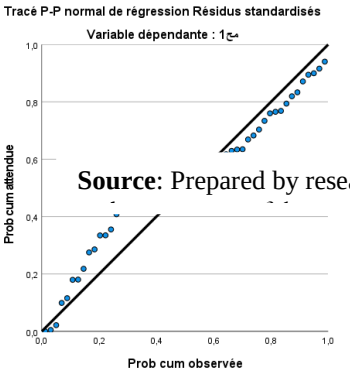
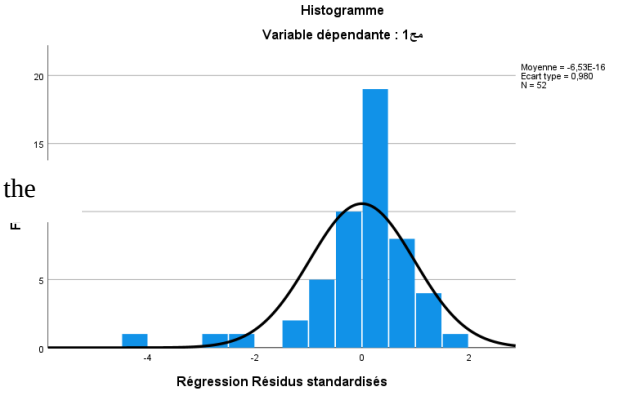


Figure 4: Residue distribution



Source: Prepared by researchers based on the

Source: Prepared by researchers based on the embarrassments of the spss27 program

In order to know the relationship between digital transformation and independent variables (challenges related to digital transformation and cybersecurity), a multiple linear regression model was used (Table 12), in which the challenges and cybersecurity variables were considered as explanatory variables and the digital transformation variable as a dependent variable, the results of the regression model showed that the regression model is significant through the value of (F) of (16.805) with a significant level of (0.001), which is smaller than the level of significance (0.05), and the results explain that the explained variables explain 40.7% of the variance in Digital transformation, considering the coefficient of determination (R^2), and the value of beta (β), which illustrates the relationship between digital transformation and cybersecurity, with a value of (0.406) is statistically significant, as this can be deduced from the value of (t) and the significance associated with it, and this means that the better the level of security by a unit, the better the pace of accelerating digital transformation by (0.406) units and expresses a positive relationship between security and digital transformation, as well as the beta value (β) for the variable of challenges related to digital transformation with a value of (0.311) D Statistically, The more challenges related to digital transformation by one unit, the greater the inability to achieve success in this digital transformation by (0.311) units, which indicates a positive relationship, as the table shows the results of the linear multilicity test, where the result revealed that the statement inflation factor for the model was (1.405), which is less than 3, which indicates that there is no linear multilinear

problem between the model variables, and we can write the regression equation as follows:
Digital transformation (expected) = 0.837 + 0.311 * challenges + 0.406 * cybersecurity + prediction error

The normal distribution curve also showed that the residues are normally distributed through Figure (4), and the Dorian Watson test to detect autocorrelation with a value of 1.804 with a significant level greater than 0.05, meaning that the model is acceptable and there is no subjective correlation between the variables, and the independent variables can be arranged according to the strength of the impact on the dependent variable based on the absolute value of the (t) test, as it is clear from the previous table that the most powerful independent variable affecting the success of digital transformation is cybersecurity. Followed by the independent variable challenges related to this transformation in Algerian financial institutions.

We note from Table (12) that all the values of the independent variables are statistically significant with a significant level less than (0.05), and this indicates that all variables had an impact on digital transformation.
- Analysis and interpretation of the results of the study hypotheses
- The first main hypothesis (H1): "There is a statistically significant impact at the level of significance (α≤0.05) of the challenges faced by financial institutions in Algeria to promote digital transformation".

From the results of the first hypothesis, it appears to us that the challenges faced by Algerian financial institutions in implementing digital transformation greatly affect the success of this transformation, and this can be explained due to inappropriate local legislation or lagging behind technological developments, which hinders the transition of institutions from traditional systems to digital and limits their ability to adapt to these changes, in addition to the weakness of technological infrastructure through the weakness of networks and systems that lead to interruption of services or slow performance, which leads to It negatively impacts the customer experience that hinders the ability of organizations to effectively implement digital transformation.
- The second main hypothesis (H2): "There is a statistically significant impact at the level of significance (α≤0.05) of cyber risks on the success of digital transformation in financial institutions in Algeria".

From the results of the second hypothesis, it appears to us that the level of security achieved by financial institutions in the use of digital financial services greatly affects the success of digital transformation in them, and this can be explained by the fact that digital transformation requires the integration of information technology systems and cybersecurity plays a vital role in securing these systems against external threats, and the amount of sensitive financial data that is dealt with increases during digital transformation, which makes protecting this data from intrusions necessary, and institutions that provide Strong security enhances its reputation in the market, trust in cybersecurity attracts customers and gains their trust, facilitating the process of digital transformation.

Conclusion

The digitization of financial institutions in Algeria is arguably a necessary step to keep pace with global developments in the financial sector and enhance efficiency and transparency in financial operations, however, this digital transformation faces significant challenges related to technological infrastructure, high costs, weak digital skills in the workforce, as well as regulatory and legislative obstacles.

In addition to these challenges, serious security risks appear that include cyber-attacks and data theft, as increased reliance on technology exposes organizations to the risks of hacks and cyberattacks that may negatively affect their reputation and customer trust, which requires strengthening digital protection systems and enhancing the awareness of their employees about the importance of data protection, and adopting strict policies and effective strategies for cybersecurity to ensure the safety of digital transactions and user trust.

The success of the digitization of Algerian financial institutions depends on a delicate balance between exploiting the benefits of technology and dealing with the risks associated with it, but it requires thoughtful investments in technology and people, as well as effective cooperation between the government and the private sector to ensure successful and safe transformation.

Based on what the results of the field study showed through the first and second main hypotheses, where:

- The results of the study of the first main hypothesis showed that there is a statistically significant impact at the level of significance ($\alpha \leq 0.05$) of cyber risks on the success of digital transformation in financial institutions in Algeria.
- The results of the second main hypothesis study showed that there is a statistically significant impact at the level of significance ($\alpha \leq 0.05$) of the challenges faced by financial institutions in Algeria to promote digital transformation.
- Digitization has enabled financial institutions to expand their services, allowing customers to access banking services easily and quickly from anywhere.
- Digitization has introduced electronic financial services, such as online payment and fast money transfers, which have contributed to improving the customer experience and improving the efficiency of financial transactions.
- Digital transformation represents an important opportunity to advance the financial sector in Algeria, but it needs to address significant challenges including infrastructure, developing digital skills, modernizing the legislative environment to simplify existing legislation to facilitate digital transformation, and supporting innovation in this area.
- With the increasing reliance on technology, the risks of cyberattacks have emerged that threaten sensitive data for organizations and customers.

Recommendations

In light of the challenges of digital transformation and security risks facing Algerian financial institutions, the following recommendations can be made:

- Financial institutions and government must invest in developing a strong and inclusive infrastructure that enables efficient digital transformation, including the modernization of electronic systems and communication networks.
- Emphasis should be placed on training and qualifying human cadres in the digital field, through specialized training courses in financial technology and information security to raise the level of efficiency and innovation.
- Financial laws and regulations should be updated in line with digital transformation, including clear policies to regulate digital financial services and ensure user protection.
- It is essential to adopt robust cybersecurity strategies that include advanced protection systems such as encryption, double verification, and continuous threat analysis, to ensure that customer data and financial operations are protected.
- It is important to educate customers about the importance and benefits of digitization, as well as how to use digital services safely to protect them from cyber threats.
- Financial innovation should be supported by providing incentives for startups and technology companies that contribute to the development of digital financial solutions, and encouraging collaboration between financial institutions, government and technology service providers to accelerate the pace of digital transformation and the exchange of expertise and technology.

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