

The Impact of Digital Transformation on Enhancing the Quality of Banking Services: A Case Study of the Algerian External Bank (BEA) Branch 42 -Annaba-

BENCHIKH LEHOCINE Ahmed ^{1*}, HADJ ALI Adnane ²

¹Associate Professor, Higher School of Management Sciences, Annaba (Algeria),
benchikh_elhoucine_ahmed@essg-annaba.dz

²Associate Professor, University of Badji Mokhtar, Annaba (Algeria),
adnane.hadjali@univ-annaba.dz

Received on: 24/03/2025

Accepted on: 13/04/2025

Published on: 30/06/2025

Abstract :

This study aims to explore the role of digital transformation in enhancing the quality of banking services. Employing an analytical descriptive approach, a field study was conducted through a survey administered to employees at the Algerian External Bank, Branch 42 in Annaba. A total of 42 survey forms were analyzed. The findings suggest that digital transformation acts as a foundational strategy for banks aiming to offer innovative and creative banking services, transcending traditional methods. It significantly enhances service quality, thereby reinforcing the bank's competitive position.

Keywords: Digital Transformation, Banking Services, Service Quality.

JEL Classification Codes : G21, O33.

Introduction:

The banking sector is globally recognized as one of the most competitive and dynamic facets of the economy. This environment compels banks and financial institutions to align with advancements in technology to offer new services and products. These systems have become critical not only to withstand direct competition but also to enhance service offerings.

Digital transformation in banking operations has become indispensable for providing financial services and products that cater to the diverse needs of the global market. The evolution of technology involves more than the mere integration of technological tools in banking; it signifies a comprehensive system overhaul that modifies internal banking methodologies and influences business operations, making public services more accessible and expedient.

In an era of rigorous competition, banks are compelled to concentrate on the quality of their services and products, comprehend the needs and desires of customers, and augment employee performance to satisfy existing customers and attract new ones. This proactive

* Corresponding author.

anticipation of customer needs and preferences is crucial in evaluating service quality to secure a competitive edge and enables banks to expand their reach not only nationally but also regionally and internationally.

Recently, there has been a prevailing belief that digital services can replace all traditional methods and services in business operations, providing definite competitive advantages. Digital services are capable of implementing positive changes in business performance through their flexibility and substantial capabilities in speeding up performance and enhancing efficiency, thereby saving effort, time, and costs.

However, most banks have not yet adopted these new types of services in the current business environment, which leads to a similarity and parity in opportunities. Consequently, other banks may be forced to find a method that allows them to achieve distinction and excellence.

- **Problem Statement:**

In light of recent transformations within the banking industry, which have necessitated adaptation to various technological advancements, this study addresses the following question:

- _ **To what extent does digital transformation impact the improvement of banking service quality?**

This main query gives rise to several sub-questions:

- _ Is there a statistically significant effect of digital transformation on the quality of banking services?
- _ Does digital technology significantly affect the quality of banking services?
- _ How significantly does customer experience impact the quality of banking services?

- **Study Hypotheses:**

To address the research questions, the study proposes the following hypotheses:

- _ Digital transformation has a statistically significant effect on the quality of banking services.
- _ Digital technologies exert a statistically significant influence on the quality of banking services.
- _ Customer experience significantly affects the quality of banking services.

- **Study Objectives:**

The objectives of this research are to:

- _ Clearly define and comprehend the concept of digital transformation and its application within banks.
- _ Identify the principal challenges banks face in implementing digital transformation.

- _ Provide a detailed overview of banking services and their quality, establish methods for assessing the quality of these services, and explore their connection to digital transformation.
- _ Investigate the potential benefits of digital transformation for Algerian banks, particularly through a case study of its implementation at the Algerian External Bank and its effects on service quality.

- **Study Importance:**

The significance of this study is derived from its focus on a continually relevant and pressing topic. It aims to:

- _ Clarify the role of digital transformation in banking.
- _ Explore methodologies for measuring banking service quality.
- _ Examine the link between digital transformation and service quality in banking.
- _ Evaluate the role of digital transformation in improving banking service quality.

- **Methodology:**

An analytical descriptive methodology was utilized in this research, employing a descriptive approach to discuss the theoretical aspects of digital transformation and its relationship with banking service quality. The analytical aspect involved using SPSS software to process and analyze the key data collected from the Algerian External Bank.

I. Concept of Digital Transformation

1. Definition of Digital Transformation:

Characterized as the process by which organizations seek to execute their strategies and evolve innovative, adaptable business models and processes. This evolution involves substantial investments in technology and talent, reorganization of operations, and change management to generate new value and enrich experiences for customers, employees, and partners. (Hussein Mosilehi, 2021, p. 12) It signifies a thorough organizational transformation geared towards streamlining administrative procedures and enhancing their quality to attain a state of digital maturity. (Samia Khwathra, 2021, p. 109)

Digital transformation transcends the mere integration of technology within organizational limits; it represents an extensive initiative that affects the entire organization, particularly in terms of internal and external work methods and service delivery (Esam Mohamed Elgohary, 2022, p. 75). It aims to redesign business models to align with customer needs through modern technological methods, thus enabling the organization to enhance the efficiency of its core operations. (Ahmad Kadhim Bris & Ward Kasem Jaber, 2021, p. 207)

From these definitions, it is inferred that digital transformation necessitates abandoning traditional methods in favor of embracing modern technological approaches, transitioning information from traditional formats to digital ones.

2. Characteristics and Dimensions of Digital Transformation:

2.1. Characteristics of Digital Transformation:

- **Interactivity:** This feature allows for role exchanges between sender and receiver, fostering a bilateral, reciprocal communication process, rather than a unidirectional flow. (Norhan Suleiman, 2020, p. 20)
- **Participation and Dissemination:** Digital transformation empowers individuals with basic tools to become publishers of their own content and disseminate it widely.
- **Intelligence:** Digital networks exhibit advanced intelligence, enabling them to continuously monitor the changing conditions of communication channels and adapt their pathways accordingly.
- **Reduced Communication Costs:** A key advantage of digital transformation is the lowering of communication costs, coupled with the development of more affordable information programs and communication systems, which encourages deeper and prolonged engagement with these technologies in individual settings.
- **Diversity:** The evolution and variety of digital innovations offer recipients a broader array of options to tailor the communication process to their specific needs and motivations.
- **Attention and Focus:** Recipients of digital media actively select and engage with content, demonstrating heightened levels of attention and focus, in contrast to the often passive reception of traditional media.
- **Asynchronicity:** This characteristic allows interaction with the communication process at times that are convenient for the user, whether sending or receiving messages.

2.2. Dimensions of Digital Transformation:

Digital transformation is primarily shaped by two dimensions:

- **Digital Technologies:**

The advent of cutting-edge digital technologies like the Internet of Things, cloud computing, artificial intelligence, and robotics has propelled digital transformation forward. This shift significantly enhances the organizational structure of institutions, facilitates service provision, and boosts quality.

- **Customer Experience:**

This dimension prioritizes digital users at the heart of the organization's strategy. Customers, especially the digitally-savvy new generation, increasingly demand superior quality products and services and expect organizations to swiftly adapt to their evolving needs. They are also proficient in utilizing new technologies and sharing their experiences via social media. (Daghnouch Al-Atra, 2023, p. 36)

II. Digital Transformation in Banks and Its Impact on the Quality of Banking Services:

1. Concept of Digital Transformation in Banks:

Digital transformation within banks is characterized by the strategic integration of these technologies to boost financial outcomes and improve customer service quality. The goal is to implement technology across all banking departments to improve services and accessibility, thereby saving time and effort. (Ousama Mohamed Eltabei El-Danoun, 2020, p. 553) This process includes the adoption of cutting-edge digital technologies such as social media, mobile phones, and embedded devices, enabling the organization to enhance its operations and customer experiences, streamline processes, and forge new business opportunities.

Moreover, digital transformation introduces a novel model that necessitates the adoption of appropriate technology, structure, and culture to accommodate rapidly evolving business processes and technologies, improve customer experience, and generate new revenue streams. (Amina Benchouk, 2019-2020, p. 13)

It represents a comprehensive shift in culture, organization, and operations through the adoption of digital technologies, aiming to instigate changes across all facets of banking operations, from introducing new products and services to refining customer engagement processes, ultimately boosting banking efficiency.

2. Digital Transformation Technologies in Banks:

- **Electronic Banking:**

Electronic banking capitalizes on technological advancements and digitalization to offer a variety of innovative banking services. This encompasses using ATMs, making automated transactions via debit and credit cards, and accessing bank services through personal computers or mobile applications.

- **Electronic Withdrawal and Payment:**

This crucial activity in digital transformation involves using ATMs strategically placed on the external walls of banks and in public spaces to provide customers access to funds outside of regular banking hours and on holidays.

- **Artificial Intelligence (AI):**

Represents the intelligence exhibited by machines and software that emulate human cognitive functions such as learning, reasoning, and problem-solving. AI assists banks in several areas: (Khoula Mersi & Hajar Moussaoui, 2023, p. 526)

- _ Identifying the most valuable customers and determining the suitable banking and credit products for them.
- _ Managing risks and detecting suspicious activities.
- _ Analyzing data to devise future operational strategies and define key performance indicators.

- **Blockchain:**

A decentralized database that enables users to access encrypted information in real-time, forming an immutable ledger while preserving a history of information exchanges between users, with stored or transferred data being authenticated, encrypted, and resistant to tampering. (Beldi Sonia, 2019-2020, p. 12)

- **Cloud Computing:**

Involves shifting processing and storage capabilities from local computers to remote servers accessible via the internet, known as the cloud. This technology facilitates the creation of backups and restoration of large data sets. (Lakshmi & Rani, 2018, pp. 802-806)

- **Cryptocurrencies:**

Digital or virtual currencies that lack a physical form and are not issued by any central bank or monetary authority. Independent of local or global currencies, cryptocurrencies are generated by sophisticated computer systems and traded on blockchain technology platforms. (Aicha Boutalja, 2022, p. 185)

3. Motivations and Importance of Implementing Digital Transformation in Banks:

3.1. Motivations for Implementing Digital Transformation in Banks:

- The 2008 mortgage crisis marked a significant upheaval, altering the global landscape and regulatory framework of banking institutions.
- Intensified competition due to the entry of new market participants and ongoing rivalry among established banks. (Benchouk Amina, 2019-2020, pp. 14-15)

Additional driving factors include: (Miada Belaiach, 2014-2015, pp. 18-19)

- Accelerated advancements in communication technologies, devices, and software.
- Staff shortages faced by numerous financial institutions and banks.
- Privacy concerns stemming from incidents of theft and embezzlement.
- Security issues, which are paramount in payment methods and a significant societal concern.
- A new competitive milieu that compels banks to innovate and swiftly transition to digital processes.
- The broader ecosystem encompassing business, social, and environmental systems, alongside global financial upheavals, economic and geopolitical shifts, demographic changes, and unexpected events.

3.2. Importance of Implementing Digital Transformation in Banks:

Digital transformation is crucial for banks to enhance access to financial services and play a pivotal role in advancing technological infrastructure. It fosters an optimal environment by modernizing branch systems, which is essential for digital adaptation, thereby attracting a

vast array of new customers for online and mobile transactions including purchases, payments, and money transfers. (Ismail Mohamed Al-Taweir, 2022, p. 260)

Evidence suggests that digital transformation redefines and seeks to bolster the banking sector's efficiency by providing system services to customers, such as end-to-end payment tracking both locally and internationally, and facilitating direct product exchanges. The availability through electronic payment methods can decrease service costs if executed electronically.

Therefore, digital transformation has become indispensable for banks aspiring to evolve and refine their services and to simplify customer access. It entails the comprehensive integration of technology within the banking system, impacting both internal and external operational practices significantly. This transformation aims to deliver services swiftly and effortlessly to the targeted public, enhancing the interface between public and private sectors. (Abderrahman Mohamed Suleiman Rachwan & Zeinab Abdel Hafid Ahmed Kasim, 2020, p. 10)

4. Impact of Digital Transformation on the Quality of Banking Services:

- **Enhancing Customer Service through Digital Design:** The digital service design for customers conceptualizes the stages of the customer journey, understanding their personas and needs via design thinking principles. This integration of customer data across banking platforms, including the use of social media, aids in comprehending and enhancing customer satisfaction and behaviors.
- **Standardizing Customer Interactions:** Digital transformation in customer service seeks to standardize the steps of customer interactions into a unified system that covers all phases of the customer's online journey. It involves interacting with customers using consistent tools, possibly the same personnel, with uniform information throughout the interaction process. This uniformity saves time and effort for both the customer and the bank staff.
- **Integrating Digital Touchpoints:** Linking bank applications on smartphones to customer profiles facilitates integration across SMS, apps, and social media communications, significantly improving customer service via digital technologies. (Daghnouch Al-Atra, 2023, p. 37)

III. Methodological Framework:

The methodology of this study focuses on examining the impact of digital transformation on banking service quality by employing various data collection and analysis techniques.

1. Study Population and Sample:

The population includes all individuals, whose characteristics and responses are extrapolated to represent the general target group." These elements or units may include individuals, institutions, or other entities.(Hamza Mohamed Doudin, 2013, p. 24) In this study, the statistical population is represented by the Algerian External Bank (BEA).

The statistical sample is a subset of the entire study population that possesses the same characteristics and attributes as the original population and serves as its representative. Data is systematically collected from a sample drawn from this population to investigate the research question, with results intended to be applicable to the broader group. The statistical sample in this study consists of employees at Branch 42 of the Algerian External Bank in the Annaba Province.

A simple random sampling method was employed to select the sample. A total of 45 paper questionnaires were distributed to employees at the bank, and 42 completed questionnaires were retrieved. These were deemed valid for statistical analysis and met all the required conditions for inclusion in the study.

2. Study Tool:

The primary instrument for data collection is a questionnaire, favored for its straightforwardness and efficiency. This questionnaire was developed based on insights gathered from prior research and comprises 28 items related to the study's theme. The questionnaire is structured into three parts:

- **First Part:** Personal characteristics of the sample members, including gender, age, years of experience, and education level.
- **Second Part:** Focuses on digital transformation, encompassing 16 statements split into the following dimensions:
 - **First Dimension:** Digital technologies, covering statements 1 to 8.
 - **Second Dimension:** Customer experience, covering statements 9 to 16.
- **Third Part:** Pertains to improving the quality of banking services, including 12 statements, numbered 1 to 12.

A five-point Likert scale was employed for response options: strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5), as detailed in Table (01).

Table 01: Five-point Likert Scale

Rating	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Degree of Agreement	5	4	3	2	1

Source: Developed by the researcher based on the five-point Likert scale.

To determine response levels within the sample, the range on the five-point Likert scale is calculated by deducting the minimum value from the maximum and dividing this by the number of scale divisions, aiding in the nuanced interpretation of response intensity, as detailed in Table (02).

Table 02: Significance of Categories on the Five-point Likert Scale

Category Number	Category Range	Category Significance
01	[1-1.8[	Very Low Agreement
02	[1.8-2.6[	Low Agreement
03	[2.6-3.4[	Moderate Agreement
04	[3.4-4.2[	High Agreement
05	[4.2-5[	Very High Agreement

Source: Developed by the researcher based on the five-point Likert scale.

2.1. Validity of the Questionnaire:

- **Face Validity:** The initial version of the questionnaire was subjected to review by three expert professors from the faculty where the research was conducted. Their feedback led to the revision and refinement of certain statements to better align with the study's objectives and thematic focus.
- **Construct Validity:** This was verified through the Pearson correlation coefficient, which quantifies the correlation between each statement and the associated dimension it aims to measure.

Table 03: Construct Validity of Digital Transformation Dimension Statements

Dimension	Number	Pearson Correlation Coefficient	Significance Level (Sig)
Digital Technologies	1	0.565**	0.000
	2	0.582**	0.000
	3	0.625**	0.000
	4	0.739**	0.000
	5	0.546**	0.000
	6	0.791**	0.000
	7	0.437**	0.004
	8	0.472**	0.002
Customer Experience	9	0.674**	0.000
	10	0.849**	0.000
	11	0.635**	0.000
	12	0.845**	0.000

	13	0.617**	0.000
	14	0.674**	0.000
	15	0.738**	0.000
	16	0.634**	0.000
	17	0.674**	0.000
	18	0.849**	0.000

Source: Developed by the researcher based on SPSS version 26 outputs.

All Pearson correlation coefficients are positive, with significance levels below the 0.05 threshold, confirming the ability of the items to accurately measure the constructs they are designed to assess.

Table 04: Construct Validity of Banking Services Quality Dimension Statements

Number	Pearson Correlation Coefficient	Significance Level (sig)
1	.506**	.0010
2	.508**	.0010
3	.649**	.0000
4	.777**	.0000
5	.743**	.0000
6	.710**	.0000
7	.755**	.0000
8	.741**	.0000
9	.766**	.0000
10	.554**	.0000
11	.664**	.0000
12	.472**	.0020

Source: Developed by the researcher based on SPSS version 26 outputs.

This table also demonstrates positive Pearson correlation coefficients for the "quality of banking services" dimension, with significance levels below the 0.05 threshold, validating the items' effectiveness in measuring the intended constructs.

2.2. Reliability of the Study Tool

Reliability pertains to the consistency of results if the study were to be replicated under similar circumstances. The stability and dependability of the questionnaire and its dimensions were evaluated using the Cronbach's alpha coefficient. A Cronbach's alpha value above 0.6 validates the reliability of the questionnaire, proving its consistent performance in measuring the intended constructs.

Table 05: Cronbach's Alpha Coefficient for the Questionnaire

Variables	Number of Statements	Cronbach's Alpha Coefficient
Digital Technologies	8	.7460
Customer Experience	8	.8560
Digital Transformation	16	.8510
Banking Service Quality	12	.8660
Total Questionnaire	28	.9060

Source: Developed by the researcher based on SPSS 26 outputs.

Cronbach's alpha coefficient for all questionnaire statements reached 0.906, an excellent value as it is higher than the acceptable threshold of 0.60. The alpha coefficients for the study dimensions range between 0.746 and 0.866, all above 0.60, confirming that the questionnaire is reliable and valid for use in analysis.

3. Statistical Methods:

In this research, the Statistical Package for Social Sciences (SPSS) was utilized to perform various statistical analyses:

- **Frequencies and Percentages:** Employed to delineate the demographic and other characteristics of the sample population.
- **Mean:** This measure of central tendency was used to gauge the average level of responses from study participants for each questionnaire item, facilitating the ranking of statements according to their mean scores.
- **Standard Deviation:** A measure of variability that shows the dispersion of responses around the mean.
- **Pearson Correlation Coefficient:** Employed to determine the strength and direction of linear relationships between variable pairs and to affirm the construct validity of questionnaire items.
- **Cronbach's Alpha Coefficient:** Used to ascertain the reliability of the questionnaire, ensuring its consistency across different administrations.
- **Normality Test:** Conducted to ensure the data distribution conforms to a normal distribution, which is a prerequisite for many parametric statistical tests.
- **Simple Linear Regression:** Implemented to examine the hypotheses related to the effects of digital transformation on various banking service quality metrics.

4. Presentation and Analysis of Field Study Results:

4.1. Presentation and Analysis of Sample Responses on the Digital Transformation Axis:

The analysis of responses to the digital transformation components was conducted by calculating the arithmetic means for each statement, within each dimension, and across the overall axis.

A. Presentation and Analysis of Sample Responses on Digital Technologies:

The responses regarding digital technologies were analyzed by calculating the arithmetic means and standard deviations for each statement as well as the overall dimension.

Table 06: Arithmetic Mean and Standard Deviation for the Digital Technologies Variable

Number	Statement	Arithmetic Mean	Standard Deviation	Agreement Level	Rank
1	Electronic banking services are used in all transactions	3.21	0.813	Moderate	8
2	Electronic withdrawal and deposit are used regularly	3.43	0.859	High	6
3	The bank relies on artificial intelligence to improve services	3.64	0.692	High	4
4	The bank relies on blockchain technology to enhance security	3.29	0.944	Moderate	7
5	Cloud computing is used for data storage	3.69	0.643	High	3
6	Cryptocurrencies are issued to increase payment efficiency	3.55	0.889	High	5
7	Electronic applications are used to achieve customer satisfaction	3.71	0.742	High	2
8	Electronic devices are used to facilitate transactions	3.76	0.692	High	1
Digital Technologies		3.54	0.474	High	--

Source: Developed by the researcher based on SPSS version 26 outputs.

The table shows that the average score for the digital technologies dimension is 3.54, which indicates a high level of agreement within the range of 3.4 to 4.2. This suggests that respondents generally perceive the presence of digital technologies at the bank positively.

The standard deviation across these items is 0.474, indicating a relatively low level of variability in responses, which suggests a consensus among the respondents regarding the integration of digital technologies. The highest agreement was observed for statement 8 ("Electronic devices are used to facilitate transactions"), which achieved the highest mean of

3.76, while the lowest agreement was for statement 1, with a mean of 3.21, reflecting moderate agreement.

B. Presentation and Analysis of Sample Responses on Customer Experience:

Analysis of responses regarding the customer experience dimension is carried out using the arithmetic mean and standard deviation for each statement and for the dimension overall.

Table 07: Arithmetic Mean and Standard Deviation for the Customer Experience Variable

Number	Statement	Arithmetic Mean	Standard Deviation	Agreement Level	Rank
1	Customers are aware of all digital services provided by BEA Bank	3.64	0.791	High	7
2	BEA Bank customers are aware of all procedures to access banking services	3.71	0.774	High	6
3	BEA Bank customers face difficulties in using digital services	3.62	0.623	High	8
4	Customers are satisfied with the services provided by BEA Bank	3.83	0.660	High	3
5	Customers trust the services provided by BEA Bank	3.76	0.576	High	5
6	Customers adapt to the services provided by BEA Bank	3.88	0.772	High	1
7	Customers feel comfortable dealing with BEA Bank	3.81	0.740	High	4
8	Customer experience with BEA Bank is increasing	3.86	0.783	High	2
Customer Experience		3.76	0.508	High	--
Digital Transformation		3.65	0.421	High	--

Source: Developed by the researcher based on SPSS version 26 outputs.

The arithmetic mean for the customer experience dimension is 3.76, indicating a high level of agreement (within the range of 3.4-4.2), suggesting that respondents are very positive about their customer experience in the context of digital transformation at BEA Bank. The standard deviation is 0.508, showing a moderate level of dispersion in the responses, which denotes a general consensus.

The highest arithmetic mean is 3.88 for statement 6, indicating strong adaptability of customers to the services provided by BEA Bank. Conversely, the lowest arithmetic mean is

3.62 for statement 3, highlighting some difficulties faced by customers in using digital services, yet still reflecting a high level of agreement overall.

The arithmetic mean for the digital transformation axis is 3.65, corresponding to a high level of agreement, demonstrating a strong endorsement of digital transformation initiatives at the bank. The standard deviation for this axis is 0.421, indicating a consistent pattern in responses across this dimension.

4.2. Presentation and Analysis of Sample Responses on the Axis of Banking Service Quality:

The responses related to the quality of banking services are analyzed through the arithmetic mean for each statement and across the overall axis. This analysis helps illustrate how digital transformation has enhanced the perceived quality of services provided by the bank.

Table 08: Arithmetic Mean and Standard Deviation for the Banking Service Quality Variable

Number	Statement	Arithmetic Mean	Standard Deviation	Agreement Level	Rank
1	BEA Bank strives to improve the quality of its services	3.67	0.846	High	11
2	BEA Bank monitors the use of electronic banking applications by its customers and resolves their technical issues	3.69	0.749	High	9
3	Profits of BEA Bank have significantly increased due to digital transformation applied to its services	3.71	0.805	High	7
4	Modern electronic services are of higher quality than traditional banking services	3.90	0.576	High	4
5	Modern electronic services are safer than traditional banking services	3.93	0.601	High	3
6	Modern electronic services have facilitated transactions between the bank and customers through electronic cards and ATMs	3.81	0.634	High	6
7	Relying on electronic services achieves customer satisfaction	3.95	0.539	High	2
8	The effectiveness of digitalization is further evidenced by the efficiency improvements seen in the bank's operations through its app.	3.71	0.673	High	8

9	Modern electronic services are easier to use than traditional banking services	3.69	0.563	High	10
10	Digitization in BEA Bank has saved time and effort	4.05	0.697	High	1
11	Modern electronic services are more trustworthy than traditional banking services	3.88	0.803	High	5
12	BEA Bank takes into account customer feedback when digitizing its services	3.38	0.697	Moderate	12
Banking Service Quality		3.78	0.438	High	--

Source: Developed by the researcher based on SPSS version 26 outputs.

From the provided data, the arithmetic mean for the "Quality of Banking Services" axis stands at 3.78, indicating a strong consensus within the high agreement range of [3.4–4.2]. This demonstrates that respondents recognize a high quality of banking services at the studied bank. The standard deviation for this axis is 0.438, indicating a satisfactory level of response consistency within the sample.

The agreement levels for individual statements within this axis vary from high to moderate. The highest arithmetic mean, at 4.05, is observed for statement number (10), indicating a high level of agreement. Conversely, the lowest arithmetic mean, at 3.38, corresponds to statement number (12), which reflects a moderate level of agreement. These results suggest that while the overall quality of banking services is rated highly.

5. Testing the Study Hypotheses:

Prior to hypothesis testing, the normality of the study variables was verified using the Kolmogorov-Smirnov and Shapiro-Wilk tests, as detailed in Table 09.

Table 09: Normal Distribution Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Z Value	Degrees of Freedom	Significance Level (sig)	Z Value	Degrees of Freedom	Significance Level (sig)
Digital Transformation	,0980	42	,2000	,9790	42	,6420
Banking Service Quality	,1030	42	,2000	,9570	42	,1150

Source: Developed by the researcher based on SPSS version 26 outputs.

The significance level (Sig) for digital transformation, according to the Kolmogorov-Smirnov test, is 0.200, which exceeds the threshold of 0.05. Similarly, the significance level

according to the Shapiro-Wilk test is 0.642, also exceeding the threshold of 0.05. Furthermore, the significance level (Sig) for banking service quality, as per the Kolmogorov-Smirnov test, is 0.200, and according to the Shapiro-Wilk test, it is 0.115, both of which are greater than the threshold of 0.05.

5.1. Testing the First Hypothesis

This hypothesis posits: *"There is a statistically significant effect at the significance level ($\alpha \leq 0.05$) of digital transformation on the quality of banking services at the External Bank of Algeria - Annaba."* The results of the simple linear regression analysis are summarized in Table 10.

Table 10: Simple Linear Regression Test Results for the First Hypothesis

Independent Variable	Dependent Variable	Correlation Coefficient (R)	Determination Coefficient (R ²)	Calculated T-value	Significance Level (Sig)
Digital Transformation	Banking Service Quality	0.630	0.397	5.127	0.000

Source: Developed by the researcher based on SPSS 26 outputs.

The regression analysis validates the model, as shown by a T-value of 5.127, surpassing the critical threshold of 1.99. The significance level (Sig) at 0.000 far exceeds the standard 0.05 cutoff, confirming a significant positive effect of digital transformation on the quality of banking services. The correlation coefficient (R) of 0.630 suggests a strong positive relationship, while the determination coefficient (R²) of 0.397 indicates that 39.7% of the variation in banking service quality is explained by digital transformation.

5.2. Testing the Second Hypothesis

This hypothesis posits: *"There is a statistically significant effect at the significance level ($\alpha \leq 0.05$) of digital technologies on the quality of banking services at the External Bank of Algeria - Annaba."* The results are summarized in Table (11).

Table 11: Simple Linear Regression Test Results for the Second Hypothesis

Independent Variable	Dependent Variable	Correlation Coefficient (R)	Determination Coefficient (R ²)	Calculated T-Value	Significance Level (Sig)
Digital Technologies	Banking Service Quality	0.449	0.202	3.178	0.003

Source: Developed by the researcher based on SPSS version 26 outputs.

Further analysis shows a T-value of 3.178, also above the critical 1.99 mark, with a significance level (Sig) of 0.003, validating the statistical reliability of these findings. Additionally, the correlation coefficient (R) of 0.449 suggests a moderate positive correlation between digital technologies and the quality of banking services, accounting for 44.9% of the relationship. The coefficient of determination (R^2) at 0.202 indicates that digital technologies explain 20.2% of the variability in banking service quality. These findings substantiate the second hypothesis.

5.3. Testing the Third Hypothesis:

This hypothesis states: *"There is a statistically significant effect at the significance level ($\alpha \leq 0.05$) of customer experience on the quality of banking services at the External Bank of Algeria - Annaba."* The results of the simple linear regression analysis for this hypothesis are presented in Table (12).

Table 12: Simple Linear Regression Test Results for the Third Hypothesis

Independent Variable	Dependent Variable	Correlation Coefficient (R)	Determination Coefficient (R^2)	Calculated T-Value	Significance Level (Sig)
Customer Experience	Banking Service Quality	0.624	0.389	5.045	0.000

Source: Developed by the researcher based on SPSS version 26 outputs.

The data presented in Table (12) confirm the validity of the simple linear regression model. This conclusion is underscored by a T-value of 5.045, which surpasses the critical T-value of 1.99, confirming the model's statistical relevance. Additionally, the significance level (Sig) of 0.000, significantly below the 0.05 limit, solidifies the hypothesis with robust confidence.

The correlation coefficient (R) of 0.624 indicates a strong positive relationship between customer experience (independent variable) and banking service quality (dependent variable), signifying that as customer experience improves, the quality of banking services also improves significantly. Additionally, the determination coefficient (R^2) of 0.389 reveals that 38.9% of the variation in banking service quality can be attributed to customer experience. These findings validate the third hypothesis.

IV. Conclusion:

The results of the research indicate that digital transformation extends beyond simply integrating digital technologies into business practices. Instead, it represents a comprehensive reengineering and restructuring of business strategies and methodologies, aligning them with a new strategic framework. In the context of rapid global advancements in recent years, digital transformation has emerged as an indispensable necessity for organizations to adapt to evolving market demands and maintain competitiveness.

The banking sector, in particular, has undergone significant advancements, leveraging digital transformation to enhance service quality, build customer trust, and increase transaction volumes. Modern banking institutions strive to achieve superior service quality

by utilizing digital applications and interactive platforms, enabling seamless communication between banks and their customers. These tools empower customers to perform all essential transactions digitally, minimizing the need for physical branch visits while ensuring operational efficiency and customer satisfaction.

- Results:

The study yielded several key findings from both theoretical and practical perspectives, summarized as follows:

- Digital transformation is identified as a fundamental strategy for banks aiming to deliver innovative and creative banking services, shifting away from traditional service delivery methods.
- Successful adoption of digital transformation necessitates robust technological infrastructure and the availability of highly skilled personnel to implement and manage digital systems effectively.
- The quality of banking services is inherently linked to customer expectations. When customer perceptions of service meet or exceed their expectations, it reflects high service quality.
- Providing high-quality banking services enables banks to gain a competitive edge, positioning them to capture a larger share of the market and build lasting customer loyalty.

V. Bibliography List :

1. Al-Atra, D. (2023). Contribution of digital transformation in improving the quality of electronic banking services. *Economic Sciences*, 16(1), 36.
2. Al-Taweir, I. M. (2022). Evaluation of the use and effectiveness of financial services under digital transformation and e-marketing: An applied study on Islamic banking windows in Libya. *The 6th International Scientific Conference of the Faculty of Economics*, Al-Khums, 260.
3. Belaiach, M. (2014-2015). Impact of electronic banking on monetary policy: Comparative study Algeria - France. PhD Thesis in Economic Sciences, Specialization in Economics of Money, Banks, and Financial Markets, University of Biskra, 18–19.
4. Benchouk, A. (2019-2020). Digital transformation of banks and customer resistance factors. Project Report for the Professional License in Banking and Financial Management, École Supérieure de Technique Essaouira Marrakech, 13.
5. Boutalja, A. (2022). Central digital currencies and their role in mitigating the risks of cryptocurrencies. *Academy for Social and Human Studies*, 14(2), 185.
6. Bris, A. K., & Jaber, W. K. (2021). Digital transformation technology and its impact on strategic performance of banks. *Administrative Sciences*, 16(65), 207. College of Management and Economics, University of Karbala, Iraq.
7. Doudin, H. M. (2013). Advanced statistical analysis using SPSS. Dar Al-Maseerah for Publishing, Amman, Jordan, 24.

8. Elgohary, E. M. (2022). The role of digital transformation in sustainable development. *Informatics Media and Communication Technology*, 4(1), 75. Beni-Suef University, Egypt.
9. Eltabei El-Danoun, O. M. (2020). Impact of digital transformation on financial performance of Egyptian banks. *Accounting Studies*, 4(2), 553.
10. Khwathra, S. (2021). Digital transformation during and beyond the coronavirus pandemic. *Algerian Journal of Legal and Political Sciences*, 58(2), 109.
11. Lakshmi, S., & Rani, P. J. (2018). Cloud computing in banking: An overview. *Research Review International Journal of Multidisciplinary*, 802–806.
12. Mersi, K., & Moussaoui, H. (2023). Application of digital transformation as a mechanism to improve banking performance: A case study of a multinational bank. 6(1), 526.
13. Mosilehi, H. (2021). *Digital transformation: The future framework for systems and information technology* (1st ed.). Egypt, 12.
14. Rachwan, A. M. S., & Kasim, Z. A. H. A. (2020). The role of digital transformation in enhancing the efficiency of bank performance and attracting investments. *Conference on Information Technology and Business*, 10.
15. Sonia, B. (2019-2020). *Digital transformation of retail banking: Challenges, impacts, case of BNP Paribas El Djazair*. Master's Thesis in Finance and International Commerce, Mouloud Mammeri University of Tizi-Ouzou, 12.
16. Suleiman, N. (2020). *Specialized media technologies: Future dynamics*. Al-Riyada for Publishing and Distribution, Dubai (1st ed.), 20.