Modeling the Relationship between E-Service Quality and Customer Satisfaction: An Empirical Study of Al Salam Algeria Bank

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Abstract:

The domain of financial technology has witnessed a significant evolution towards digitization, propelled by groundbreaking advancements in information and communications technology. Financial entities have transitioned from conventional operational frameworks to embrace digital innovations extensively. This research delves into the ramifications of electronic service quality on customer satisfaction at Bank El Salam in Algeria. Employing a methodological approach, the study distributed questionnaires to a sample of 60 clients and analyzed the data utilizing SPSS software version 22. The findings reveal that electronic service quality exerts a substantial and statistically significant impact on customer satisfaction, which is predicated upon three pivotal determinants: customer expectations, perceived performance, and the extent of promise fulfillment at Bank El Salam Algeria.

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INTRODUCTION

In contemporary times, the world is experiencing an unprecedented wave of rapid transformations and developments across all facets of life, prominently marked by the digital revolution spurred by advances in communication and information technologies. This revolution has instigated profound changes across diverse sectors, catalyzing the emergence of novel service products through the provision of electronic services. These services are characterized by enhanced accessibility for customers, reduced time and effort, and diminished acquisition costs (Bessachi and Announ 2025).

With increasing competition in electronic services and more customers comparing service quality, financial institutions are driven to improve their offerings. This enhancement is crucial to meet the elevated expectations of customers, thereby ensuring their satisfaction and fostering loyalty.

1. **Problem Statement:** The digital revolution has notably transformed various sectors, with banks and financial institutions being particularly impacted. This transformation has not only altered the type and quality of services provided but has also necessitated strategic adaptations to ensure institutional survival, continuity, and competitive advantage. In this dynamic context, banks have concentrated their efforts on refining the quality of their electronic services to secure and enhance customer satisfaction. Thus, the primary research question that this study seeks to address is:

What is the impact of E-Service Quality on Customer Satisfaction at the Al salam Bank Algeria?

2. **Study Hypotheses:** To comprehensively address the problem statement, this study proposes the following main hypothesis:

−There is a statistically significant impact of **E-Service Quality** on the **Customer Satisfaction** in Al Salam Bank Algeria at a 5% significance level.

This main hypothesis is bolstered by several sub-hypotheses:

−There is a statistically significant impact of E-Service Quality on the Expectation Dimension in Al Salam Bank Algeria at a 5% significance level.

−There is a statistically significant impact of E-Service Quality on Perceived Performance dimension in Al Salam Bank Algeria at a 5% significance level.

−There is a statistically significant impact of E-Service Quality on Conformity or Non-conformity dimension in Al Salam Bank Algeria at a 5% significance level.

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3. Study Importance: This research is characterized by multiple unique aspects:

- The novelty of the topic within the domain of digitalization, an area where digital services have become essential to contemporary transactions.

- The focus on delivering e-services at Al Salam Bank Algeria, recognizing the reliance of modern banking operations on digital technologies to achieve operational success.

4. Study Objectives: The objectives of this study are designed to enhance understanding and practical outcomes:

- Identify the study variables, specifically E-Service Quality and Customer Satisfaction.

- Develop practical recommendations for institutions to improve their e-service quality, thereby enhancing customer satisfaction and loyalty.

- Develop practical recommendations for institutions to improve their e-service quality, thereby enhancing customer satisfaction and loyalty.

- It furnishes data and insights that may underpin subsequent investigations into E-Service Quality and Customer Satisfaction.

5. Methodology: The study employs a dual approach, integrating descriptive and analytical methods to investigate the relation between E-Service Quality and Customer Satisfaction.

It systematically examines key concepts and their implications within a theoretical framework, while also assessing the impact of E-Service Quality strategies on Customer Satisfaction through data from surveys at Al Salam Bank Algeria.

The First Topic: E-Service Quality

In the current digital era, technological advancements have become a cornerstone in the marketing strategies of various institutions, catalyzing fierce competition in the virtual space. A primary challenge faced by these entities is forging interactive relationships with customers that elevate the perceived value of their products and services. This challenge has given rise to the concept of digital marketing, which encompasses the strategies employed by an institution to meet its objectives across digital platforms.

First section: Definition of E-Service Quality:

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E-services primarily involve web-based or interactive services available through the internet, emphasizing the provision of effective and efficient services via electronic channels. (Firdous & Farooqi, 2019)E-services are broadly defined as services facilitated over the internet using information and communication technology (Al-Nuaimi, Mahmood, Low, & Jebur, 2013)with some interpretations emphasizing the role of a website in enabling shopping, purchasing, and delivery in an effective and efficient manner. (Kaur, Kaur, Pandey, & Joshi, 2020)

Furthermore, e-service quality is characterized by customers' general perceptions, judgments, and evaluations of services anticipated to be delivered through electronic media. (Firdous & Farooqi, 2019)

E-service quality is defined by the comprehensive assessments and impressions customers form about the quality of electronic service delivery in digital markets. It includes both the outcomes experienced by users and their views on the service recovery processes.

This concept reflects the balance customers perceive between their expected and actual values of online services, highlighting an organization's commitment to addressing the complexities of digital service delivery. Crucially, the quality of these electronic services is a key factor in determining an organization's success or failure in providing services via the internet or other information technologies. By adeptly managing these expectations and perceptions, organizations can significantly improve their operational effectiveness and customer satisfaction, thus gaining a competitive advantage in the digital-driven market.

Second section: Dimensions/models of e-service qualite:

E-service quality stands out from traditional service quality metrics. Both evaluate the difference between expected and delivered services, but e-service quality is specifically designed for digital environments. Research indicates a lack of agreement on the exact dimensions of e-service quality, though several commonly referenced dimensions have become standard within the discipline.

E-Service Quality Dimensions by Various Researchers:

Researchers have proposed various models to define e-service quality dimensions, among which the SERVQUAL model stands out as a particularly

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impactful framework. Originally proposed by American marketing scholars Valarie Zeithaml, Leonard Berry, and A. Parasuraman in 1988, the SERVQUAL model is designed to analyze both the dimensions and perceptions of service quality. Despite its age, this model continues to be highly regarded and widely utilized in various studies.

In the digital commerce sector, many scholars have revised the SERVQUAL model to suit the online environment, resulting in the creation of various significant adapted models: (Rita, Oliveira, & Farisab, 2019)

•The WebQual model developed by (Barnes & Vidgen, 2002) in 2002;

•The eTailQ model created by (Wolfinbarger & Gilly, 2003) 2003;

•The ES-Qual model formulated by (Parasuraman, Zeithaml, & Malhotra, 2005)in 2005.

Table 01: models of e-service quality

Models	researchers	dimensions
Site qual	Yoo and Donthu (2001)	Usability, visual design, operational speed, and security measures.
WebQual	Lociacono, Watson and Goodhue(2002)	Suitability of information for tasks, user interaction, reliability, speed of response, layout, user-friendliness, visual attractiveness, creativity, emotional engagement, cohesive communication, operational processes, and interchangeability.
eTailQ	(Wolfinbarger & Gilly , 2003)	Website layout, dependability/delivery, confidentiality/security, client support.
E-S-QUAL AND E-Rec-SQUAL	(Parasuraman, Zeithaml, & Malhotra, 2005)	Efficacy, order completion, system uptime, promptness, redress, and accessibility.
WEB-QUAL	)Barnes and Vidgen(2002 ،	User-friendliness, Layout, Data quality, Credibility, Compassion.

Source :(Firdous & Farooqi, 2019)

Second Topic : Customer satisfaction :

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First Section: Definition of Customer satisfaction

This concept measures the gap between a customer's initial expectations and the actual performance of a product post-purchase, assessing the extent of deviation from those expectations., Satisfaction is an evaluative judgment that results when comparing perceived service and expected service (BARBARAY, 2016).

According to Kotler and Keller, it reflects the feelings a person has after evaluating a product's performance against their prior expectations (Tabelessy, Sitaniapessy, & Lekatompessy, 2023). Arokiasamy (2013, p. 15) defines it as the customer's response to the evaluation of the gap between their initial expectations and the actual product performance after use.

These interpretations highlight that satisfaction encompasses three levels, essentially reflecting the variance between expected and actual performance.

- Performance less than expectations = Customer dissatisfied
- Performance equal to expectations = Customer satisfied
- Performance exceeds expectations = Customer very satisfied

Second Topic: Dimensions of customer satisfaction:

➢ **Customer expectations:** These are the preconceived standards customers hold prior to buying or using a product, which they use to gauge the actual performance of the product or service (Iskandar, Astuti, & Indrajaya, 2024).

➢ **Perceived Performance:** Customer expectations encapsulate the beliefs consumers hold before purchasing or trying a product. These expectations are used as benchmarks for assessing the performance of a product or service (Manoppo, 2014)In turn, customer perception influences five pivotal factors(Tulcanaza-Prieto, Cortez-Ordoñez, & Lee, 2023):

- Personalization (PER).
- Trust (TRU).
- Customer Loyalty (LOY).
- Customer Satisfaction (SAT).

➢ **Customer Conformity (fixation):** This concept captures the difference between customers' initial expectations and the actual performance experienced

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after purchase, quantifying how much the actual product performance deviates from what was anticipated.

Third Section: Benefits of customer satisfaction

− Customer satisfaction is a critical driver of business success. Research by (Rahimić & Uštović, 2012)indicates that enhancing customer satisfaction is a key performance indicator for international companies.

− Effective customer satisfaction boosts profitability, particularly through informal verbal endorsements by satisfied customers. These personal recommendations typically influence between 9 to 10 other people, potentially increasing company profits by more than 25%. It is estimated that half of American businesses benefit significantly from "word-of-mouth" marketing (Ilieska, 2013).

− Customer satisfaction is crucial for cultivating a robust customer base and generating repeat business (Patil & Rane, 2023).

− Additionally, customer satisfaction is a vital determinant in maintaining the resilience and flexibility of a business's customer base and in attracting new clients. By evaluating the extent of customer satisfaction with a product or service, one can clearly see how well the desires and needs have been aligned with customer expectations(Sukardi, Abu Jahid, & Hendrawan, 2023).

Third Topic : Field Study :

A study was performed to assess the effect of e-service quality on customer satisfaction at financial institutions, focusing on Al Salam Bank Algeria's clients. The data collection tool used was a divided questionnaire, consisting of three parts:

1. Details the personal attributes of the respondents.
2. Addresses the quality of electronic service.
3. Examines aspects of customer satisfaction.

First Section: Study Population and Sample:

1. Study Population: This group included clients from Al Salam Bank Algeria, noted for their variety in terms of gender, age range, educational background, and length of relationship with the bank.

2. Study Sample: Sixty bank clients were randomly chosen for participation in this research, ensuring a representative cross-section of the bank's customer demographics.

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3. Study Tool: The primary instrument for data collection was a questionnaire, which was subsequently processed using SPSS version 23 to fulfill the objectives of the study.

Second Section: Statistical Processing Methods:

1. General Characteristics of Sample:

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Table 01: Description of Sample Characteristics

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Gender			Age			Educational Level			Years of Dealing with the Bank		
Description	Frequency	Percentage	Description	Frequency	Percentage	Description	Frequency	Percentage	Description	Frequency	Percentage
Male	45	%75	Less than 30 years	4	%6.7	Secondary or less	5	%8.3	Less than 5 years	38	%63.3
Female	15	%25	From 30 to less than 40 years	14	%23.3	University level	44	%73.3	From 5 to 10 years	19	%31.7
			From 40 to less than 50 years	24	%40.0	Postgraduate studies	11	%18.3	More than 10 years	3	%5.0
			50 years and older	18	%30.0						

Source: The table was prepared based on the questionnaire data and processed using SPSS v22.

According to Table 01, there is a demographic variation within the sample, with approximately 52.9% males and 47.1% females, the latter slightly lower due to

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the randomness of the selection. An age breakdown shows that a small fraction, 6.7%, are under 30 years, while 23.3% fall within the 30-40 year age group.

The largest segment, 40%, falls within the 40-50 year range, and the remaining 30% are aged over 50 years. In terms of educational attainment, 8.3% of participants have secondary or lower education, the smallest group, whereas a significant majority, 73.3%, have completed university level education, and 18.3% hold postgraduate degrees. Additionally, it is noted that 63.3% of the sample have been banking with the institution for less than five years, 31.7% have been customers for five to ten years, and a small fraction, 5%, for more than ten years.

2. Validity and Reliability Test:

2.1 Validity Test: The questionnaire's reliability was verified through the Pearson correlation coefficient and significance tests, ensuring consistent responses across multiple dimensions. The detailed outcomes are presented in the subsequent table.

Table 02: Internal Consistency Validity of the Questionnaire

Axis	Dimensions	Statement	Pearson Correlation Coefficient	Significance Level
E-Service Quality	E-Service Quality	QX1	.844**	0.000
		QX2	.764**	0.000
		QX3	.783**	0.000
		QX4	.846**	0.000
		QX5	.866**	0.000
		QX6	.838**	0.000
		QX7	.892**	0.000
		QX8	.809**	0.000
Customer Satisfaction	Expectation	QY1	.920**	0.000
		QY2	.897**	0.000
		QY3	.934**	0.000
		QY4	.864**	0.000
	Perceived Performance	QY5	.789**	0.000
		QY6	.847**	0.000
		QY7	.889**	0.000
		QY8	.880**	0.000
	Customer Conformity	QY9	.721**	0.000
		QY10	.718**	0.000

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| | | QY11 | .818** | 0.000 |
| | | QY12 | .831** | 0.000 |

Source: The table was prepared based on the questionnaire data and processed using SPSS v22.

Table 02 reveals that correlation coefficients between the study's dimensions and their associated items vary between 0.721 and 0.934. These values represent strong and statistically significant correlations, with the significance level reaching 0.000. This outcome signifies that the data exhibit robust internal consistency, affirming that each questionnaire item accurately reflects its dimension.

2.2 Reliability of the Study Tool: The reliability of study tool was assessed using Cronbach's Alpha coefficient, results were as follows:

Table 03: Reliability Test of the Questionnaire Items

Statement	Items	Cronbach's Alpha Value (Questionnaire)
Independent Variable (E-Service Quality)	8	0.938
Dependent Variable (Customer Satisfaction)	12	0.959
Dimension 1: Expectation	**4**	**0.934**
Dimension 2: Perceived Performance	4	0.898
Dimension 3: Customer Conformity	4	0.900
The entire questionnaire	20	0.973

Source: prepared based on the questionnaire data and processed using SPSS v22.

The study's reliability was verified using the Cronbach's Alpha coefficient, which confirmed a high consistency level across the questionnaire's dimensions with values over 80%, exceeding the minimum threshold of 60%.

Fourth Topic: Analysis of Results

First Section: Statistical Analysis of Variables:

Data analysis will be conducted using SPSS v23 software, emphasizing the agreement and consistency across each item in the questionnaire. Data will be

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processed using SPSS v23 to assess agreement and consistency within the questionnaire responses, calculating means and standard deviations for the measured variables. The analysis concludes with hypothesis testing. A five-point Likert scale was employed to determine category lengths, calculated by dividing the total range (5-1=4), by the number of scale points, resulting in a category length of 0.80. The defined levels of agreement are detailed in the following table:

Table 04: Agreement Levels According to Respondents' Choices

Range	From 1 to 1.80	From 1.81 to 2.60	From 2.61 to 3.40	From 3.41 to 4.20	From 4.21 to 5
Importance	Very Low	Low	Medium	High	Very High

Source: researchers' preparation using Likert scale tendencies

Second Section: Descriptive Analysis of Data Related to Digital Marketing Variable:

The subsequent table outlines the sample participants' feedback on assertions concerning the digital marketing aspect:

Table 05: Evaluation of E-Service Quality Variable

Item No.	Statement	Mean	Standard Deviation	Agreement Level
1	The user interface design is user-friendly and appealing.	3.7833	1.26346	High
2	You find that the design elements of the bank's website (images, colors, logo) are consistent with modern web standards.	3.5000	1.04962	High
3	I can easily find the information I am looking for on the website.	3.4167	1.10916	High
4	The documentation and instructions available on the website make it easy to understand how to use the service.	3.6167	1.09066	High
5	I find the information provided on the website to be accurate and up-to-date.	3.5000	1.15714	High
6	I find the information provided on the website to be relevant to my needs.	3.5333	1.22774	High
7	The website provides tools that allow me to control how my personal data is collected and used.	3.4500	1.18501	High

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8	I feel that my personal information is secure on the website.	3.5833	1.04625	High
	E-Service Quality	3.5567	.95374	High

Source: The table was prepared based on the questionnaire data and processed using SPSS v22.

Continuing from Table 05, the results indicate a generally positive user experience with the E-Service Quality, evidenced by an average score of 3.5567. Respondents demonstrated "High" agreement levels across all evaluated statements. Notably, users expressed particular satisfaction with the user-friendly and well-structured website design, as highlighted by high scores for interface design (statement 1, mean 3.7833) and the ease of finding information (statement 3, mean 3.4167).

Additionally, the clarity (statement 4, mean 3.6167) and accuracy (statement 5, mean 3.5000) of the information were well-received, effectively meeting users' needs (statement 6, mean 3.5333). Security concerning personal information was also highly rated, with a substantial mean score for statement 8 (3.5833). However, the relative lower score for statement 7 on data control (mean 3.4500), while still within the "High" agreement category, suggests a potential area for further investigation regarding users' perceptions.

Third Section: Descriptive Analysis of Customer Satisfaction Variable Dimensions:

Table 06: Evaluation of the Customer Satisfaction Variable

Dimension No.	Dimensions	Mean	Standard Deviation	Agreement Level
1	Expectation	3.5433	1.19552	Hight
2	Perceived Performance	3.5533	1.04888	Hight
3	Customer Conformity	3.4067	1.00370	Medium
\	Customer Satisfaction	3.5011	1.00735	Hight

Source: The table was prepared based on the questionnaire data and processed using SPSS v22.

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Table 06 reveals that despite the generally high overall customer satisfaction (mean: 3.5011), there are areas that could benefit from further refinement. Customers hold clear expectations (mean: 3.5433) and perceive that the service generally meets these expectations (mean: 3.5533). However, the dimension labeled "Conformity or Non-conformity" registers a slightly lower mean of 3.4067.

This "Medium" score indicates the presence of occasional mismatches between customer expectations and their actual service experiences. Delving into the causes behind this discrepancy could provide critical insights into enhancing service delivery to achieve more consistent fulfillment of customer expectations.

Fourth Section: Testing the Study Hypotheses:

1. Testing the Main Hypothesis: There is a statistically significant impact of **E-Service Quality** on the **Customer Satisfaction** in Al Salam Bank Algeria at a 5% significance level.

Table 07: One-way ANOVA Analysis of Sample Responses

Statement	Sum of Squares	Degrees of Freedom	Mean Squares	Calculated F-Value	Significance Value (Sig)
Between Groups	51.722	1	51.722	247.506	.000[b]
Within Groups	12.120	58	.209	At Significance Level: Alfa=0.05	
Total Variation	63.843	59		R=(0.900)	R²=(0.810)

Source: Prepared based on the questionnaire data and processed using SPSS v22.

The analysis yielded an F-value of 247.506 with degrees of freedom (1 and 59) and a significance level of 0.000, which is below the 0.05 criterion set for this research. This finding supports the main hypothesis that E-Service Quality significantly affects Customer Satisfaction at Al Salam Bank Algeria.

The strong bond between these variables is further highlighted by a high correlation coefficient of 0.9, suggesting a strong positive link. Furthermore, the determination coefficient of 0.81 indicates that 81% of the variation in customer satisfaction responses among the surveyed banking customers is due to variations in E-Service Quality.

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2. Testing the First Sub-Hypothesis: There is a statistically significant impact of E-Service Quality on the Expectation Dimension in Al Salam Bank Algeria at a 5% significance level.

Table 08: One-way ANOVA Analysis of Sample Responses

Statement	Sum of Squares	Degrees of Freedom	Mean Squares	Calculated F-Value	Significance Value (Sig)
Between Groups	75.200	1	75.200	284.374	.000[b]
Within Groups	15.338	58	.264	At Significance Level: Alfa=0.05	
Total Variation	90.537	59		R=(0.911)	R²=(0.831)

Source: Prepared based on the questionnaire data and processed using SPSS v22.

Table 08 reveals substantial statistical findings: an F-value of 284.374, degrees of freedom (1 and 59), and a significance level of 0.000, far below the study's threshold of 0.05. These results validate the main hypothesis that E-Service Quality significantly influences the Expectation dimension at Al Salam Bank Algeria.

The correlation coefficient is 0.911, reflecting a strong positive association. The determination coefficient of 0.831 shows that 83.1% of the variability in customer satisfaction in the banking sector is due to fluctuations in the Expectation dimension. The remaining 16.9% of variability is due to external factors not included in the model.

3. Testing the Second Sub-Hypothesis: There is a statistically significant impact of E-Service Quality on Perceived Performance dimension in Al Salam Bank Algeria at a 5% significance level.

Table 09: One-way ANOVA Analysis of Sample Responses

Statement	Sum of Squares	Degrees of Freedom	Mean Squares	Calculated F-Value	Significance Value (Sig)
Between Groups	40.124	1	40.124	93.635	.000[b]
Within Groups	24.854	58	.429	At Significance Level: Alfa=0.05	
Total Variation	64.978	59		R=(0.786)	R²=(0.618)

Source: Prepared based on the questionnaire data and processed using SPSS v22.

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Table 09 further elucidates the influence of E-Service Quality, displaying a calculated F-value of 93.635 at degrees of freedom (1 and 59) with a significance level of 0.000 (Sig =), again beneath the 0.05 standard adopted for this study.

The data shows a strong positive relationship with a correlation coefficient of 0.786. Additionally, 61.8% of the variability in customer satisfaction in banking is explained by changes in the Perceived Performance dimension, with the remaining 38.2% influenced by external factors.

4. Testing the Third Sub-Hypothesis: There is a statistically significant impact of digital marketing on Customer Conformity dimension in Al Salam Bank Algeria at a 5% significance level.

Table 10: One-way ANOVA Analysis of Sample Responses Between E-Service Quality and Customer Conformity dimension in Al Salam Bank Algeria

Statement	Sum of Squares	Degrees of Freedom	Mean Squares	Calculated F-Value	Significance Value (Sig)
Between Groups	43.156	1	43.156	111.962	.000^b
Within Groups	22.356	58	.385	At Significance Level: Alfa=0.05	
Total Variation	65.511	59		R=(0.812)	R²=(0.659)

Source: Prepared based on the questionnaire data and processed using SPSS v22.

Table 10 shows that E-Service Quality significantly affects the Customer Conformity dimension at Al Salam Bank Algeria, evidenced by an F-value of 111.962 and a significance level of 0.000, well under the study's 0.05 threshold.

This relationship is strongly positive, as shown by a correlation coefficient of 0.812. Additionally, 65.9% of the variation in responses is explained by E-Service Quality, with the remaining 34.1% influenced by external factors.

Conclusion :

The results of our study clearly show that improving electronic service quality is a key factor in boosting customer satisfaction in the banking sector. It is imperative for financial institutions, particularly banks, to invest in upgrading their electronic services to align with customer expectations and elevate their satisfaction levels. This study offers specific recommendations for banks to refine their digital marketing strategies and augment the quality of their electronic services. Such improvements are pivotal not only in cultivating a favorable brand

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image but also in fostering customer loyalty. Emphasizing the quality of electronic services is essential for maintaining competitiveness in the increasingly digital marketplace.

Study Findings: Based on the field study and simple linear regression analysis of the relationship between electronic service quality and customer satisfaction at Al Salam Bank Algeria, we have drawn several conclusions:

✓ The research established a strong positive correlation between electronic service quality and customer satisfaction. Enhancing these services greatly improves customer satisfaction and encourages increased loyalty to the bank.

✓ Electronic service quality directly affects customer expectations at Al Salam Bank Algeria.

✓ Customer perceptions of performance at Al Salam Bank Algeria are greatly impacted by the quality of electronic services.

✓ The quality of electronic services is key in shaping whether customers' expectations are met or not.

Study Suggestions: In light of the findings, the study offers the following strategic suggestions for Al Salam Algeria Bank and similar institutions:

✓ The bank should focus on improving the user interface of its electronic services to ensure ease of use and accessibility.

✓ Accurate and timely information must be consistently provided through electronic services to bolster trust and achieve higher levels of customer satisfaction.

✓ Significant investment should be made to enhance the security of electronic transactions, thereby protecting customer data and elevating their sense of security.

✓ Regular monitoring and analysis of customer expectations are essential to ensure that the services provided are aligned with their evolving needs and expectations.

✓ Continued development and enhancement of the electronic performance of services are crucial to maintain a satisfactory and sustainable customer experience.

✓ Investment in modern technologies such as artificial intelligence and data analytics is recommended to enhance the quality of electronic services and offer a personalized experience to each customer.

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