

The Impact of Electronic Control Systems on Banking Performance: A Case Study of Natixis Algeria Bank - Mostaganem and Oran Branches

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Abstract :

This study aims to examine the impact of electronic control systems (ECS) on banking performance, focusing on Natixis Algeria Bank's branches in Mostaganem and Oran. Using a descriptive and analytical methodology, data was gathered from 25 employees through a structured questionnaire. Statistical analysis, performed using SPSS version 27, applied multiple linear regression, T-tests, and ANOVA to test the hypotheses. The findings reveal that electronic control systems significantly enhance strategic, functional, financial, and marketing performance. These results highlight the pivotal role of ECS in improving operational efficiency, decision-making, and customer satisfaction, contributing to overall banking performance and competitiveness.

Keywords: Electronic Control Systems, Banking Performance, Digital Transformation, Operational Efficiency, Competitive Advantage.

Jel Classification Codes: G21, O33, L86, M15, C83.

Introduction:

The rapid advancement of digital technologies has fundamentally transformed the banking sector, necessitating a shift from traditional operational frameworks to more sophisticated and efficient electronic control systems. These systems, which encompass a range of digital tools and technologies, play a critical role in enhancing various aspects of banking performance such as decision-making, risk management, and customer service. These systems enable real-time monitoring, data analysis, and automated processes that significantly improve the effectiveness of bank operations. ECS ensures that banks can manage their resources efficiently, reduce errors, and comply with regulatory standards, contributing to overall financial stability and

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customer satisfaction, and underscoring the significance of digital transformation in driving operational excellence and competitive advantage.

A major driving force behind the integration of ECS in the banking sector is digital transformation. Digital transformation encompasses the adoption of new technologies, such as artificial intelligence (AI), big data analytics, and cloud computing to provide actionable insights, streamline decision-making processes, and enhance operational efficiency. The integration of ECS within the broader context of digital transformation not only enhances banking performance but also positions banks to remain competitive in an increasingly competitive and digitalized financial landscape.

On the other hand, banking performance refers to the ability of financial institutions to achieve their strategic and operational goals. This performance is usually assessed by financial metrics such as profitability, return on assets and return on equity, as well as non-financial indicators such as customer satisfaction and service quality. Achieving optimal banking performance requires not only sound financial management, but also the adoption of innovative technologies that simplify processes and enhance the provision of services. Where, the relationship between electronic control systems and banking performance is increasingly recognized as symbiotic. Assessment centers play a vital role in supporting the strategic objectives of banks. As a result, banking institutions that effectively implement the social security system can better adapt to market changes, manage risks, and improve overall performance metrics.

This study aims to explore the impact of electronic control systems on banking performance, with a specific focus on Natixis Algeria Bank's branches in Mostaganem and Oran. By examining this relationship, the research seeks to provide empirical evidence on the efficacy of digital tools in enhancing banking operations and to contribute to the broader discourse on digital transformation in the financial sector.

1.1. Research problematic:

To recognize electronic control systems' significant influence on banking operations, this study poses the following research question: **How do electronic control systems influence the relationship between operational efficiency and banking performance in financial institutions, particularly at Natixis Algeria Bank?**

1.2. Research Hypotheses:

To comprehensively address the principal research problem, the study formulates four distinct hypotheses, each examining a critical aspect of banking performance influenced by electronic control systems. These hypotheses are structured as follows:

H1: The electronic control systems have a positive impact on strategic performance at Natixis Algeria Bank;

H2: The electronic control systems have a positive impact on functional performance at Natixis Algeria Bank;

H3: The electronic control systems have a positive impact on financial performance at Natixis Algeria Bank;

H4: The electronic control systems have a positive impact on marketing performance at Natixis Algeria Bank.

1.3. Research objectives:

Shortcomings in the effective utilization of electronic control systems can hinder overall banking performance, particularly in terms of operational efficiency, financial stability, and customer satisfaction. Many banks face challenges in fully leveraging these systems to optimize their performance. Therefore, this study aims to examine the impact of electronic control systems on banking performance, with a specific focus on Natixis Algeria Bank's branches in Mostaganem and Oran. Through this research, we aim to achieve the following objectives:

- Identify the core concepts related to electronic control systems and banking performance;
- Determine the extent and nature of the impact that electronic control systems have on strategic performance, operational efficiency, financial outcomes, and marketing effectiveness at Natixis Algeria Bank;
- Evaluate the role of electronic control systems in enhancing decision-making processes and improving customer satisfaction within the bank.

1.4. Research methodology:

The research employs a descriptive and analytical approach to identify key variables and test hypotheses. Theoretical concepts are developed by reviewing diverse sources, and empirical data is analyzed to support the findings. The research is structured into five sections: introduction, theoretical background, methodology, results and discussion, and finally, conclusion.

2. THEORETICAL BACKGROUND

2.1. Digital Transformation in the Banking Sector: Concepts, Technological Drivers, and Foundational Pillars

2.1.1. Definition of digital transformation:

Digital transformation is a comprehensive strategic process that involves the adoption and integration of digital technologies across all operational areas of an organization to improve performance, optimize efficiency, and drive the creation of new business, Year models. The implementation of technologies such as artificial intelligence (AI), cloud computing, and the Internet of Things (IoT) are crucial to enabling this transformation, allowing businesses to innovate, enhance customer experiences, and streamline operational processes. Digital transformation goes beyond simply adopting digital tools, it involves rethinking traditional systems and models and moving towards a digital environment that supports organizational growth and competitiveness.

A successful digital transformation begins with the development of a well-structured digital strategy that evaluates the organization's current digital capabilities and identifies gaps and potential barriers. This strategy must address change management to ensure that both technology and people align with the new digital culture. Effective change management is essential to guide employees and stakeholders through the transformation process, helping the organization adapt to rapidly evolving customer needs and market conditions. According to Houch Houria and Kheira Madjdoub, digital transformation is “a strategic process requiring organizations to reimagine their business models, culture, and operations, adopting

new ways of thinking and working to create more connected, automated, and efficient institutions”.²

2.1.2. The Concept of Digital Transformation in the Banking Sector:

Within the banking sector, digital transformation is marked by the integration of digital technologies throughout all facets of banking operations. This transformation is driven by the need to optimize services, improve customer experiences, streamline internal processes, and foster the development of new business models. The deployment of advanced technologies such as AI, blockchain, big data analytics, and mobile platforms is central to this shift, enabling banks to build more agile, responsive, and customer-centered systems that can meet the evolving expectations of clients.³

This process extends beyond the simple digitization of services and requires a fundamental strategic rethinking of how banks operate and interact with customers. By leveraging these technologies, financial institutions can enhance operational agility, improve service personalization, and maintain a competitive advantage in an increasingly digital financial landscape. This shift reflects a broader industry-wide movement towards a digital-first approach in banking, which places greater emphasis on creating seamless, integrated experiences for both customers and employees.⁴

2.1.3. The Technological Factors Contributing to Digital Transformation in Banks:

Several technological drivers are central to the digital transformation of the banking sector. These include:

- Artificial Intelligence (AI): AI is used to analyze vast datasets for personalized services, improve decision-making, and streamline operations.
- Blockchain: Blockchain revolutionizes transaction processes with transparency and security
- Data Analytics: Data analytics enables banks to gain insights into customer behavior for targeted offerings⁵
- Cloud Computing: Cloud computing provides scalable solutions for data storage and processing.⁶

2.1.4. Foundations (Pillars) of Digital Transformation in the Banking Sector:

The success of digital transformation in banking relies on several foundational pillars, including technological integration, customer engagement, operational efficiency, business model innovation, risk management, and regulatory compliance

² Houich, Houria, and Kheira Madjdoub. 2024. “The Contribution of Digital Transformation in Improving Banking Services Quality: An Empirical Study of a Sample of Banks in Tiaret Province, Algeria.” *The Journal of Economics and Finance(JEF)* 10 (02),p.62.

³ Lóska, Gergely, and Juha Uotila. 2023. “Digital Transformation in Corporate Banking: Toward a Blended Service Model.” *California Management Review* 66 (3),p94.

⁴ Abdurrahman, Abdurrahman, Aurik Gustomo, and Eko Agus Prasetyo. 2024. “Impact of Dynamic Capabilities on Digital Transformation and Innovation to Improve Banking Performance: A TOE Framework Study.” *Journal of Open Innovation Technology Market and Complexity* 10 (1).

⁵ Batchu, Ravi Kumar. 2024. “Digital Transformation in Banking: Navigating the Technological Frontier.” *International Machine Learning Journal and Computer Engineering* 7 (7),p.5.

⁶ Kurbanov, Alisher. 2023. “ACCELERATING GROWTH: THE IMPACT OF DIGITAL TRANSFORMATION ON BANKS’ PERFORMANCE.” *EPRA International Journal of Economics, Business and Management Studies (EBMS)* 10 (8),p.9.

Technological Integration: The deployment of AI, machine learning, blockchain, robotic process automation (RPA), and cloud computing is vital for driving digital transformation. These technologies enable banks to process large datasets for tasks like fraud detection and personalized customer service. Blockchain enhances security in transaction processing, while cloud computing provides scalable solutions for data storage and processing.⁷

Shift in Customer Engagement: As customer expectations evolve, banks are moving away from traditional face-to-face interactions to digital channels. Mobile banking, chatbots, and AI-driven virtual assistants allow for 24/7 service availability, creating seamless omnichannel experiences where customers can manage accounts, perform transactions, and receive personalized financial advice.⁸

Operational Efficiency: Automation of routine tasks, such as loan approvals, customer onboarding, and document processing, enhances operational efficiency. This reduces costs and human errors while allowing banks to reallocate human resources towards more complex tasks requiring strategic judgment and creativity.⁹

Business Model Innovation: Digital transformation is driving the development of new business models, such as neobanks, which operate exclusively online without physical branches. Traditional banks are also adopting hybrid models, blending physical and digital interactions to cater to a diverse customer base. Digital transformation fosters continuous innovation in banking services, ensuring banks remain competitive in a tech-driven market.¹⁰

Risk Management and Cybersecurity: As banking operations shift online, the risks of cyberattacks, data breaches, and fraud increase. Banks implement AI-driven fraud detection systems, advanced encryption methods, and biometric authentication to safeguard financial data and ensure secure transactions. Navigating these risks requires balancing technological innovation with strong security measures.¹¹

Regulatory Compliance and Governance: Digital transformation necessitates the use of regulatory technology (RegTech) to ensure compliance with evolving regulations. RegTech automates compliance monitoring, risk assessment, and reporting, helping banks meet regulatory standards efficiently while maintaining the flexibility to innovate.¹²

Sustainability and ESG Integration: Digital transformation also plays a role in enhancing banks' environmental, social, and governance (ESG) performance. By adopting digital tools, banks can reduce their carbon footprint, support green financing, and improve corporate governance practices, contributing to broader societal goals while maintaining competitiveness.¹³

⁷ Kurbanov, Alisher, Op.cit,p.9.

⁸ Porfírio, José António, José Augusto Felício, Tiago Carrilho,. 2023. "Factors affecting digital transformation in banking." *Journal of Business Research* 171,p.2.

⁹ Abdurrahman, Abdurrahman, Aurik Gustomo, and Eko Agus Prasetyo.,ibid,p.3.

¹⁰ Shanti, Riris, Hermanto Siregar, Nimmi Zulfainarni, and None Tony. 2024. "Revolutionizing Banking: Neobanks' Digital Transformation for Enhanced Efficiency." *Journal of Risk and Financial Management* 17 (5),p.3.

¹¹ Batchu, Ravi Kumar Op.cit,p.3.

¹² Kurbanov, Alisher.,ibid,p.9.

¹³ Zhu, Yongjie, and Shanyue Jin. 2023. "How Does the Digital Transformation of Banks Improve Efficiency and Environmental, Social, and Governance Performance?" *Systems* 11 (7),p.2.

2.2. Banking performance:

2.2.1. definition of banking performance:

Banking performance encompasses the ability of banks to achieve their strategic and operational goals by managing both financial and non-financial factors. Performance is measured by financial indicators, such as Return on Assets (ROA) and Return on Investment (ROI), as well as non-financial metrics like customer satisfaction and service quality. Effective banking performance requires a balance between technological innovation, governance, risk management, and operational efficiency, all of which contribute to the bank's resilience and customer satisfaction.¹⁴

2.2.2. Banking performance dimensions:

The four key dimensions of banking performance include:

Strategic Performance: This dimension evaluates how effectively a bank's strategy adapts to its environment and balances the long-term objectives with operational efficiency. Strategic performance reflects the bank's capacity to align its resources, processes, and decision-making with its overarching goals.¹⁵

Functional Performance: Focuses on internal operations, particularly employee performance and the bank's ability to develop staff competencies through training. Functional performance ensures the bank's internal processes are efficient and capable of meeting market demands.¹⁶

Financial Performance: Financial performance, measured by indicators such as ROI, profitability, and liquidity, reflects the bank's financial health and its ability to achieve profitability and cost-efficiency.¹⁷

Marketing Performance: Evaluates how effectively the bank's marketing efforts translate into market share growth, customer satisfaction, and profitability. Key metrics include profitability of products, customer segments, and market share relative to competitors.¹⁸

2.3. Electronic control systems:

2.3.1. Definition of Control:

Control involves monitoring performance, comparing it with planned objectives, and identifying deviations. In a digital context, electronic control enables real-time tracking of performance variables, allowing managers to take corrective actions immediately. This minimizes time gaps in detecting and addressing issues, enhancing operational efficiency.¹⁹

¹⁴ Abdurrahman, Abdurrahman, Aurik Gustomo, and Eko Agus Prasetyo.,ibid,p.6.

¹⁵ Bekouch, Chaimaa, and Fatima Bouadou. 2024. "The impact of financial technology on the quality of banking performance - a case study of Al Baraka Islamic Bank for the states of Skikda and Constantine." *Beam Journal of Economic Studies* 8 (2),p.181.

¹⁶ Mihoub, Samch. 2014. "The Impact of Information and Communication Technology on the Commercial and Financial Performance of French Banks – A Case Study of Remote Banking Activities." PhD thesis, Canstantine: Canstantine 2,p.26.

¹⁷ Mahsoul, Naaman, and Siradj Mousou. 2019. "Evaluating the financial performance of commercial banks: A case study of Arab Banking Corporation (ABC Jordan) during the period 2011-2018." *Namaa Economy and Trade Journal* 3 (2),p.123.

¹⁸ Bekouch, Chaimaa, and Fatima Bouadou.,ibid,p.180.

¹⁹ Aicha Mohammed Ahmed Hadj Idriss. 2020. "The impact of electronic control on the efficiency of performance in public corporation 2008 - 2018." *Journal of the Faculty of Humain Development* 9 (9),p.225.

2.3.2. Forms of Electronic Control:

Various forms of electronic control include:²⁰

Internet Control: Focuses on securing data privacy and protecting communication networks from unauthorized access.

Electronic Employee Monitoring: Tracks employee productivity and ensures efficiency, though it raises privacy concerns.

Computer System Control Protects against system failures and cyber threats, with specific controls for data input, processing, output, and file management to ensure data accuracy and security. Computer system control is divided into two categories:

General Control Procedures: These define the organization's strategy for managing electronic data processing.

Application Controls: Designed to ensure accurate data handling, they include:

- Input Controls: Verify authorized data entry and protection against tampering.
- Operational Controls: Critical for preventing operational errors, and ensuring compliance with established procedures.
- Output Controls: Ensure the accuracy and confidentiality of processed data, preventing distribution errors.
- File Controls: Ensure proper file labeling and correct execution of recording, processing, and reporting.²¹

3. Study Methodology:

3.1. Sample of research:

We developed a structured questionnaire as the primary instrument for data collection, focusing on Natixis Algeria Bank, specifically within its Mostaganem branch for the applied study. Given the limited sample size at this location, additional questionnaires were distributed to the Oran branch to ensure a more representative sample. The research sample was selected through random sampling techniques, comprising 25 respondents from both branches. All distributed questionnaires were successfully retrieved, yielding a 100% response rate. After a thorough review, all completed questionnaires met the necessary criteria for inclusion in the analysis, indicating a high level of data integrity.

The Likert scale was employed as the measurement tool, featuring a five-point range (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree). The questionnaire was divided into two main sections: the first section addressed demographic variables, including gender, age, educational attainment, and professional experience. The second section measured four key performance variables: strategic performance (10 items), functional performance (10 items), financial performance (10 items), and marketing

²⁰ Adwan, Yaser manaa, and Ahmed Amine Elsarhan. 2020. "The Impact of Electronic Control on the Level of Employees Performance in Jordanian Government Financing Institutions." *Jerash for Research and Studies Journal* 21 (1),p.323.

²¹ Hazim Ahmed Farwana. 2022. "The impact of electronic control on the speed of completion of transactions at Islamic Bank." *Elbahith Journal for Sports and Social Sciences* 4 (2),p-p.168-169.

performance (10 items). The characteristics of the research sample are summarized in Table 01 below.

Table 01. Respondents 'demographic profile

Category		Ni	(%)
Gender	Male	15	60
	Female	10	40
Total		25	100
Age	Under 25 year	0	0
	From 26 to 40 year	18	72
	From 41 to 55 year	7	28
	From 56 year and above	0	0
Total		25	100
Educational level	Baccalaureate	0	0
	Bachelor	3	12
	Master	22	88
	PhD	0	0
Total		25	100
Professional Experience	Under 05 year	8	32
	From 06 to 10 year	7	28
	From 11 to 15 year	3	12
	From 16 year and above	7	28
Total		25	100

Source: by the authors using SPSS V27 output

The demographic analysis of the research sample reveals key insights into gender, age, education, and professional experience. The sample shows a slightly male-dominated distribution, with 60% male and 40% female participants. Age-wise, 72% are between 26 and 40 years old, while 28% are aged 41 to 55, indicating a predominantly middle-aged cohort, with no respondents under 25 or over 55. Regarding educational attainment, 88% hold a master's degree, reflecting a highly educated group with advanced expertise, while 12% have bachelor's degrees. The professional experience is varied, with 32% having less than 5 years, 28% having 6 to 10 years, another 28% with over 16 years, and 12% having 11 to 15 years. This distribution highlights a well-rounded representation across different career stages, providing diverse professional perspectives.

3.2. Data Analysis Instruments:

The study employed a comprehensive set of statistical tools to ensure the robustness and reliability of the data analysis. Cronbach's alpha was utilized to assess the model's reliability, confirming internal consistency. Descriptive statistics, including the mean and standard deviation, were applied to evaluate central tendencies and variability in questionnaire responses. The One-Sample Kolmogorov-Smirnov Test

was used to check the normality distribution of variables. Multiple linear regression analysis (B) was conducted to explore the predictive relationships between electronic control systems and banking performance, revealing both the strength and direction of these associations. Additionally, the t-test and ANOVA were applied to assess significance and correlations within the regression model. All statistical analyses were performed using SPSS version 27, ensuring a rigorous and systematic approach to data analysis

4. Results and discussion:

4.1. Validity of the measurement scale:

To assess the validity and reliability of the questionnaire, we utilized Cronbach's Alpha, which ranges from 0 to 1, with higher values indicating greater reliability. In Table (02), the Cronbach's Alpha value is 0.880, signifying a high level of internal consistency. This strong reliability score reflects that the items within the questionnaire are well-aligned and measure the intended construct effectively. The high value confirms the acceptability of the questionnaire, thereby supporting its use for further testing and analysis of the study.

Table 02. Model validity tests

Items	Cronbach's alpha
44	0.849

Source: by the authors using SPSS V27 output

4.2. Normality test of data:

The one-sample Kolmogorov-Smirnov (K-S) test is a non-parametric statistical procedure used to assess whether a sample comes from a specific theoretical distribution, such as the normal distribution. The results of this test analysis are shown in the following table:

Table 03. One-sample Kolmogorov-Smirnov (K-S) test

Metrix	Value
Simple size	25
Mean	158.6
Standard Deviation	10.428
Most Extreme Differences	0.205
P-value	0.196

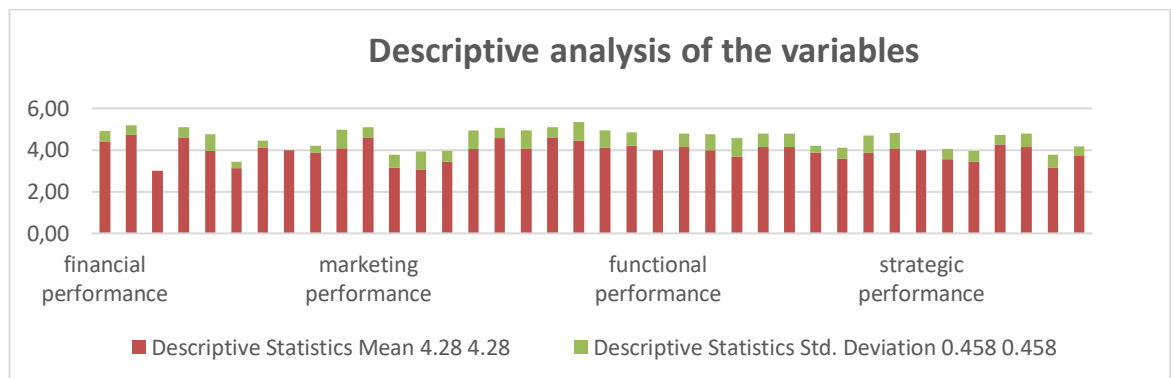
Source: by the authors using SPSS V27 output

Since the P-value of 0.196 is greater than the conventional significance level of 0.05, we do not have sufficient statistical evidence to reject the null hypothesis. This suggests that the differences between the observed data and a perfectly normal distribution are not substantial enough to be considered statistically significant. As a result, we can conclude that the data adheres to a normal distribution, making it suitable for parametric tests and further analyses that assume normality.

4.3. Descriptive analysis of the variables:

The descriptive analysis reveals a strong consensus across all performance dimensions (financial, marketing, functional, and strategic) with consistently high levels of agreement among respondents. Financial performance exhibits mean scores ranging from 3.00 to 4.60, with low variability (standard deviations between 0.00 and 0.79), indicating strong confidence in the financial metrics. Marketing performance shows similar mean values (3.00 to 4.60) and slightly higher variability (standard deviations of 0.33 to 0.89), reflecting a high level of acceptance. Functional performance follows the same pattern, with mean values between 3.44 and 4.40, and standard deviations from 0.46 to 0.90, demonstrating widespread agreement on operational effectiveness. Although strategic performance displays slightly more variation (mean scores from 3.44 to 4.16 and standard deviations of 0.46 to 0.84), it still reflects a high level of agreement, suggesting that the strategic initiatives are well-received. Overall, the analysis highlights a positive reception across all performance measures, with respondents consistently agreeing on the various dimensions.

Figure01. Descriptive analysis of the variables



Source: by the authors using SPSS V27 output

4.4. Hypothesis Testing Results:

To evaluate the primary hypothesis, which posits that "The electronic control systems have a positive impact on banking performance at Natixis Algeria Bank," a comprehensive analysis of the sub-hypotheses will be conducted. This analysis utilizes robust statistical methods, including the T-test, Linear Regression, and ANOVA, to assess the relationships between the control system and strategic performance. The detailed results of these tests are presented in the subsequent table:

Table 04. Results of the hypothesis testing

Hypothesis	t-value	Regression Coefficient (B)	R-squared	F-value	Significance (p-value)	Cohen's d
H1: The electronic control systems have a positive impact on strategic performance at Natixis Algeria Bank	87.834	4.494	0.928	143.088	0.001	2.154
H2: The electronic control systems have a positive impact on functional performance at Natixis Algeria Bank	45.904	2.281	0.945	391.912	0.001	4.444
H3: The electronic control systems have a positive impact on financial performance at Natixis Algeria Bank	108.033	3.226	0.336	11.639	0.001	1.873
H4: The electronic control systems have a positive impact on marketing performance at Natixis Algeria Bank	55.261	2.471	0.717	58.149	0.001	3.572

Source: by the authors using SPSS V27 output

The statistical analysis across all four hypotheses reveals significant positive relationships between the electronic control systems and various banking performance factors. The statistical analysis for H1 demonstrates that the electronic control systems have a substantial positive impact on strategic performance at Natixis Algeria Bank. The t-test yielded a value of 87.834 and a highly significant p-value of less than 0.001, confirming the robustness of the result. The regression coefficient ($B = 4.494$) indicates that improvements in the electronic control systems lead to significant increases in strategic performance. The R-squared value of 0.928 suggests that the model explains 92.8% of the variance in banking performance, indicating a strong relationship. Furthermore, the ANOVA test, with an F-value of 143.088 and a p-value below 0.001, reinforces the significance of the model, highlighting the electronic control system's pivotal role in enhancing strategic performance. The effect size, reflected by Cohen's d (2.154), confirms a large and meaningful practical impact of the system on strategic outcomes.

Similarly, H2 explored the impact of the electronic control systems on functional performance, revealing a highly significant relationship with a t-value of 45.904 and a p-value of less than 0.001. The regression coefficient ($B = 2.281$) indicates a strong

positive influence of the electronic control systems on functional performance. Additionally, the R-squared value of 0.945 suggests that 94.5% of the variability in banking performance can be explained by functional performance, driven by the electronic control systems. The ANOVA test, with an F-value of 391.912, further confirms the significance of this relationship, reinforcing the critical role of electronic control systems in enhancing functional performance. Moreover, the effect size, reflected by Cohen's d of (4.444), indicates an exceptionally large practical impact, underscoring the substantial effect of the control systems on functional performance outcomes.

H3 examined the impact of the electronic control systems on financial performance, revealing a significant positive relationship. The one-sample t-test showed a remarkably high t-value of 108.033, with a p-value of less than 0.001, indicating that the electronic control system significantly enhances financial performance. further supports this strong effect. The regression analysis demonstrated a positive influence, with a regression coefficient ($B = 3.226$), suggesting that improvements in the electronic control system are associated with an increase in financial performance. The R-squared value of 0.336 indicates that 33.6% of the variance in banking performance is explained by financial performance, driven by the electronic control systems. Although this R-squared value is lower than in previous sub-hypotheses, it still reflects a moderate explanatory power. The ANOVA results reinforce this conclusion, with an F-value of 11.639, confirming the significance of the relationship. The effect size, reflected by Cohen's d (1.873), confirms a large and meaningful practical impact of the system on financial outcomes. These results substantiate that the electronic control systems have a substantial positive impact on financial performance at the bank, consistent with the overall hypothesis.

finally, H4, which examined the impact of the electronic control systems on marketing performance, also revealed a significant positive relationship. The one-sample t-test generated a t-value of 55.261 and a p-value of less than 0.001, indicating that the control systems significantly enhances marketing performance. underscores the strong effect of the control systems. In the regression analysis, the coefficient ($B = 2.471$) shows a substantial positive influence of the control systems on marketing performance, demonstrating that improvements in the control systems correlate with increases in marketing performance. The R-squared value of 0.717 indicates that 71.7% of the variance in banking performance is explained by the changes in marketing performance, driven by the electronic control systems. The ANOVA results further support this conclusion, with an F-value of 58.149 and a p-value of less than 0.001, confirming the statistical significance of the relationship. Additionally, the effect size, as measured by Cohen's d (3.572), indicates a very large practical impact. Overall, these findings strongly affirm that the electronic control systems have a significant and meaningful positive impact on marketing performance at Natixis Algeria Bank.

Conclusion:

The integration of electronic control systems has yielded a profound and transformative impact on banking performance, markedly enhancing strategic decision-making, optimizing operational efficiency, fortifying financial stability, and improving customer satisfaction. These systems function as critical enablers, driving sustained growth, fostering adaptability, and ensuring long-term

competitiveness within the banking industry. The findings of the present study substantiate these assertions.

The research highlights that electronic control systems play a vital role in enhancing the strategic performance of Natixis Algeria Bank. These systems have supported the bank's ability to achieve long-term goals by providing real-time data for strategic analysis and decision-making. By facilitating adaptability to market changes and aligning operations with external trends, the control systems have strengthened the bank's competitiveness and innovation capacity. This ensures that the bank not only meets current demands but also remains agile in a dynamic environment, securing its long-term strategic objectives.

In terms of functional performance, electronic control systems have significantly improved employee productivity and overall operational efficiency. The monitoring systems have optimized workflows, reduced functional errors, and enhanced coordination between departments. By providing clear performance metrics, these systems have created a more efficient work environment, allowing employees to perform tasks more effectively. The automation and supervision capabilities offered by these systems ensure that the quality of work is maintained at a high standard, contributing to the bank's functional success.

The research also reveals that financial performance has been positively impacted by the implementation of electronic control systems. These systems have helped reduce operational costs, improve cash flow management, and increase profitability. Additionally, they have contributed to risk mitigation and enhanced the accuracy of financial reporting. The use of supervised accounting programs has led to significant improvements in Return on Investment (ROI) and has strengthened the bank's financial stability. Overall, the electronic control systems have ensured greater efficiency in resource management and financial decision-making.

Finally, marketing performance has been significantly enhanced by the adoption of electronic control systems. The systems have improved customer satisfaction by streamlining service delivery processes and reducing customer complaints. Additionally, they have contributed to increased market share and customer loyalty, allowing the bank to introduce new products and services more efficiently. By providing insights into customer needs and behavior, the control systems have strengthened the bank's reputation and competitive position in the market.

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