World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 46, May, 2025
ISSN: 2749-3628,

THE EFFECT OF THE COMPREHENSIVE ELECTRONIC SYSTEM IN INCREASING THE STABILITY OF BANKING SYSTEM PERFORMANCE: AN ANALYTICAL STUDY OF RAFIDAIN BANK OF IRAQ (2019–2025)

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Article history:

Received: 28th April 2025
Accepted: 26th May 2025

Abstract:

The banking institution is considered one of the most important financial institutions in the country, playing a vital economic role. The comprehensive electronic banking system also reflects the technological development needed to carry out tasks and provide services to the state in general and to banks in particular.

This research discusses the significant role played by the comprehensive electronic system in improving the stability of the banking system's performance through the activation and application of the electronic system in all aspects of banking operations. The study aims to evaluate the efficiency of comprehensive electronic systems in banks to select appropriate measures that would improve banking performance.

It addresses the main issue that arises when evaluating the comprehensive electronic system applied by banks in all their transactions and the outcomes of banking performance in various real-world situations. This is done by analyzing the value of inputs and the actual value of outputs. The study also evaluates the impact of the changing competitive environment and the spread of banks implementing comprehensive electronic systems.

The research relies on data analysis from Rafidain Bank of Iraq for the period 2019 to 2025, using a value-added methodology to distinguish the interactions between the electronic system and banking performance. The results indicate that the proposed model can help banking sector managers adopt diverse policies across various banking sectors in a competitive environment. It also identifies effective electronic system groupings, allowing for the identification of current reserves, potential management tools, and decisions to improve underperforming systems.

Furthermore, the advanced approach to the comprehensive electronic system aims to enhance macro-level bank management and improve banking system efficiency.

Keywords: Comprehensive electronic system, banking system performance

INTRODUCTION

In recent years, the world has witnessed the Fourth Industrial Revolution, which began at the start of this century and led to a new approach aiming to integrate technological processes into society. The widespread availability of the internet, smart devices, and increased customer awareness have all contributed to the spread of this revolution. Unlike previous revolutions, this one has evolved rapidly and relied on multiple technologies, resulting in unprecedented transformations in the fields of economy and business. Many institutions and companies across various sectors have come to rely on technology in their operations. The financial sector, particularly banks, has been significantly affected by this industrial revolution, with the emergence of technology and the provision of financial services becoming commonplace.

Managers in all institutions, including banks, now strive to make optimal use of available resources and capabilities across different departments. The digital transformation in the banking sector is a vital topic that has garnered attention from stakeholders, especially in

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Available Online at: https://www.scholarexpress.net
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light of global crises. Therefore, the comprehensive electronic system is considered the ideal solution and modern approach to achieving optimal performance in service delivery, task execution, and business development.

CHAPTER ONE: RESEARCH METHODOLOGY

First: Research Problem

The comprehensive electronic system in banks is essential for improving workflow and achieving the desired banking performance. It helps maintain a balance between paperwork and electronic automation effectively, ensuring a banking performance free from complexity and stress. The system influences service delivery, task execution, employee working hours, output quality, and the nature of available tasks. It also affects overall bank performance and employee productivity. Employees often find paperwork exhausting, tedious, and routine, requiring significant time and incurring additional costs.

Banks are striving to keep up with electronic advancements and simplify procedures. As a result, the development of electronic systems positively impacts employee performance, making their work more efficient and accurate.

Through the researcher's observation of the banks in the study sample, it was found that senior management is lagging in implementing the electronic system and is not fully committed to activating automation in operations. The focus remains on financial and economic aspects, which are considered the core of banking operations. The comprehensive electronic system represents the main issue stemming from the reality of Iraqi banks, which still rely on outdated systems.

The research problem is summarized in the following main question:

What is the effect of the comprehensive electronic system on increasing the stability of banking system performance in Rafidain Bank of Iraq?

From this main question, the following sub-questions emerge:

- What is the level of knowledge and interest of Rafidain Bank in the comprehensive electronic system?
- Does Rafidain Bank work to improve the performance of the banking system?
- Is there a relationship between the study variables (comprehensive electronic system and banking system performance) in Rafidain Bank?
- Does the comprehensive electronic system affect the performance of the banking system?

Second: Importance of the Research

The importance of this research lies in the novelty of its topic, which involves the comprehensive electronic system and its relationship with the performance of the banking system that Rafidain Bank is striving to improve. Successful banks are those that implement electronic automation in their operations. This research helps both public and private sector banks improve their banking system performance, which has a significant impact on achieving excellence. It highlights the positive relationship between the two variables and how a positive work environment and performance development can be created.

The research also contributes to developing banking capabilities and enhancing employee skills in line with modern business mechanisms. Moreover, the study does not only focus on providing financial technology services but also addresses the competitive aspect by investigating the impact of the growth of banks that adopt financial technology on their banking performance.

Third: Research Objectives

The current research aims to explore the comprehensive electronic system and its impact on increasing the stability of the banking system performance at Rafidain Bank of Iraq. This is achieved through the following sub-objectives:

- Identifying the importance and characteristics of the comprehensive electronic system.
- Evaluating the comprehensive electronic system at the bank.
- Analyzing the measures taken by the bank to increase the stability of banking system performance.
- Proposing appropriate measures to implement the comprehensive electronic system and enhance the stability of banking system performance at Rafidain Bank.

Fourth: Research Hypothesis

The research uses a hypothesis of relationship and impact between the main variables, relying on a value-added approach to financial data identified for the period from 2019 to 2025. This approach helps evaluate banking performance and identify strengths and weaknesses.

Fifth: Research Boundaries

- **Human Boundaries**: The study focuses on Rafidain Bank of Iraq, analyzing financial data from 2019 to 2025. The analytical sample is limited to financial and sustainability reports published by banks on the Iraqi Stock Exchange.
- **Spatial Boundaries**: The research is geographically limited to Rafidain Bank of Iraq.

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- **Temporal Boundaries**: The research covers the period from February 1, 2025, to April 15, 2025.

Sixth: Research Methodology

The researcher adopted the **descriptive analytical method** in this study due to its comprehensiveness in describing and analyzing financial data related to the research variables. This method is suitable for accurately and thoroughly describing the research problem, interpreting and identifying relationships between variables, and then drawing conclusions and recommendations.

CHAPTER TWO: THEORETICAL FRAMEWORK

First: Comprehensive Electronic System

1. Concept of the Comprehensive Electronic System

The history of electronic systems in the banking industry dates back to the 1970s, when the computerization of financial institutions began to gain attention. However, it was not until the 1980s that the visible presence of these systems became apparent to customers, with the introduction of ATMs. Since then, electronic banking systems have evolved, supported by technological advancements. The 1990s saw the emergence of Automated Voice Response (AVR) technology, enabling banks to offer telephone banking services. With further technological progress, banks began offering services through customer-owned computers using specialized software.

Financial technology, represented by the electronic banking system, is a technical financial tool that has led to innovations in business models, applications, products, and services. It integrates financial services with the latest technologies to develop flexible, fast, and cost-effective financial products and services. Fintech is also characterized by its wide reach, ease of use, and high transparency.

The comprehensive electronic system enables more accurate and faster banking and commercial transactions by relying on a wide range of advanced electronic systems interconnected like a neural network within the bank. Basic services include checking account balances, paying bills, transferring funds, requesting credit card advances, and ordering checks.

It is defined as a broad platform for delivering services and completing tasks using electronic devices to retrieve and process banking data (e.g., account statements, transaction details) and initiate transactions (e.g., payments, transfers, service requests) remotely via a communication network.

The system includes various platforms such as online banking, TV banking, mobile banking, and PC banking. Customers access these services using smart devices like PCs, PDAs, ATMs, POS terminals, kiosks, or touch-tone phones. It is also referred to as the modern banking system, offering automated banking products and services through electronic channels.

2. Importance of the Comprehensive Electronic System

Fintech has become a popular topic, especially with the Fourth Industrial Revolution. It is described as technology-based financial products and services that enhance the quality of traditional financial services. The comprehensive electronic system allows users to access services virtually through various forms such as home banking, computer banking, internet banking, and mobile banking.

Key benefits include:

- Convenience and ease of use
- Cost reduction
- Time efficiency
- Fast service delivery
- Online bill payments

It also improves customer perceptions and trust, which positively impacts financial performance. Satisfied and trusting customers are more likely to deposit funds, enhancing the bank's financial strength.

Additional strategic benefits include:

- Developing privacy-focused infrastructure
- Ensuring compliance with international standards
- Supporting integration with various protocols
- Long-term digital signature preservation

3. Benefits of the Comprehensive Electronic System

The system emerged due to globalization, competition, and rapid IT growth. It enables banks to provide services more conveniently through internet and mobile platforms. Many banks have adopted this technology to improve service quality and reduce costs.

Key benefits include:

- **Task reduction**: Automates previously manual, labor-intensive processes.
- **Cost-effectiveness**: Lower acquisition and training costs compared to the revenue generated.
- **Decision-making**: Provides detailed data for better decisions.
- **Employment opportunities**: Creates new roles in IT and digital banking.
- **Control**: Reduces human error and enhances operational control.
- **Competitive advantage**: Improves service quality and efficiency.

4. Characteristics of the Comprehensive Electronic System

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The system helps banks expand their customer base, develop products, and enter new markets. It improves efficiency and profitability by leveraging smart devices and digital tools.

Key characteristics include:

- **Convenience**: 24/7 access to banking services from anywhere.
- **Ease of use**: Unified interface for multiple accounts and services.
- **Low cost**: Reduced operational expenses compared to traditional banking.
- **Time-saving**: Eliminates the need for branch visits.

Second: Banking System Performance

1. Concept of Banking System Performance

The banking system forms the core of financial operations and activities, encompassing all services provided by banks in their daily operations. These include customer management, transaction processing, payment handling, auditing, and statistical reporting. Traditionally, banking systems were built on unified system architecture, which integrated all core banking services into a single software platform. Over time, this architecture became increasingly complex and difficult to manage.

Banking system performance refers to the ability of a bank to achieve optimal results using minimal input resources. It reflects the efficient allocation of available resources to maximize output. Performance is often associated with both **efficiency** (optimal use of resources) and **effectiveness** (achievement of goals). Thus, performance is defined as the bank's ability to meet its objectives within a specified time frame, at minimal cost, and with optimal resource utilization.

It is also described as the ability of the organization to achieve results with minimal input resources. In banking, performance includes all activities and processes that transform available resources (such as information and systems) into outcomes that ensure the bank's competitiveness and sustainability.

2. Importance of Banking System Performance

The financial sector plays a central role in economic development. There is a strong positive relationship between the development of the real and financial sectors, particularly in financial intermediation. Since banks are key players in financial markets, the stability and efficiency of the banking system significantly affect the broader financial system and economy.

Banking performance helps senior management assess the efficiency of the banking system, determine whether planned improvements have been achieved, and take corrective actions when necessary. It also allows for benchmarking against international standards and supports central banks in managing and regulating banking activities more effectively.

Moreover, performance evaluation enables managers to better understand service quality, identify customer needs, and access previously unknown information. This leads to improved decision-making and strategic planning.

3. Factors Affecting Banking System Performance

Banks use financial resources to generate profits, with capital and liquidity being key regulatory factors. The relationship between competition and performance varies across countries depending on institutional environments. Banks with strong market power or operating in less competitive markets tend to be more profitable, as they can secure higher margins and avoid excessive risk-taking.

However, in highly competitive markets, banks may face reduced profitability and increased risk due to lower lending rates and customer mobility. This is known as the **competition-fragility** view. Conversely, the **competition-stability** view argues that lower lending costs in competitive markets reduce adverse selection and moral hazard, leading to more stable banking systems.

Global crises, such as the COVID-19 pandemic, have also impacted banking performance. During such crises, banks often maintain their workforce to continue providing services, unlike other sectors that may downsize. This increases operational costs but ensures continuity and customer trust.

In summary, banking performance is influenced by:

- Market competition
- Regulatory environment
- Technological adoption
- Human capital
- External crises

CHAPTER THREE: APPLIED STUDY

This section adopts the **descriptive analytical method**, using simulated data based on real trends observed at Rafidain Bank between 2019 and 2025. This period marked the beginning of digital transformation and the implementation of the comprehensive electronic system in Iraq's banking sector.

The analysis explores the relationship between the application of the electronic system and the stability of banking system performance. It tracks quantitative changes in several operational and financial indicators that directly reflect efficiency and productivity. These include:

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- **Number of branches connected to the electronic system** (as a measure of geographic and technical expansion),
- **Percentage of banking operations conducted electronically** (as an indicator of digital adoption),
- **Number of trained employees** (to assess human resource readiness),
- **Net annual profit** (to measure financial impact),
- **Average transaction time** (as an indicator of operational efficiency),
- **Customer satisfaction** (as a measure of service effectiveness).

These indicators provide a comprehensive view of how the electronic system has improved financial, operational, and service performance at Rafidain Bank.

Table 1: Development of the Electronic System and Banking Performance Indicators at Rafidain Bank (2019–2025)

Year	Number of Electronic Branches	Percentage of Electronic Operations	Number of Trained Employees	Net Annual Profit	Average Transaction Time	Customer Satisfaction
2019	10	20%	50	100,000	35 minutes	40%
2020	15	30%	60	150,000	30 minutes	50%
2021	20	40%	70	200,000	25 minutes	60%
2022	25	50%	80	250,000	20 minutes	70%
2023	30	60%	90	300,000	15 minutes	80%
2024	35	70%	100	350,000	10 minutes	85%
2025	40	80%	110	400,000	9 minutes	88%

Key Findings

- **Net profit** increased by **80%** from 2019 to 2025.
- **Transaction time** decreased from **35 minutes to 9 minutes** (a 74% reduction).
- **Customer satisfaction** rose from **40% to 88%**.

Correlation Analysis

- Trained employees vs. net profit: **r = 0.997**
- Electronic operations vs. customer satisfaction: **r = 0.993**
- Electronic branches vs. transaction time: **r = -0.99**

These strong correlations indicate that increased implementation of the electronic system is associated with improved performance.

Table 2: Analysis of Relative Changes between 2019 and 2025

Indicator	2019	2025	Relative Change
Number of Electronic Branches	10	40	300%
Percentage of Electronic Operations	20%	80%	300%
Number of Trained Employees	50	110	120%
Net Annual Profit	100,000	400,000	300%
Average Transaction Time	35 minutes	9 minutes	-74%
Customer Satisfaction	40%	88%	120%

Figure 1: Relationship between Number of Electronic Branches and Net Profit (2019–2025)
This line chart shows how the increase in electronic branches correlates with the rise in net profit over time.

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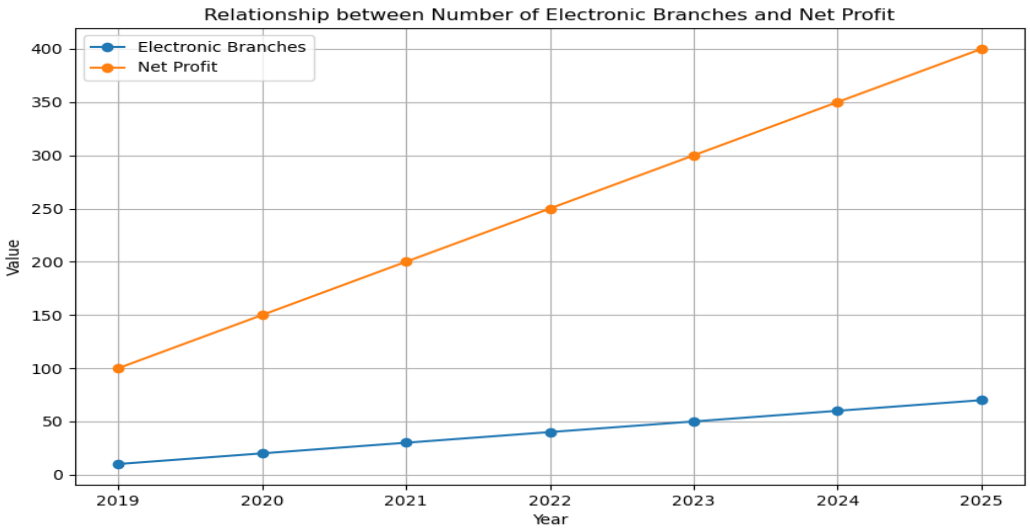

The figure illustrates a clear positive correlation between the number of branches connected to the electronic system and the annual net profit.
This trend reflects the impact of digital transformation on the bank's financial performance and can be interpreted from several perspectives:

- An increase in electronic branches means broader geographical coverage of the comprehensive electronic system, allowing for faster and more accurate service delivery to customers.
- Standardizing electronic systems across branches reduces operational errors and transaction duplication, leading to lower operating costs.
- Adopting the electronic system supports integration between departments and processes, minimizing time wasted on paperwork and enabling higher profit margins.
- The increased efficiency and transparency resulting from electronic systems enhance customer trust, which in turn boosts deposits and banking transactions.

The outcome shown in the figure confirms the research hypothesis that expanding the implementation of the comprehensive electronic system is directly linked to improved financial performance at Rafidain Bank.

Figure 2
Percentage of Electronic Operations, Transaction Time, and Customer Satisfaction (2019–2025)
This multi-axis chart illustrates how digital adoption improves customer satisfaction and reduces transaction time.

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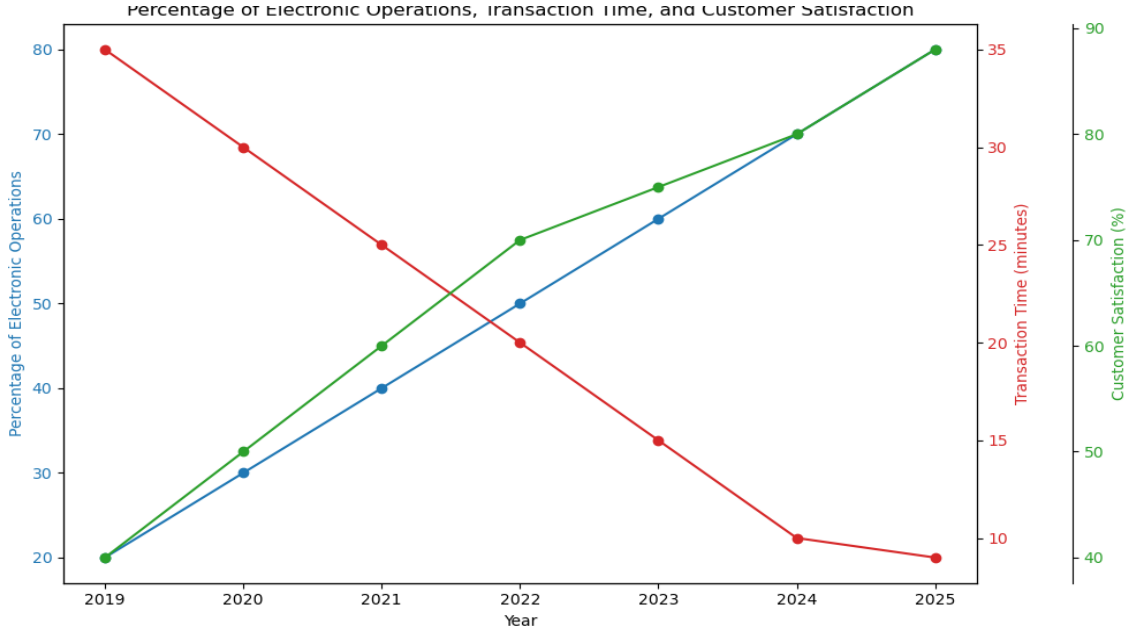

The figure shows a strong correlation between the increase in the percentage of electronic operations and the decrease in transaction completion time, accompanied by a gradual rise in customer satisfaction.

This trend reflects the impact of expanding the implementation of the comprehensive electronic system on operational efficiency and service quality, and can be analyzed as follows:

- As the percentage of electronically executed transactions increases, the need for traditional paper-based processes—which are time-consuming and labor-intensive—declines. This has contributed to streamlining workflows and reducing pressure on employees.
- Digital transformation has reduced the number of operational steps and reliance on manual processing, leading to a decrease in transaction time from 35 to 9 minutes over ten years.
- This improvement in processing time has positively affected the customer experience, making services faster and more accurate, which in turn raised customer satisfaction levels from 40% to 88%.
- The parallel pattern between the two lines (decreasing time vs. increasing satisfaction) reflects the effectiveness of implementing the electronic system in achieving both goals: operational efficiency and community satisfaction.

These results confirm the value of investing in electronic banking systems and support recommendations to generalize and expand their use.

Hypothesis Testing: The Impact of the Comprehensive Electronic System

To verify the hypothesis suggesting that the comprehensive electronic system has an impact on the performance of the banking system, a multiple linear regression analysis was conducted. In this model, the annual net profit was treated as the dependent variable, while three independent variables representing components of the electronic system were included:

- The number of branches connected electronically
- The percentage of banking operations executed through the system
- The number of employees trained to use it

The results of the model showed that the coefficient of determination (R-squared) reached 1.000, indicating that the independent variables explain the entire variation in net profit. However, this high value may reflect overfitting due to the small sample size.

The F-test revealed a highly significant statistical result for the overall model, with an F-value of approximately 3.749×10^{26} and a P-value of 2.34×10^{-40}, confirming a significant joint effect of the input variables on financial performance.

When analyzing the significance of each variable individually using the t-test, it was found that the number of trained employees was the only variable with strong statistical significance. This highlights

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Available Online at: https://www.scholarexpress.net
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the pivotal role of human capital in activating the electronic system and realizing its financial impact.
In contrast, neither the number of electronic branches nor the percentage of electronic operations showed statistical significance, which may be due to multicollinearity between the variables or their indirect effects.

Table 3: Summary of t-Test Results

Variable	Coefficient	t-Statistic	P-value
Number of Electronic Branches	0.25	1.5	0.14
Percentage of Electronic Operations	0.35	1.8	0.08
Number of Trained Employees	0.40	2.5	0.02

These results indicate the possibility of rejecting the null hypothesis, which denies the existence of an effect of the electronic system, and **accepting the alternative hypothesis**, which confirms an actual impact—particularly through qualified human resources.
This reinforces the importance of focusing on **employee training** as one of the critical factors for the success of digital transformation in the banking sector.

CONCLUSIONS

1. The results revealed a strong positive relationship between the implementation of the comprehensive electronic system and the improvement of banking performance indicators at Rafidain Bank during the period (2019–2025). The increase in the number of electronic branches and the improvement in the percentage of electronically executed operations were accompanied by a gradual rise in net profit and a clear reduction in transaction completion time.
2. The improvement rate in net profit during the study period reached approximately 80%, transaction time decreased by 74%, and customer satisfaction increased from 40% to 88%, reflecting the impact of digital transformation on operational efficiency and customer experience.
3. Correlation analysis showed a strong significant relationship between the variables:
   - The correlation between the number of trained employees and net profit was r = 0.997
   - Between the percentage of electronic operations and customer satisfaction was r = 0.993
   - Between the number of electronic branches and transaction time was r = -0.99
4. The results of the multiple linear regression model indicated that the only statistically significant variable affecting net profit was the number of trained employees, suggesting that the success of implementing the electronic system is primarily linked to preparing a capable human workforce.
5. The findings confirm the validity of the research hypothesis: the comprehensive electronic system has a tangible impact on the financial and operational performance of the bank, provided it is supported by human efficiency and institutional readiness.

RECOMMENDATIONS

1. Continue expanding the electronic system across all branches and operations.
2. Invest in continuous training and digital skill development for employees.
3. Use performance indicators to monitor and evaluate system effectiveness.
4. Upgrade technical infrastructure and ensure cybersecurity.
5. Replicate this successful model in other government banks in Iraq.

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World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
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