

# Profit Performance of Nigerian Commercial Banks from Non-Lending Services: The Role of Automated Teller Machines (ATMs) And Point of Sale (POS) Electronic Media

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## **Abstract**

*The study examined the role of Automated Teller Machines (ATM) and Point of sale (POS) electronic medium on profit performance of commercial banks in Nigeria between 2009 and 2022. Based on the ex-post facto design, annual time series secondary data extracted from CBN Statistical bulletin in Nigeria was utilised, from the aggregate of the 24 commercial banks operating in Nigeria. The pulled data was analysed using descriptive statistics, while the Ordinary Least Square regression technique was adopted to interrogate the extracted time series data. The OLS regression model results revealed that ATM and POS contributes positively and significantly to the overall profit performance of commercial banks in Nigeria within the study period. Following, it is concluded that the emergence of electronic banking services has significantly shifted and altered the earnings streams of commercial banks from being primarily lending dependent. Profit takings from non-lending banking services in the e-banking services domain contributes significantly to the overall profits of commercial banks. It was recommended among others that stakeholders should invest in advanced security measures for ATM and POS transactions to build customer trust. Ensuring the safety and integrity of electronic transactions can lead to increased usage and, subsequently, higher non-lending service profits.*

**Keywords:** Automated Teller Machines, Point-of-Sale, Profit Performance, Commercial Banks, Non-Lending Service

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## **1. Introduction**

The banking sector in Nigeria has experienced significant transformation over the past two decades, largely driven by advancements in technology and the increasing adoption of electronic banking services. Automated Teller Machines (ATMs) and Point of Sale (POS) systems have emerged as pivotal tools in enhancing the efficiency and accessibility of banking services, ultimately influencing the profit performance of commercial banks (Ogbulie et al., 2021). ATMs offer customers 24/7 access to cash withdrawals, account inquiries, and various banking services, thereby reducing the operational costs associated with traditional banking (Akinwande et al., 2022). Similarly, POS systems facilitate seamless electronic transactions, enhancing customer experience and satisfaction while providing banks with real-time data on consumer behavior and transaction trends (Oni & Adebayo, 2020).

Following the 2008 financial crisis, and the need to mitigate the impact of interest rate fluctuations and lending risk exposure to the lending sector amidst a weakened economy, banks became emboldened to diversify their income sources. This impetus encouraged them to explore and develop non-lending

services offerings. Adopting digital banking solutions provided banks with cost-effective ways to offer and deliver a broader range of non-lending services. Online platforms facilitated efficient customer acquisition, improved services delivery and reduced operational costs, boosting profit margins for these services.

The profit performance of commercial banks is a critical determinant of their sustainability, competitiveness, and contribution to national economic growth. In recent years, Nigerian commercial banks have increasingly adopted Automated Teller Machines (ATMs) and Point-of-Sale (POS) electronic mediums as part of their service delivery innovations. While these technologies are intended to enhance service efficiency, customer satisfaction, and operational cost reduction, there is a lack of empirical evidence on how they impact the profit performance of the banks. Despite their widespread use, challenges such as system downtimes, transaction errors, and security vulnerabilities may undermine their potential profitability benefits. In a banking environment marked by stiff competition, the strategic importance of ATMs and POS as revenue generators remains unclear, especially when considering costs associated with maintenance, infrastructure, and security. The absence of clear insights into how these electronic platforms influence key profit indicators such as return on assets (ROA), return on equity (ROE), and net interest margins (NIM) has created a gap in understanding their true impact.

For instance, Oniore and Okoli (2019) in their study on the effect of online banking on DMB efficiency in Nigeria, found that ROA was positively affected by point-of-sale systems, but it is negatively affected by internet or online payment systems and has no statistical significance when it comes to ATMs. Similarly, Taiwo and Agwu (2017) who looked into how e-banking adoption affected organisational performance, reported that the operational efficiency of banks in Nigeria has increased since the introduction of electronic banking compared to the era of conventional banking, noting further that bank stability, income, and capital bases all saw an uptick. Also, Nwankwo and Agbo (2021) in their study to ascertain how commercial banks fared when customers used ATMs, POS systems, and mobile banking for the period 2013–2017, found that commercial banks in Nigeria benefited significantly from ATM transactions, but suffered mildly from point-of-sale terminals and mobile banking transactions. In the same vein, findings from Ezie (2023) on the impact of online banking on the efficiency of Nigerian banks for the period 2009Q1 to 2023Q1, reported that there is a clear correlation between the total number of point-of-sale transactions (POS) and the impact of electronic banking on the long-term profitability of Nigerian banks.

Therefore, this study investigated the role of Automated Teller Machines (ATM) and Point-of-Sale (POS) electronic medium on profit performance of commercial banks in Nigeria between 2009 and 2022.

## **2. The Literature**

### **2.1 Conceptual Review**

#### **Profit Performance of Nigerian Commercial Banks**

Profit performance refers to the ability of a financial institution to generate earnings relative to its revenue, assets, and equity. Mawutor, et al., (2019) describes profit performance as a company's ability to utilize its financial resources effectively and could be judged by how much net income it generates in comparison to its total assets. In the context of Nigerian commercial banks, profit performance is critically influenced by various factors, including operational efficiency, customer base, market competition, and the adoption of technology. Understanding the determinants of profit performance is essential for banks in Nigeria to devise strategies that enhance their financial outcomes in a rapidly evolving economic landscape.

#### **Non-Lending Electronic Services**

Non-lending electronic banking services are digital banking services provided by financial institutions that do not involve issuing loans or lines of credit (Ebimotimi, 2024). These services focus on streamlining financial management, enhancing transaction convenience, and offering customers increased access to banking products online or through mobile devices. Non-lending services encompass an extensive array of financial products and offerings beyond traditional loans, embracing

avenues such as deposit services, payment processing, wealth management, investment advisory, insurance, and various fee-based services. These non-interest income sources, once peripheral, have now evolved into indispensable components of banks' revenue portfolios, shaping their profitability in profound ways (KPMG, 2021).

### **Electronic Banking Construct: The ATM and POS Dimensions**

The synergistic effect of ATMs and POS systems in enhancing the profit performance of Nigerian commercial banks cannot be overstated. Together, these electronic mediums provide a comprehensive approach to customer service and operational efficiency, leading to increased transaction volumes and reduced costs (Akinwumi, 2021). The integration of these technologies allow banks to collect valuable data on customer behaviour and preferences, enabling them to tailor their products and services more effectively, which can lead to enhanced customer loyalty and retention (Nwanosike & Nnanna, 2021). Moreover, as banks continue to invest in the development and maintenance of these technological infrastructures, they are likely to experience improved profit performance in a competitive banking environment.

## **2.2 Theoretical Review**

### **Technology Acceptance Theory (TAT)**

The Technology Acceptance Theory (TAT), developed by Fred Davis in 1986, modifies the Theory of Reasoned Action (TRA) to explain how individuals adopt and utilize new technologies, such as Automated Teller Machines (ATMs) and Purchase-Order-Sales (POS) systems within the banking sector (Davis, 1986). TRA, formulated by Martin Fishbein and Icek Ajzen in 1967, posits that behavioral intentions are influenced by two key factors: attitudes toward the behaviour and subjective norms, which represent perceived social pressures to engage in a specific action (Fishbein & Ajzen, 1975). In the context of electronic banking services, these factors significantly affect customers' intentions to utilize ATMs and POS systems, ultimately impacting the profit performance of commercial banks in Nigeria.

As research progressed, the limitations of TRA became apparent, particularly in scenarios where external factors limited individuals' control over their behaviours. Bagozzi et al. (2012) found that individuals often form attitudes and intentions towards new technologies like ATMs and POS systems before actual usage, indicating that effective adoption may require time and exposure to the technology. TAT expands upon this by asserting that users' intentions to engage with a system are influenced by their perceptions of its usefulness and ease of use (Davis, 1989). Consequently, intention to use serves as a mediator between perceived usefulness and actual system usage, with perceived ease of use directly impacting perceived usefulness.

This research is anchored in Technology Acceptance Theory (TAT) due to its relevance in understanding the acceptance and adoption of electronic banking technologies. By focusing on customers' perceptions of ease and usefulness, Nigerian commercial banks can develop targeted strategies to enhance user experiences with ATMs and POS systems. These strategies can increase adoption rates and, in turn, improve profit performance from non-lending services, thereby contributing to the overall financial health of these institutions.

### **2.3 Hypothesis Premise**

Odhiambo (2019) examined the impact which electronic banking has had on the performance of DMBs in Nigeria. The researchers made use of secondary panel quarterly data over the period from 2006 and 2017 obtained from CBN statistical bulletin and some banks' audited annual accounts. The OLS regression results indicated that POS positively and statistically impacted ROA while WEB (internet or online) payment and ATM were negatively and statistically insignificant with ROA.

Osinubi et al. (2022) studied whether there is any relationship between internet banking and profitability of Fidelity bank PLC in Nigeria. The researchers used questionnaires, primary data instrument administered to 200 staff of the bank in Lagos. The results of the descriptive survey research showed that ATM and POS had a positive and significant relationship with profitability.

An empirical assessment of the effects of online banking on the efficiency of Sri Lankan commercial banks was performed by Prabodhi and Buddhika (2022). The research relied on secondary panel data

collected from ten different financial institutions between 2014 and 2019. Using ordinary least squares regression, we found that WEB was positively and significantly related to ROA, but ATM was negatively related.

The purpose of this study by Aba-Bulgu (2022) was to examine how the cooperative bank of Oromia, Ethiopia fared after implementing online banking services. In order to gather all of the necessary information, the study mostly relied on questionnaires. While online banking and ATM banking were not significant predictors, mobile banking and agency banking were, according to the OLS regression results.

Osakwe and Ezeaku (2022) looked into how commercial banks in Nigeria have adapted to the rise of online banking. For the years 2006–2019, utilised secondary data derived from the statistics bulletin of the Central Bank of Nigeria (CBN). The ordinary least squares analysis revealed that ATM had a positive and statistically significant effect on ROA, POS had a negative and statistically significant effect on ROA, and M-Pay had no effect.

Okonkwo and Ekwueme (2022) sought to empirically investigate the impact of electronic payments on the efficiency of Nigerian DMBs. The research relied on secondary panel data collected from the audited annual accounts of thirteen different banks between 2009 and 2019. Based on the findings of the ordinary least squares regression, it was shown that whereas online or WEB payments had a negative effect on ROA, MPAY payments had a positive and statistically significant influence.

Okafor (2021) set out to conduct empirical research to determine if electronic banking had affected the growth of entrepreneurs in Nigeria. Secondary panel data for the years 2015–2020 was culled from eight different financial institutions for the study. The outcomes of the ordinary least squares regression demonstrated a positive correlation between PED and ATM, POS, WEB, and MPAY.

The impact of online banking on the efficiency of Nigerian DMBs was studied by Nabila et al. (2021). The 21 banks' annual reports from 2013 to 2017 and the Central Bank of Nigeria (CBN) Statistical Bulletin were used to acquire secondary panel data. Using ordinary least squares regression, we found that ATM, WEB, and MPAY all had a net positive effect on ROA.

The impact of online banking on DMB profitability in Nigeria was investigated experimentally by Aduaka and Awolusi (2020). The research relied on secondary panel data collected from audited annual accounts of banks between 2010 and 2017 and 150 questionnaires to which 137 individuals replied. According to the findings of the ordinary least squares regression, three payment methods had a positive and statistically significant effect on net interest margin (NIM): MPAY, CARDS, ATM, and POS. Internet banking, or WEB, had no effect.

From 2009Q1 to 2023Q1, Ezie (2023) studied the impact of online banking on the efficiency of Nigerian banks. With return on assets (ROA) as the dependent variable and point of sale (POS) and cheque (CHQS) as the independent variables, this article used the Dynamic Ordinary Least Squares (DOLS) method. There is a clear correlation between the total number of point-of-sale transactions (POS) and the impact of electronic banking on the long-term profitability of Nigerian banks. Electronic banking has a statistically significant and beneficial influence on the return on assets (ROA) of Nigerian banks, according to the results. Conversely, the impact of electronic banking on bank performance as measured by return on assets (ROA) is positively correlated with the coefficient of total transactions carried out on cheques (CHQS). This bodes well for the future of e-banking in Nigerian banks as the number of cheque transactions continues to climb. A model of the digital global market and banking sector should be implemented by government or financial institutions, according to the study, and banks should promote electronic banking to their customers. Concerning the usage of checks, it is necessary to devise efficient methods of discouraging their use and encouraging clients to switch to electronic banking.

In their 2019 study, Enoruwa et al. used statistics from the CBN statistical bulletin covering the years 2009–2017 to analyse the correlation between online banking and the profitability of Nigerian banks. To determine the type and extent of the link between the dependent and independent variables, regression analysis was employed. We utilised Total Bank Deposit as a proxy for the performance of the Nigerian banking system, and we used the transaction values of ATM Debit Cards, Mobile Banking, Point of Sale (POS), and Web Pay as proxies for electronic banking. The growing demand for e-channel

goods in Nigerian banks and beyond necessitated this investigation. The correlation results indicate a positive and statistically significant relationship between electronic channel products (such as ATMs, point-of-sale systems, web pay, and mobile pay) and bank performance. All of the factors are significantly associated with one another, according to the regression findings.

Ugwueze and Nwezeaku (2016) looked at how commercial banks in Nigeria fared when they used online banking. The study was prompted by the growing use of electronic banking, which has revolutionised financial services globally, including in Nigeria. The success of commercial banks was measured by the amount of money clients deposited, whereas electronic banks were evaluated by the value of their point-of-sale transactions. Data from the sample period (January 2009–December 2013) was analysed using the Engle-Granger cointegration model. Unlike savings and time deposits, which are not cointegrated with POS, demand deposits are. The banking public would be well-served by a comprehensive education campaign by the monetary authorities and commercial banks on the merits, ease, and significance of using online banking channels to conduct financial transactions.

H0<sub>1</sub>: Revenue from Automated Teller Machines (ATMs) has no significant effect on profit performance of the Commercial Banks in Nigeria.

H0<sub>2</sub>: Revenue from Purchase-Order-Sales (POS) has no significant effect on profit performance of the Commercial Banks in Nigeria.

### 3. Methodology

This research adopted *ex-post facto* research design. *Ex-post facto* involves a systematic empirical inquiry, in which an observer has no direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulated. The study basically employed annual time series data for the period 2009 to 2022. However, because of the very short study period which is not sufficient for the implementation of the Ordinary Least Square (OLS) estimation process, the annual time series were converted into quarterly data to provide a large data point sufficient enough for the execution of the OLS technique. The secondary data were extracted from published CBN statistical bulletin from 2009 to 2022. The population of the study comprises all the twenty-four commercial banks in Central Bank of Nigeria official website as at December 2023. The study then adopted a census-survey technique, where all the 24 commercial banks will be used in the study.

#### Model of Specification

The economic model used in the study (which was in line with what is mostly found in the literature) is given as:

$$Y(E) = f(ATM, POS) \dots\dots\dots (1)$$

$$PRP = \beta_0 + \beta_1 ATM_t + \beta_2 POS_t + \varepsilon \dots\dots\dots (2)$$

#### Variables Definition and Measurement

- ATM = Revenue from Automated Teller Machine,
- POS = Revenue from Point-Order-Sales
- $\beta_1 - \beta_2$  are the coefficient of the parameter estimate.
- $\beta_0$  the intercept
- $\varepsilon$  = error term

Descriptive statistics was computed using e-views which amongst other things help show the pattern, distribution, deviation and nature of the data. For the regression analysis, Ordinary Least Square (OLS) Regression was used to test the hypotheses. The study used the adjusted coefficient of determination (adj. R<sup>2</sup>) to measure the extent to which electronic banking services (ATM & POS) estimates profit performance from non-lending sources of Commercial banks in Nigeria from 2009-2022. The decision is that the null hypothesis was rejected if the p-value < 0.05; otherwise, it was accepted.

#### 4. Data analyses and Hypothesis Outcome

**Table 1: Descriptive Statistics of the variables**

	ATM	POS	PRP
Mean	6975.65	2192.41	39347.0
Median	8	2	2
Maximum	6480.09	2383.11	37705.5
Minimum	0	0	6
Std. Dev.	12044.0	3207.24	52966.0
Skewness	0	6	4
Kurtosis	4988.13	759.000	31682.8
Jarque-Bera	0	0	2
Probability	1803.23	886.414	6347.13
Sum	6	6	2
Sum Sq. Dev.	1.72160	-	0.80513
Observations	8	0.326979	7
	5.15878	1.57539	2.57663
	5	8	2
	11.6988	1.74048	1.96365
	9	2	9
	0.00288	0.41885	0.37462
	1	1	5
	118586.	37271.0	668899.
	2	1	4
	5202654	1257169	6.45E+0
	6	4	8
	56	56	56

**Source:** E-Views Output (2024)

As shown in Table 1, the mean value of PRP for all the sampled 24 banks is 39347.02 billion naira over the study period, with lowest and highest values of 31682 and 52966.04 billion naira respectively. With a standard deviation of 6347.132, the PRP of the banks that were investigated shows a significant amount of variability from the mean value. The skewness statistic value for PRP for the study period, which is 0.805137 is indicative of the fact that the data distribution for PRP is positively skewed and its kurtosis statistic (2.576632) shows that the distribution is mesokurtic in nature (meaning that, the distribution is not too peaky) but normal. This is further supported by the Jarque-Bera statistic value of PRP which is 1.963659 and its corresponding probability value of 0.374625 which is greater than 0.05. Throughout the research period, the average income from ATM was ₦6,975.658 billion, as shown in Table 4.1. The minimum and maximum income from ATM to all sampled 24 banks for the period stood at ₦4,988.236 and ₦12,044.00 billion respectively. A standard deviation of 1803.236 for ATM shows a significant amount of variability from the mean value. The skewness statistic value for ATM for the study period, which is 1.721608 is also indicative of the fact that the data distribution for ATM is positively skewed and its kurtosis statistic (5.158785) shows that the distribution is platykurtic in nature (meaning that, the distribution is has a fat tail and is very peaky) and not normal. This is further supported by the Jarque-Bera statistic value of ATM which is 11.69889 and its corresponding probability value of 0.002881 which is less than 0.05.

Revenue from POS has an average of ₦2,192.412 billion, with a corresponding minimum and maximum values of ₦759.00 and ₦3,207.246 billion respectively over the study period. The data distribution for POS is seen to be negatively skewed as its skewness statistic has a negative value of -0.326979, with a corresponding kurtosis, Jarque-Bera and Probability values of 1.575398, 1.740482 and 0.418851, indicating that the data distribution for POS is normal as the probability value is greater than 0.05.

**Table 2: OLS Estimates of Non-Lending Electronic Banking Services and Profit Performance of Commercial Banks in Nigeria.**

Dependent Variable: PRP

Method: Least Squares

Sample (adjusted): 2009Q1 2022Q1

Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15025.56	4072.764	3.689279	0.0018
ATM	0.792059	0.221008	3.583841	0.0023
POS	0.221461	0.068136	3.250257	0.0047
R-squared	0.871927	Mean dependent var		35890.44
Adjusted R-squared	0.814896	S.D. dependent var		7326.192
S.E. of regression	74.54060	Akaike info criterion		11.71490
Sum squared resid	94457.11	Schwarz criterion		12.10494
Log likelihood	-138.4363	Hannan-Quinn criter.		11.82308
F-statistic	33117.09	Durbin-Watson stat		1.947864
Prob(F-statistic)	0.000000			

**Source: Author's computation using E-views 10**

**Hypothesis 1 (H<sub>01</sub>):** Revenue from Automated Teller Machines (ATMs) has no significant effect on profit performance of the Commercial Banks in Nigeria.

From Table 2, the absolute student t-statistic value for revenue from Automated Teller Machines (ATMs) of 3.583841 and its corresponding probability value of 0.0023 showed that revenue from Automated Teller Machines (ATMs) has a significant effect on profit performance of commercial banks over the period of the study. This is because, the absolute t-statistic value (3.583841) that corresponds with ATM is greater than 2 and its corresponding p-value (0.0023) is also less than 0.05. Therefore, hypothesis one of this study is rejected and its alternate hypothesis is accepted. The study thus concludes that revenue from Automated Teller Machines (ATMs) has a significant effect on profit performance of the commercial banks in Nigeria.

**Hypothesis 2 (H<sub>02</sub>):** Revenue from Purchase-Order-Sales (POS) has no significant effect on profit performance of the Commercial Banks in Nigeria.

From Table 2, the absolute student t-statistic value for revenue from Purchase-Order-Sales (POS) of 3.250257 and its corresponding probability value of 0.0047 showed that revenue from Purchase-Order-Sales (POS) has a significant effect on profit performance of commercial banks over the period of the study. This is because, the absolute t-statistic value that corresponds with POS (3.250257) is greater than 2 and its corresponding p-value (0.0047) is also less than 0.05. Therefore, hypothesis two of this study is rejected and its alternate hypothesis is accepted. The study establishes that revenue from Purchase-Order-Sales (POS) has a significant effect on profit performance of the commercial banks in Nigeria.

## 5. Conclusion, Implications and Recommendation

The study revealed that revenue from Automated Teller Machines (ATMs) has a significant effect on the profit performance of the commercial banks in Nigeria. This finding implies that the revenue from ATMs as a component of electronic banking has significantly improved the profit performance of commercial banks in Nigeria. Practically, a substantial portion of banks' revenue is derived from ATM transaction fees, impacting their overall profitability. Moreover, the expansion of ATM networks enhances accessibility to banking services, fostering financial inclusion and potentially increasing customer base and transactions, further boosting profits. From a policy perspective, regulators must strike a balance between promoting ATM usage for financial inclusion and ensuring that excessive fees do not hamper consumers' patronage. Additionally, policies aimed at encouraging banks to invest in innovative ATM technologies could enhance efficiency and profitability. Theoretically, the relationship between ATM revenue and bank profits underscores the importance of technology adoption and service delivery mechanisms in shaping financial performance within the banking sector, highlighting the need for further research on the dynamics of ATM usage and its impact on bank profitability in emerging economies like Nigeria. This supports Odhiambo (2019) who studied how e-banking affects the performance of DMBs in Kenya and that ATM, WEB, MPAY, and agency banking positively and statistically impacted ROA.

The study revealed that revenue from Point-of-Sales (POS) has a significant effect on profit performance of the commercial banks in Nigeria. Practically, this implies that POS revenue contributes to banks' fee income, diversifying their revenue streams and potentially bolstering profitability. The proliferation of POS terminals facilitates electronic payments, driving transaction volumes and promoting financial inclusion, which can translate to increased deposits and lending opportunities for banks, further enhancing profits. From a policy standpoint, regulators must ensure a conducive environment for POS deployment, including measures to address security concerns and promote interoperability among different POS systems. Furthermore, policies promoting digital payment adoption and infrastructure development can amplify the role of POS transactions in driving bank profits. Theoretically, the relationship between POS revenue and bank profitability underscores the evolving nature of banking in the digital age, emphasizing the importance of technological innovations and payment infrastructure in shaping financial performance within the Nigerian banking sector. This supports Osinubi et al. (2022) who studied whether there is any relationship between internet banking and profitability of Fidelity bank PLC in Nigeria and reported that POS had a positive and significant relationship with profitability. The rise of electronic banking services, particularly Automated Teller Machines (ATMs) and Purchase-Order-Sales (POS) systems, has transformed the financial sector in Nigeria, reshaping traditional banking operations. As Nigerian commercial banks adapt to changing customer preferences and technological advancements, this study highlights the critical role that revenues from ATMs and POS services play in enhancing profit performance. The findings indicate that income generated from these electronic services significantly contributes to the overall profitability of commercial banks.

The results underscore a fundamental shift in the banking industry's earnings structure, moving away from a heavy reliance on lending activities. Instead, the profitability derived from non-lending electronic banking services is becoming increasingly important, showcasing the potential for banks to diversify their revenue streams effectively. Ultimately, the study demonstrates that Nigerian commercial banks stand to benefit significantly from the integration of technology into their operations, as electronic banking services not only enhance customer satisfaction but also bolster financial performance in an evolving market landscape.

In line with the findings of the study, the following recommendations are made:

1. To optimize profit performance, Nigerian Commercial Banks should strategically leverage revenue generated from Automated Teller Machines (ATMs) by expanding ATM networks, enhancing fee structures, and investing in innovative ATM technologies to meet evolving customer needs and preferences.
2. To capitalize on the substantial effect of revenue from Purchase-Order Sales (POS) on profit performance, Nigerian Commercial Banks should prioritize investments in POS infrastructure,



streamline transaction processing, and innovate fee structures to maximize revenue generation and enhance overall profitability.

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