Impact of Digital Payment Systems on Revenue Generation of Federal Inland Revenue Service In Nigeria

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Abstract

This study investigates the impact of digital payment systems on revenue generation for the Federal Inland Revenue Service (FIRS) in Nigeria, using a quarterly dataset spanning from the first quarter of 2009 to the last quarter of 2024. Employing Autoregressive Distributed Lag (ARDL) technique for data analysis, the findings indicate that both Remita (RMTA) and National Electronic Funds (NEFT) Transfer do not have a statistically significant impact on FIRS revenue during the analyzed period. This indicates that these platforms may not be effectively utilized for tax-related transactions or lack sufficient transaction volumes to impact overall revenue. Conversely, the result shows that Web Pay has a significant positive impact on revenue generation, indicating that transactions processed through this platform are likely associated with taxable activities, thereby enhancing revenue collection. The success of Web Pay can be attributed to its user-friendly interface and reliability, which encourage increased taxpayer engagement in digital transactions. However, the study also finds that Mobile Pay has a significant negative impact on FIRS revenue generation, potentially due to lower adoption rates for tax-related transactions or challenges in tracking and reporting. Based on these findings, it is recommended that FIRS prioritize Web Pay, promote its adoption through targeted campaigns, and investigate the limitations of Remita and National Electronic Funds Transfer. Additionally, a comprehensive assessment of Mobile Pay is necessary to identify and address barriers, aiming to transform it into a more effective revenue-generating tool for the FIRS.

Keywords: Digital Payment Systems; Revenue Generation; RMTA; NEFT, Web Pay, Mobile Pay

1.0 Introduction

Nigeria is grappling with significant fiscal challenges, reflected in one of the lowest tax-to-GDP ratios globally at 6.3% (Oyadeyi, 2022). This situation creates unsustainable revenue collection amid increasing public spending demands. As a result, there is an intensified search for innovative solutions, especially within the Federal Inland Revenue Service (FIRS), which is responsible for over 70% of federal revenue (FIRS, 2023). The rise of digital payment systems offers a transformative opportunity, as transaction values improved from ₦73.7 trillion in 2019 to ₦387.1 trillion in 2023 (CBN, 2024), following the implementation of Nigeria's cashless policy. This digital shift has the potential to address longstanding issues in tax administration, including cash-based tax evasion, inefficiencies in manual collection, and delays in reconciliation that has historically hampered revenue performance. Globally,

61

the adoption of digital payment systems is reshaping financial transactions, and Nigeria is no exception (Usman et al, 2024). This transition could significantly enhance revenue generation for the FIRS (Olaoye & Atilola, 2018). Traditional tax collection approaches in Nigeria have been marred by inefficiencies, corruption, and tax evasion (Akintola et al, 2021). Digital payment systems can improve transparency, lessen administrative burdens, and boost tax compliance (Adefulu et al, 2023).

Additionally, Nigeria has seen a rapid increase in digital payment adoption, supported by factors such as rising smartphone usage, Fintech innovation, and the Central Bank of Nigeria's (CBN) cashless policy (CBN, 2017). Payment methods like mobile wallets, internet banking, Point of Sale (POS) systems, and Unstructured Supplementary Service Data (USSD) are gaining popularity (EFInA, 2023). The COVID-19 pandemic further accelerated this trend as businesses and consumers sought contactless payment options (Arewa & Santoro, 2022). In response to the technological shift in tax administration, the Federal Inland Revenue Service (FIRS) has launched initiatives like the TaxPro-Max platform, which reportedly led to a 47% increase in non-oil tax receipts (FIRS, 2022). However, significant knowledge gaps remained regarding the quantitative impact and sustainability of these improvements, particularly given Nigeria's informal economy, which constitutes 42.5% of GDP (NBS, 2023). The urgency for assessment is heightened by interconnected challenges, including a substantial tax compliance gap—where only 12% of taxable entities comply (Adekanola & Yusuf, 2022) and a fiscal crisis in which debt servicing takes up 98% of government revenue (BudgIT, 2023).

Additionally, obstacles such as inadequate infrastructure, low financial literacy, and a large unbanked population hinder the effective use of digital payment systems for tax collection (Adejuwon & Olasunkanmi, 2023; NCC, 2023). This study aims to investigate how various digital payment systems such as Remita, National Electronic Funds Transfer (NEFT), POS, mobile money, e-invoicing, ATMs, Web Pay, and Mobile Pay affect FIRS revenue generation in Nigeria, emphasizing the need to address these challenges to fully leverage digital payment systems. From an empirical perspective, several notable studies have been conducted, including those by Olurankinse and Oladeji (2018), Usman and Okoroigwe (2025), Saadu and Danmalam (2025), Adegbie and Akinyemi (2020), Onuselogu and Onuora (2021), and Omehe, Okowa, and Okolie (2023). These prior studies utilized survey datasets. In contrast, this study adopts a different approach by analyzing a secondary quarterly dataset spanning from the first quarter of 2009 to the last quarter of 2024. Furthermore, none of the existing research has incorporated digital payment methods such as Web Pay and Mobile Pay in their analyses. As a result, this study addresses these gaps by investigating the impact of digital payment systems on FIRS revenue generation in Nigeria. To achieve this objective, the study is structured into five sections: the first section introduces the topic, section two reviews relevant literature, section three details the data and methodology used, section four discusses the results, and section five concludes with recommendations.

2.0 Literature Review

2.1 Review of Related Empirical Studies

Empirically, several relevant studies on digital payment systems have been conducted both within Nigeria and internationally. For instance, Mayunga and Jilenga (2024) conducted a study to evaluate the impact of the Government e-Payment Gateway (GePG) on revenue generation in higher education institutions, specifically focusing on Arusha and Moshi in Tanzania.

The findings indicated a significant increase in revenue following the implementation of GePG, which was attributed to improved financial transparency and more predictable revenue streams. However, the study also revealed variations in the extent of revenue enhancement, suggesting differing levels of GePG integration across institutions. Key factors identified for successful GePG adoption included comprehensive staff training and strong leadership support, although the degree of strategic integration varied among institutions.

Haji and Jilenga (2022) examined the effectiveness of an e-payment system on revenue collection at the Zanzibar Revenue Board (ZRB) in Tanzania using a survey dataset for a sample of 67 respondents. By applying Ordinary Least Square (OLS) regression, the findings revealed a positive and significant relationship between system usability and revenue collection in Zanzibar, with computer literacy and awareness playing crucial roles. Specifically, the study found that improvements in e-payment system usability could significantly increase revenue collection.

In addition, the primary objective of Okiro's (2015) assesses the effect of e-payment systems on revenue collection by the Nairobi City County Government. The research utilized a descriptive approach, focusing on 18 government departments operational from 2013 to 2015. Data were gathered from secondary sources and analyzed using Ordinary Least Square (OLS) regression. The study found a considerable increase in revenue collection performance following the introduction of the e-payment system. It concluded that adopting e-payment systems positively influences revenue collection in Nairobi City County. A significant relationship was identified between the level of compliance with budget estimates before and after the adoption of e-payment. This indicates that compliance levels were significantly enhanced post-adoption, as both values were below the 0.05 threshold. Furthermore, the study revealed that 92.20% of the variation in revenue collection performance in Nairobi City County could be attributed to the adoption of the e-payment system. This strong correlation emphasizes the critical role that e-payment systems play in enhancing revenue collection efficiency within the local government.

Kessy (2019) conducted a study to examine the influence of e-payment systems on revenue collection in Kinondoni Municipal, Dares Salaam, Tanzania. Utilizing a semi-structured questionnaire, data were collected from 77 respondents, including revenue collectors and administrators, through a simple random sampling procedure and used Ordinary Least Square (OLS) regression. The results indicated that a majority of respondents acknowledged the positive impact of e-payment on revenue collection, primarily by enhancing tax compliance. The study further highlighted that e-payment systems provide a competitive advantage in monitoring revenue sources and improving the quality of financial reporting. A positive linear relationship was established between e-payment and revenue collection, specifically related to tax compliance, monitoring capabilities, and financial reporting. However, the study also identified several challenges associated with the implementation of e-payment systems, including poor connectivity, limited awareness among users, lack of technical assistance, inadequate experience with the technology among tax collectors, and unreliable power supply. These factors could hinder the effectiveness of e-payment systems in enhancing revenue collection.

Chepkoech et al. (2022) assessed the effects of e-services, mobile payment systems, and e-banking on sustainable revenue collection within the Nairobi County Government. Grounded in the Information Systems Success Theory, Diffusion Innovation Theory, and Resource-Based Theory, the researchers adopted a cross-sectional research design.

The target population included staff from the Nairobi County Government (NCCG) and the Kenya Revenue Authority (KRA), comprising 98 middle-level and 143 low-level management employees. Given the small population size, all employees were included in the study. Primary data were collected through semi-structured questionnaires, and used Ordinary Least Square (OLS) regression. The findings revealed that various e-payment methods significantly enhance revenue collection. Specifically, e-receipting improved the county's revenue collection, the use of e-services facilitated revenue generation, and e-billing contributed positively to the county's revenue efforts. Additionally, e-invoicing was found to enhance sustainability in revenue collection. The study highlighted that the county government primarily uses M-Pesa for revenue collection, with mobile payments facilitated through USSD codes and an Android app, along with a web portal that supports the overall revenue collection process.

Mtebe and Sausi (2021) evaluated the performance of the Government e-Payment Gateway (GePG) system by assessing its success in terms of public value, focusing on efficiency, effectiveness, and social value. Employing a concurrent mixed research design, the researchers integrated questionnaires with interviews, involving a total of 442 respondents from 271 public institutions across 11 regions in Tanzania. The findings revealed significant improvements associated with the use of the GePG system. Specifically, revenue collection increased by 44.28%, while the costs associated with revenue collection decreased by 27.10% between the fiscal years 2015/2016 and 2019/2020 in the surveyed institutions. Additionally, the implementation of the system fostered greater trust between citizens and the government, enhancing transparency and traceability in the revenue collection process. However, the study also identified challenges that hindered optimal performance. Notably, the lack of integration between the GePG system and institutional billing systems, as well as the absence of self-service facilities in some institutions, were significant barriers to maximizing the system's potential.

Furthermore, from the Nigeria's context, studies were conducted by Olurankinse and Oladeji (2018) investigated the relationship between self-assessment, e-taxation payment systems, and revenue generation in Nigeria. The research utilized a cross-sectional survey with a quasi-experimental design, targeting 30 tax executives from 30 quoted companies in Rivers State. A total of 30 questionnaires were administered to the selected executives. To analyze the data, the researchers employed Ordinary Least Square (OLS) regression. The results indicated a positive and significant relationship between self-assessment practices and e-taxation payment systems in relation to revenue generation. The paper concludes that e-taxation represents an online tax payment and administration system designed to generate tax revenues from all eligible taxpayers following statutory guidelines. The self-assessment tax payment system allows taxpayers to voluntarily complete their tax returns based on legislations approved by the government. While self-assessment can be conducted manually or electronically, e-taxation is strictly an electronic process, facilitating tax filing through bank accounts. These systems are implemented by the government to enhance effective revenue generation.

Furthermore, Usman and Okoroigwe (2025) investigated the impact of tax e-filing systems and e-payment platforms on revenue generation in Niger State, Nigeria. Utilizing a quantitative cross-sectional survey design, the researchers administered structured questionnaires to 156 senior management staff of the Niger State Internal Revenue Service (NSIRS). Data collected from the questionnaires were analyzed using both descriptive and inferential statistics. Multiple Linear Regression was employed to test the research hypotheses. The findings revealed that, despite the potential benefits of electronic filing, it does not significantly contribute to revenue generation.

The study concludes that enhancing the effectiveness of e-filing requires increased public education, technical improvements, and incentives for digital filing. Conversely, the research confirmed that electronic payment systems are critical for tax revenue generation. It emphasized that ensuring a secure and efficient e-payment platform would encourage taxpayer compliance, reduce fraud, and streamline revenue collection processes.

Sa'adu and Danmalam (2025) studied the effect of e-payment systems on tax revenue generation in Nigeria, focusing on the Federal Inland Revenue Service (FIRS) as the unit of analysis. A sample of 407 respondents was surveyed, and Ordinary Least Square (OLS) regression was employed to analyze the data. The findings indicated a positive and significant relationship between e-payment and revenue generation at FIRS. This indicates that the agency effectively utilizes electronic means for revenue collection, including credit card options like MasterCard, Visa, and Verve, as well as POS systems. Furthermore, Adegbie and Akinyemi (2020) analyzed the impact of electronic payment systems on revenue generation in Lagos State, Nigeria. A survey research design was employed, focusing on a population of 4,275 staff members from six selected revenue-generating agencies. Using Taro Yamane's sampling formula, a sample size of 366 was determined. Data were collected via a structured questionnaire, which demonstrated a reliability coefficient ranging from 0.71 to 0.93, achieving a 100% retrieval rate. The study utilized percentage frequency tables, analysis of variance (ANOVA), and Ordinary Least Square (OLS) regression. The findings indicated that electronic payment variables, specifically Automated Teller Machines (ATMs) and Electronic Tax Collection (ETC) had significant and positive effects on various aspects of revenue generation:

Onuselogu and Onuora (2021) conducted a study to evaluate the effectiveness of the electronic taxation system adopted in Nigeria in reducing tax evasion and addressing issues associated with the previous manual taxation system in Anambra State. The research focused on its impact on revenue generation, particularly concerning company income tax and personal income tax. Primary data were gathered through a 5-point Likert scale questionnaire that assessed respondents' perceptions and opinions regarding the study's objectives. By employing Ordinary Least Square (OLS) regression the findings revealed that the electronic tax system significantly reduced instances of tax fraud in Anambra State, Nigeria, and notably improved revenue generation from personal income tax and company income tax. Finally, Omehe, et al. (2023) conducted a study to investigate the impact of e-tax payment systems on revenue generation in South-South Nigeria. Utilizing a descriptive survey design, the research focused on the Board of Internal Revenue across the six states in the region. A sample of 165 respondents was selected through simple random sampling, achieving a response rate of 82.6%. Data were collected using a validated questionnaire, with reliability tested via Cronbach's alpha, resulting in a reliability score of 0.72, deemed acceptable for the study. The analysis employed regression techniques, revealing several key findings: there is a positive and significant effect of e-tax payment on revenue generation in South-South Nigeria; the e-tax payment system effectively controls tax evasion and enhances revenue generation; and a significant interrelationship exists between e-tax payment, administration, and control regarding tax evasion and revenue generation in the region.

2.1 Theoretical Framework

The most appropriate theory for examining the impact of digital payment systems on FIRS revenue generation in Nigeria is the Technology Acceptance Model (Davis, 1989). This choice is grounded in the model's specific focus on the factors influencing user adoption and acceptance of technology (Durodolu, 2016).

Given that the effectiveness of digital payment systems hinges on taxpayer engagement, understanding the perceived ease of use (PEOU) and perceived usefulness (PU) becomes crucial (Okwong et al, 2024). If taxpayers perceive these systems as beneficial and user-friendly, they are more likely to adopt them, leading to improve tax compliance (Tambun & Muhtiar, 2019) and increased revenue generation for the FIRS (Olaoye & Atilola, 2018). TAM is particularly relevant to the Nigerian context, where traditional tax collection methods have faced significant challenges, including inefficiencies and corruption (Akintola et al, 2021). The transition to digital payment systems represents a significant shift in how taxes are collected.

3.0 Methodology

This study utilized a quarterly dataset covering the period from the first quarter of 2009 to the last quarter of 2023, with data sourced from the Central Bank of Nigeria's website and the Planning, Research, and Statistics Department of the Federal Inland Revenue Service. This timeframe was selected based on the availability of data on digital payment systems, including the Remita (RMTA), National Electronic Funds Transfer (NEFT), Web Pay, and Mobile Pay. The dependent variable analyzed was the total actual revenue generated by the Federal Inland Revenue Service (FIRS). Meanwhile, the independent variables considered in the analysis included Remita, national electronic funds transfer, Web Pay, and Mobile Pay, all measured in billions of Naira. Hence, following the works of Nyoka et al (2023) and Sa'adu and Danmalam (2025) the model for this study is specified as:

$$REV_t = \beta_0 + \beta_1 RMT_t + \beta_2 NEFT_t + \beta_3 WPAY_t + \beta_4 MPAY_t + \mu_t \ldots\ldots\ldots\ldots 1$$

From equation 1, REV represents FIRS revenue generation, $RMTA$ is the Remita, $NEFT$ is the National Electronic Funds Transfer, $WPAY$ is the web pay, while $MPAY$ is the mobile pay, β_1 to β_4 are the coefficients of the dependent variables while β_0 and μ are the intercept and error term respectively. However, to analyze both short-run and long-run effects, equation 2 is estimated by applying the Autoregressive Distributed lag (ARDL) approach developed by Pesaran, Shin and Smith (2001). Thus, the equation becomes:

$$\Delta REV_t = \beta_o + \sum_{i=1}^{m} \beta_1 \Delta REV_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta RMTA_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta NEFT_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta WPAY_{t-i} + \sum_{i=1}^{m} \beta_5 \Delta MPAY_{t-i}$$

$$+ \alpha_1 REV_{t-1} + \alpha_2 RMTA_{t-1} + \alpha_3 NEFT_{t-1} + \alpha_4 WPAY_{t-1} + \alpha_5 MPAY_{t-1} + \varepsilon_t \ldots 2$$

Where Δ is the first difference operator, m stands for optimal lag, β_1 to β_5 are the coefficients of the short-run parameters, while α_1 to α_5 are the long-run coefficients of the variables in the equations. β_0 is the constant and μ is the error term. All other variables are as defined in equation 1. In an attempt to test the hypotheses, the null hypothesis of the ARDL model is expressed as H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ which means that there is no long run relationship among the variables. On the other hand, the alternative hypothesis is stated as H_1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$ which indicates that there is an existence of long run relationship among the variables. However, the error correction representation of equation 2 is formulated as:

$$REV_t = \beta_o + \sum_{i=1}^{m} \beta_1 \Delta REV_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta RMTA_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta NEFT_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta WPAY_{t-i}$$

$$+ \sum_{i=1}^{m} \beta_5 \Delta MPAY_{t-i} + \beta_6 ecm + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Where ECM is the error correction term generated from the ARDL models and β_6 is the coefficient of the ECM which express the speed of adjustment back to equilibrium in case of any distortion in the economy. Furthermore, before applying the ARDL model, pre-estimation tests were performed using the Augmented Dickey-Fuller and Phillips-Perron tests to assess the stationarity of the series. Finally, post-estimation tests for autocorrelation, heteroscedasticity, and misspecification test were conducted to confirm the validity of the results.

4.0 Results and Discussions

This section presents the results on the impact of digital payment systems on FIRS revenue generation in Nigeria. The analysis begins with an assessment of the descriptive characteristics of the variables, and the results are reported in Table 1.

Table 1: Summary Statistic of the variables

Statistics	REV	RMTA	NEFT	WPAY	MPAY
Mean	4933.330	4633.631	6002.966	1.93E+08	40204.33
St. Dev.	4707.308	6759.632	6916.158	7.54E+08	76742.07
Skewness	2.726507	1.383581	0.296013	3.614783	1.808314
Kurtosis	10.55417	3.527066	1.135372	14.06666	4.668123
Jarque-Bera	231.4687	21.15994	10.20622	465.9670	42.30035
Probability	0.000000	0.000025	0.006078	0.000000	0.000000
Observations	64	64	64	64	64

Source: Author computation using EViews version 12.0.

Table 1 presents the summary statistics of the variables used in this study. The mean revenue generated is approximately 4,933.33 billion Naira, with a standard deviation of 4,707.31 billion Naira, indicating a relatively high variability in revenue generation across the observed periods. The results indicate that the quarterly growth rate of the Federal Inland Revenue Service (FIRS) is ₦4,933.33 for the period spanning from the first quarter of 2009 to the fourth quarter of 2024. The skewness value of 2.73 suggests that the revenue distribution is positively skewed, meaning a larger number of lower revenue periods compared to higher ones. The kurtosis value of 10.55 indicates a distribution that is much sharper than a normal distribution and this is confirmed by the Jarque-Bera statistic of 231.47, with a probability of 0.000, that the revenue data significantly deviates from normality.

For the independent variables, the quarterly growth rates for Remita, NIBSS Electronic Fund Transfer, Web Pay, and Mobile Pay transactions are ₦4,633.631 billion, ₦6,002.966 billion, ₦193 billion, and ₦40,204.33 billion, respectively. This indicates that the digital payment systems, including Web Pay, and Mobile Pay, experienced positive growth rates throughout the study period.

The standard deviations for these variables are 6759.632, 6916.158, 754, and 76,742.07, indicating varying levels of volatility in the adoption and usage of these digital payment systems. Furthermore, the stationarity of the variables was assessed using the Augmented Dickey-Fuller and Phillips-Perron tests, with results provided in Table 2.

Table 2: Unit Root Test (Augmented Dickey-Fuller and Phillips-Perron)

Variables	Augmented Dickey-Fuller		Phillips-Perron	
	Level I(0)	First Diff. I (1)	Level I(0)	First Diff. I(1)
Revenue Generation	-2.2027	-7.5723***	-1.8209	-7.9279***
Remita	-1.5098	-7.7420***	-1.5881	-7.7420***
National Electronic Funds Tr.	-1.7339	-7.8623***	-1.7339	-7.8623***
Web Pay	-0.2205	-7.8741***	-0.8590	-8.1831***
Mobile Pay	-4.8456***	-2.4879	-0.4728	-8.9268***

Source: *Authors computation from EViews Version 12.0.*

Note ***, **, * indicating significance at 1%, 5%, 10% respectively.

The results from the unit root tests, specifically the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, indicate that FIRS revenue generation, Remita, national electronic funds transfer and Web Pay become stationary after the first difference. In contrast, Mobile Pay is stationary at its level value. Given the varying orders of integration among the variables, it is concluded that the Autoregressive Distributed Lag (ARDL) model is the most appropriate and effective method for analyzing these results. Therefore, this study proceeds to conduct a bound test using the ARDL model, with the findings detailed in Table 3.

Table 3: ARDL Bounds Test

F-Statistics	5.59	
Critical Value Bounds		
Significance levels	I(0) Bounds	I(1) Bounds
10%	2.2	3.09
5%	2.56	3.49
1%	3.29	4.37

The results of the bound test, shown in Table 3, provide strong evidence of cointegration among the variables. This is further supported by the F-statistic value of 5.59, which exceeds the critical value bounds at the 1% significance level. As a result, the alternative hypothesis is accepted, while the null hypothesis of no cointegration is rejected. The existence of cointegration enables the study to estimate both the long-run and short-run coefficients of the ARDL model. The long-run coefficients of the ARDL model are detailed in Table 4.

Table 4: Digital Payment System and FIRS Revenue Generation in Nigeria

Dependent Variable: FIRS Revenue Generation

Variables	Coefficients	std. Error	t-Statistics	Prob.
Remita	0.0803	0.0603	1.3331	0.1880
National Electronic Funds Transfer	-0.0075	0.0657	-0.1147	0.9091
Web Pay	0.0000	0.0000	9.1340	0.0000
Mobile Pay	-0.0233	0.0084	-2.7938	0.0072
Constant	4219.7891	763.4236	5.5275	0.0000

$R^2 = 0.92$, Adj. $R^2 = 0.91$, DW = 1.83, F-Stat. = 99.51 (0.0000), AIC = 16.3928, SIC = 16.6649, HQC = 16.4998

The results presented in Table 4 provides empirical evidences on the relationship between digital payment systems and FIRS revenue generation in Nigeria. The results indicate that both Remita and National Electronic Funds Transfer (NEFT) do not have a statistically significant impact on FIRS revenue, even at the 10% significance level. This suggests that an increase of one unit in financial transactions processed through either Remita or NEFT is unlikely to lead to any noticeable change in FIRS revenue generation. The lack of significance may be attributed to several factors. For instance, it is possible that the transaction volumes for these platforms are not sufficiently large enough to influence overall revenue, or that the types of transactions processed do not align with revenue-generating activities for FIRS. Additionally, the administrative or operational frameworks surrounding these payment systems may not effectively facilitate the collection of taxes or fees that contribute to FIRS revenue. Moreover, the results could imply that taxpayers may not be utilizing these payment methods for transactions that are taxable, or that there may be alternative payment methods that are preferred. The foregoing findings contradict the findings of Adegbie and Akinyemi (2020), Mtebe and Sausi (2021), Chepkoech, Gichana, and Agong (2022), Haji and Jilenga (2022), and Usman and Okoroigwe (2025), all of whom highlight the significant positive effects of using digital payment technologies in their respective research areas.

For the Web Pay the results indicate that it has a statistically significant positive impact on FIRS revenue generation. The significant coefficient implies that an increase in transactions through Web Pay is associated with a considerable rise in FIRS revenue. This can be attributed to several factors. First, Web Pay may facilitate a seamless and efficient transaction process, encouraging more users to engage in taxable activities. Its user-friendly interface and reliability could enhance taxpayer compliance, leading to higher revenue collection. Furthermore, as digital payment systems gain prominence, Web Pay may be capitalizing on growing consumer preferences for online transactions. This trend suggests that taxpayers are increasingly inclined to use platforms that offer convenience and security, which Web Pay likely provides. Consequently, this shift in consumer behavior can lead to an uptick in the volume of transactions reported to FIRS, thus boosting revenue. Additionally, the strong statistical significance of the results implies that the observed relationship is unlikely to be due to random chance. It points to the effectiveness of Web Pay as a tool in enhancing tax revenue, making it a critical component of FIRS's revenue generation strategy. The above results are in line with findings of Adegbie and Akinyemi (2020), Mtebe and Sausi (2021), Chepkoech, Gichana, and Agong (2022), Haji and Jilenga (2022), and Usman and Okoroigwe (2025) all of whom highlight the significant positive effects of using digital payment technologies in their respective research areas. On the other hand, the finding contradicts the work of Usman and Okoroigwe (2025) who revealed that, despite the potential benefits of digital filing system, it does not significantly contribute to revenue generation.

Conversely, the results show that Mobile Pay has negative impact on FIRS revenue generation in Nigeria at 1% level. This implies that as Mobile Pay transactions increase, FIRS revenue may decrease. This contradicts the work of Chepkoech, Gichana, and Agong (2022) who reveal that digital payment method in form of Mobile pay was found to enhance sustainability in revenue collection. This conflicting result could stem from several factors, such as a higher prevalence of informal transactions or evasion facilitated by the anonymity of mobile payments. Furthermore, the constant term of 4219.78, which is statistically significant, suggests that there exists a substantial baseline level of revenue generation independent of the digital payment systems analyzed. This baseline figure indicates a solid foundation of revenue that could be further enhanced through strategic improvements in the utilization of digital payment technologies.

Table 5: Short-run impact of digital payment on revenue generation in Nigeria

Dependent Variable: Δ (FIRS Revenue Generation)

Variables	Coefficients	std. Error	t-Statistics	P-value
Δ (Remita)	0.0377	0.0374	1.0066	0.3186
Δ (Electronic Funds Transfers)	0.0164	0.0446	0.3688	0.7137
Δ (Web Pay)	0.0000	0.0000	26.9198	0.0000
Δ (Mobile Pay)	-0.0192	0.0062	-3.1107	0.0030
Error Correction Model (-1)	-0.2579	0.0817	-3.1570	0.0026

Corr. = 0.57 (0.5671), H-test = 6.15 (0.4782), Norm-test = 853.96 (0.000)

The results from Table 5 provide the short-run on the impact of digital payment systems on FIRS revenue generation in Nigeria. Remita and national electronic funds transfer have positive and statistically insignificant on revenue generation. In contrast, Web Pay has significant positive contribution to revenue outcomes. The result indicates the crucial role of web pay in enhancing tax revenue. Additionally, Mobile Pay presents a concerning trend, as increases in its transactions are associated with a decrease in FIRS revenue, raising issues regarding tax compliance and the potential for informal transactions that evade taxation. Furthermore, the Error Correction Model (ECM) term has a coefficient of -0.2579 and a p-value of 0.0026, indicating that any deviations from the long-run equilibrium in FIRS revenue generation will adjust at a rate of 25.79% per period. This evidences the significance of maintaining stable revenue growth and suggests a robust adjustment process towards restoring equilibrium. The results from these tests demonstrate that the model does not exhibit problems with serial correlation or heteroskedasticity. This conclusion is reinforced by the probability values of the tests, which are not statistically significant, even at a 10% significance level. However, the stability test was conducted using CUSUM and CUSUM of squares and the results are reported in Figure 1 and 2 respectively.
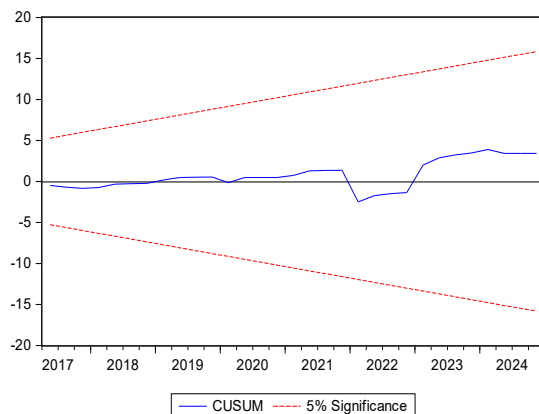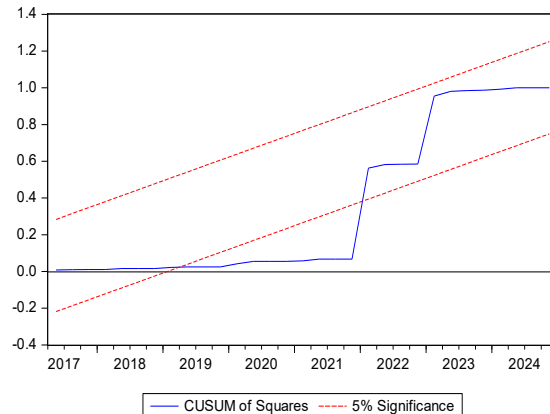
Figure 1: CUSUM   **Figure 2: CUSUM of Squares**

The results from Figure 1 (CUSUM) indicate that the model and its estimated parameters exhibit significant stability, as evidenced by the significant line remaining between the two critical red lines. However, the CUSUM of squares test reveals signs of instability within the model. This is illustrated by the significant blue line moving outside the critical red line. This instability is observed from the second quarter of 2019 to the first quarter of 2021, a period that aligns with macroeconomic turbulence and the COVID-19 pandemic affecting Nigeria's economy.

5.0 Conclusions and Recommendations

This study examines the influence of digital payment systems on the revenue generation of the Federal Inland Revenue Service (FIRS) in Nigeria. The findings enrich the existing body of literature by indicating that both Remita and National Electronic Funds Transfer do not statistically significantly impact FIRS revenue during the analyzed period. This suggests that these platforms may not be effectively utilized for tax-related transactions or that their transaction volumes are insufficient to impact overall revenue. In contrast, the analysis reveals that Web Pay has a significant positive effect on FIRS revenue generation. This indicates that transactions processed through Web Pay are likely to be associated with taxable activities, thereby contributing meaningfully to revenue collection. The success of Web Pay may be attributed to its user-friendly interface and reliability, which encourage more taxpayers to engage in digital transactions. Conversely, the study also finds that Mobile Pay has a significant negative impact on FIRS revenue generation. This unexpected result may point to issues such as lower adoption rates for tax-related transactions through Mobile Pay or potential challenges in tracking and reporting these transactions accurately.

Based on the findings of this study, it is recommended that the Federal Inland Revenue Service (FIRS) focus on enhancing the utilization of Web Pay as a primary digital payment platform, given its significant positive impact on revenue generation. Efforts should be made to promote awareness and encourage taxpayer adoption of Web Pay through targeted campaigns that highlight its benefits and ease of use. Additionally, FIRS should investigate the factors contributing to the lack of significance in Remita and National Electronic Funds Transfer, possibly by collaborating with these platforms to optimize their functionalities for tax-related transactions. Finally, a thorough assessment of Mobile Pay is necessary to identify barriers to its effectiveness, with the aim of implementing strategies that can transform it into a viable revenue-generating tool.

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