Research Article

Digital Payment Systems and Performance of Own Source Revenue in County Government of Kenya

*ᵃRoselyne Nyanchama Moraa and ᵇJulius Miroga

ᵃ&ᵇDepartment of Economics, Accounting and Finance, Jomo Kenyatta University of Agriculture and Technology, P.O. Box 62000–00200 Nairobi, Kenya
*Corresponding Author Email: nyanchamaroses@gmail.com

Abstract
The study examined the impact of revenue collection automation on the performance of Own Source Revenue (OSR) in Kisii County, Kenya. OSR was identified as critical to county governments' effectiveness due to its role in enhancing financial independence and service delivery. Despite efforts by the National Treasury through the IFMIS system, counties like Kisii struggled, collecting less than 40% of their potential OSR. The study focused on how digital payment systems affected OSR performance. The study provided valuable insights for policymakers on improving efficiency, transparency, and accountability through automation. It employed a survey totalling 180 respondents, using a census sampling method. Data was collected via questionnaires, validated through content validity, and tested for reliability using Cronbach's alpha threshold of 0.71. SPSS Version 22.0 was used for data analysis, with descriptive statistics summarizing the findings. The descriptive data suggest that respondents generally perceive digital payment systems as having a positive impact on the performance of own-source revenue in the county government of Kisii. The analysis revealed that digital payment systems are a significant positive predictor of operational performance, indicating that improvements in digital payment systems are linked to higher performance in own-source revenue. Based on the study findings and conclusions, the study recommends that the county government of Kisii should: The county government should invest in robust and scalable digital payment platforms to facilitate seamless transactions. Ensuring these systems are accessible to a broad range of citizens (including mobile payment options) will increase compliance and enhance revenue collection. Develop and implement a fully integrated revenue collection system that connects various departments and revenue streams. This would streamline processes, reduce duplication of effort, and provide real-time data for informed decision-making.
Keywords: Digital Payment Systems, Revenue Performance, Efficiency, Transparency, Accountability.

Introduction
Own-source revenue is pivotal in determining the effectiveness of county governments, as it directly reflects their financial independence and capacity to finance critical services and development initiatives within their regions (Yan and Reschovsky, 2023). By generating revenue internally, counties enhance their fiscal autonomy, reducing reliance on external funding sources and enabling them to prioritize and address local needs more efficiently. This self-sufficiency is fundamental to driving sustainable development and ensuring responsive governance. Pîrvuț and Ciuhureanu (2020) emphasize that enhancing the efficiency of revenue collection for the consolidated general budget is a key objective in modernizing tax administration systems. Their study highlights the necessity of revising tax regulations and improving collection methods to ensure accurate identification of the taxable base. This approach aims to maximize the identification and collection of taxes and fees owed, thereby bolstering the effectiveness of the revenue system. By focusing on these measures, the study underscores the critical role of systematic and methodical interventions in achieving efficient and reliable tax collection. Ofurum *et al.,* (2018) investigated the impact of E-taxation on corporate profitability and economic development in Nigeria, revealing that the implementation of integrated electronic tax systems did not significantly increase tax revenue. In fact, tax revenue declined following the adoption of the system. Consequently, the study recommended that the government organize more awareness campaigns and training seminars across Nigeria to enhance public understanding and effective use of the digital tax platform.

County governments in Kenya heavily depend on funding from the national government, which constrains their ability to deliver services effectively to their citizens (Office of the Controller of the Budget, 2023). To address this, they need to implement innovative strategies to enhance their own source revenue collection, thereby supplementing funds from external sources (Muthomi and Thurmaier, 2021). While the devolution era initially spurred an increase in revenue collection at the county level, this momentum has diminished over time. Presently, own source revenue constitutes only 12-13% of Total County funding, highlighting a critical need for more robust and sustainable revenue-generation mechanisms (Office of the Controller of the Budget, 2018). Many counties continue to use outdated, manual revenue collection systems that are highly susceptible to inefficiencies, leakages, and corruption. According to audit by the Commission on Revenue Allocation (2023), these weaknesses resulted in counties collecting less than half of their potential own source revenue (OSR). Key revenue streams such as property taxes, market fees, and business permits frequently go untapped due to inadequate administrative capacity and ineffective enforcement mechanisms, highlighting the urgent need for modernized systems and strengthened governance to improve revenue generation and accountability.

Objective of the Study
The objective of the study was to assess the impact of digital payment systems on performance of own source revenue in county government of Kisii.

Theoretical Framework
The study was anchored on 'The Technology Acceptance Model (TAM),' developed by Fred Davis in 1989. It provides a theoretical framework for understanding how individuals adopt and use technology. TAM posits that two main factors, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), influence users' attitudes toward a technology, which in turn affects their intention to use it and actual adoption behaviour. The model emphasizes that when users perceive a technology as beneficial and easy to use, they are more likely to integrate it into their practices. TAM's simplicity and focus on user-centric factors make it a widely applied model in technology adoption studies. TAM's proposition that perceived usefulness and ease of use drove technology adoption was highly relevant to the study on the effect of revenue collection automation practices on the performance of own source revenue in Kisii County. Digital payment systems, integration of revenue collection systems, automated reporting, and technological training was all technological interventions whose success depended on the county employees' and stakeholders' willingness to adopt and effectively utilize them. The study objectives aligned with TAM, as the model explained how the perceived benefits and user-friendliness of these systems influenced their adoption and impact on revenue performance.

While TAM provided a robust framework for explaining technology adoption, it had been critiqued for its limited scope in addressing external factors such as organizational, cultural, and infrastructural issues that might have influenced technology acceptance. For instance, in Kisii County, barriers like lack of adequate infrastructure, resistance to change among staff, or limited funding for training programs had impacted the adoption of automated revenue collection systems, factors that TAM did not directly address. TAM had been used to analyze whether the perceived benefits of a unified system, such as streamlined processes and improved data accuracy, outweighed the perceived difficulties associated with its complexity. Regarding automated reporting, the theory was relevant, as the adoption of automated reporting tools depended on users' perceptions of their utility in providing real-time insights and ease of generating accurate financial reports. TAM helped explain how these perceptions influenced the extent to which these tools enhanced transparency and decision-making, ultimately improving revenue performance.

The theory was relevant to technological training as it aimed to improve user competence and confidence, directly addressing the ease-of-use component of TAM. When users felt adequately trained, they were more likely to perceive the systems as user-friendly and beneficial, facilitating their adoption and impact on revenue performance. The technology acceptance model therefore provided a theoretical lens to evaluate the factors influencing the adoption of automation practices in revenue collection. Despite its limitations, TAM's focus on user perceptions of technology aligned with the study's objectives, providing a valuable framework for analyzing how automation practices could enhance the performance of own source revenue in Kisii County.

Literature Review
Mpofu (2022) provided valuable insights into the effects of mobile money taxes on revenue mobilization and financial inclusion in Africa, highlighting the trade-off between increased tax revenue and reduced

affordability of digital payments. However, the study focused broadly on the African continent without specifically addressing county governments, such as Kisii, which may have unique administrative, economic, and technological factors influencing digital payment adoption. Additionally, the study primarily examined taxation rather than the overall impact of digital payment systems on own-source revenue performance. This creates a research gap in understanding how digital payment systems, beyond taxation, influence revenue collection efficiency, compliance, and accountability in Kisii County, necessitating a localized empirical investigation.

Mabaso (2023) explored the adoption of digital payment systems among informal SMEs in South Africa's township economies, highlighting key factors influencing merchants' intention to use such methods. However, the study primarily focused on individual business owners rather than institutional revenue collection, limiting its applicability to the performance of own source revenue in county governments. Furthermore, while it addressed user adoption factors, it overlooked the broader fiscal implications within government settings. This gap necessitates an investigation into how digital payment systems affect own source revenue performance in county governments, particularly in Kisii.

Muchinguri (2016) focused on the failure to implement near field communication-based contactless payment systems in South Africa, identifying financial constraints, interoperability issues, and governance challenges as key barriers. However, the study primarily addressed technological and institutional failures without assessing the broader impact of digital payment systems on revenue performance. This gap necessitates an investigation into how digital payment systems influence the performance of own-source revenue in county governments, such as Kisii, to provide context-specific insights for policy and implementation.

Chepkoech *et al.,* (2025) provided valuable insights into the impact of e-payment systems on sustainable revenue collection in Nairobi City County, highlighting the varying influence of different digital payment methods. However, their study focused solely on Nairobi City County, leaving a contextual gap regarding the applicability of these findings to other counties such as Kisii, which may have different economic structures, technological adoption rates, and administrative challenges. Therefore, further research is necessary to examine how digital payment systems influence the performance of own-source revenue in Kisii County, addressing county-specific factors that may affect revenue collection efficiency and effectiveness.

While Wekesa *et al.,* (2022) provided valuable insights into the impact of electronic payment systems on revenue collection in Trans Nzoia County, their study did not specifically address how digital payment systems influence the performance of own-source revenue in Kisii County. Their focus on general revenue collection overlooked potential differences in revenue structures, compliance levels, and administrative efficiency unique to Kisii County. This gap necessitated further research to assess the specific impact of digital payment systems on own-source revenue in Kisii County, considering contextual variations and potential obstacles to effective implementation.

Kimatu *et al.,* (2023), examined the effect of digital payments on the financial performance of tier-one commercial banks in Kenya, concluding that these payment solutions positively influenced profitability. However, their study focused on commercial banks, leaving a gap in understanding how digital payment systems impact own-source revenue performance in county governments, particularly in Kisii. County governments operate under different financial structures, revenue collection mechanisms, and regulatory environments compared to banks, necessitating a distinct examination of how digital payment adoption influences their fiscal performance. This gap underscores the need for research specifically addressing the role of digital payment systems in enhancing revenue generation within the public sector at the county level.

Oduor *et al.,* (2024) examined the impact of mobile payments on revenue collection performance in Nandi County, revealing that mobile payment systems significantly enhanced efficiency and overall revenue performance. However, their study focused solely on mobile payments, overlooking other digital payment systems such as e-banking, card payments, and electronic invoicing, which could also influence revenue performance. This gap necessitated further investigation into the broader scope of digital payment systems and their collective impact on own source revenue performance in Kisii County, providing a more comprehensive understanding of their effectiveness in diverse county government settings.

Eshitika (2025) examined the effects of a cashless policy on revenue optimization in Kakamega County, revealing significant improvements in revenue collection and a reduction in fraud and mismanagement.

However, the study focused primarily on revenue efficiency without extensively analyzing the broader impact on overall own-source revenue performance. Additionally, it did not account for contextual differences between counties, such as administrative capacity and taxpayer compliance levels. The findings, while insightful, may not be directly generalizable to Kisii County, which has unique governance and economic structures. This gap highlights the need for a study that specifically investigates how digital payment systems influence own-source revenue performance in Kisii County, considering county-specific factors that may affect the effectiveness of such systems. Limo *et al.,* (2024) examined the impact of mobile payments on revenue collection performance in Nandi County, Kenya, highlighting the efficiency gains and improved accessibility for taxpayers. However, their study was limited to mobile payments, neglecting other critical digital payment systems such as electronic banking, online payment portals, and automated revenue collection platforms, which may have different effects on revenue performance. This creates a research gap, necessitating an investigation into the broader spectrum of digital payment systems and their impact on own-source revenue performance in Kisii County to provide more comprehensive insights.

Research Methodology
Therefore, this study used a survey research design. Survey research design involved planning and executing a study to collect data from a sample of individuals or groups using survey instruments, hence its preference in the study. According to Pernecky (2016), the population was defined as a larger collection of all subjects from which a sample was drawn. The population of the study was drawn from all revenue collection officers and county government finance department staff, totalling 180 respondents. Since the study population is small, census sampling was used to select all of them as a study sample. Before data collection, researcher applied for a research permit from the National Commission for Science, Technology and Innovation (NACOSTI) to allow for data collection. Relevant authorities were sought from the county government of Kisii to allow data collection. Data was collected using a questionnaire. The validity of the instruments was assessed through construct validity, ensuring factor loadings of 0.5 and above. Reliability was confirmed with a Cronbach's alpha coefficient exceeding 0.71. Quantitative data collected was coded, entered into the Statistical Package for Social Sciences (SPSS) then analysed both descriptively, through frequencies, percentages, means and standard deviations where applicable, and through regression analysis.

Findings

Table 1. Digital payment systems.

Statements	N	Minimum	Maximum	Mean	Standard deviation
Mobile money services (e.g., M-pesa) have improved the efficiency of county revenue collection.	173	1	5	3.27	1.498
Mobile money payments are more convenient than cash payments for paying county fees and levies.	173	1	5	3.44	1.335
The use of mobile money reduces revenue leakages and corruption in revenue collection.	173	1	5	3.46	1.383
Online payment platforms (e.g., county websites, payment portals) make it easier to pay county fees.	173	1	5	3.31	1.587
The county government's online platforms are reliable and user-friendly.	173	1	5	3.54	1.288
Online payment systems have reduced delays and inefficiencies in revenue collection.	173	1	5	3.31	1.446
E-banking (e.g., direct bank transfers, automated transactions) has simplified county revenue collection.	173	1	5	3.52	1.368
E-banking has reduced operational costs associated with revenue collection.	173	1	5	3.54	1.429
The integration of e-banking with county financial systems enhances revenue performance.	173	1	5	3.67	1.358

The study sought to establish the digital payment systems on performance of own source revenue in county government of Kisii. The respondents were asked to give their opinion using a Likert scale of 1-5 where, 1

represents is strongly disagree and 5-strongly agree. The study analysis was based on a response rate of 173 out 180 questionnaires sent out for data collection. The results were recorded in Table 1.

The descriptive data reveal that respondents generally agreed that digital payment systems have positively impacted the performance of own source revenue in the county government of Kisii. The integration of e-banking with county financial systems received the highest mean score (M = 3.67, SD = 1.358), indicating strong support for its role in enhancing revenue performance. Similarly, perceptions of the reliability and user-friendliness of county online platforms (M = 3.54, SD = 1.288) and the reduction of operational costs through e-banking (M = 3.54, SD = 1.429) were notably positive. Mobile money services such as M-Pesa were also seen to improve efficiency (M = 3.27, SD = 1.498) and convenience (M = 3.44, SD = 1.335), though with slightly lower mean scores compared to e-banking-related items. Overall, the standard deviations, ranging between 1.288 and 1.587, suggest a moderate spread in responses, indicating that while there was general agreement, variations in individual experiences existed. These findings imply that digital payment systems are perceived as important enablers of better revenue collection efficiency, transparency, and cost-effectiveness in Kisii County.

Regression Analysis
Model Fitting Information
In ordinal regression analysis, the model fitting information was required to be examined before the interpretation of parameter estimates, because it was assessed whether the model as a whole fitted the data significantly better than a baseline (typically, an intercept-only) model. Therefore, the confirmation of model fit was first provided as a necessary foundation for the meaningful interpretation of the regression coefficients.

Table 2. Model fitting information.

Model	2-log likelihood	Chi-square	df	Sig.
Intercept only	252.423	-	-	-
Final	.000	252.422	3	.000
Link function: Logit.				

This suggests that the variables included in the final model have a statistically significant impact on the outcome, and the link function used in the model is the Logit, which is commonly employed in ordinal regression to model the relationship between the predictors and the ordinal outcome. The significant Chi-square value implies that the predictors in the final model explain a significant portion of the variation in the dependent variable.

Goodness of Fit
Table 3 provides an assessment of the goodness of fit for an ordinal regression model, with the Chi-square statistics (Pearson and Deviance) used to evaluate how well the model fits the observed data.

Table 3. Goodness of fit.

	Chi-square	df	Sig.
Pearson	31.191	173	1.000
Deviance	38.040	173	1.000
Link function: Logit.			

The results revealed that both the Pearson Chi-square and Deviance Chi-square values are reported as 31.191 and 38.040, respectively, with both having 173 degrees of freedom (df). The p-values (Sig.) for both tests are 1.000, indicating that the model does not significantly deviate from the expected values under the null hypothesis of good fit. This means that the model, based on the chosen link function (Logit), fits the data adequately, as the high p-values (1.000) suggest there is no significant difference between the observed and predicted frequencies. In other words, the model's predictions align closely with the actual data, and the null hypothesis that the model fits the data well is not rejected. These results imply that the ordinal regression model with a Logit link function is a good representation of the relationship between the predictors and the ordinal outcome variable.

Pseudo R-Squared
In the context of ordinal regression, the pseudo-R-squared values serve as indicators of the goodness of fit for the model.

Table 4. Pseudo-R-squared.

Cox and Snell	.995
Nagelkerke	1.000
McFadden	.995
Link function: Logit.	

Table 4 reveals the Nagelkerke pseudo-R-squared value, which is 1.000 in this case, suggests that the model explains a very high proportion of the variance in the dependent variable. This is indicative of a strong fit, as the value is close to 1, which represents the highest possible explanatory power. Together, these pseudo-R-squared values (Cox and Snell, Nagelkerke, and McFadden) provide a strong indication that the ordinal regression model is well-suited to the data, explaining nearly all of the variance in the outcome variable.

Test of Parallel Lines
In the context of ordinal regression, the model fitting process is crucial for evaluating how well the model explains the relationship between the independent variables and the ordinal dependent variable. Table 5 presents the results from the "Test of Parallel Lines," which is used to assess whether the assumption of proportional odds holds in the ordinal regression model.

Table 5. Test of parallel lines.

Model	2-log likelihood	Chi-square	df	Sig.
Null hypothesis	.000	-	-	-
General	1.580[b]	.000	173	1.000
The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.				
a. Link function: Logit.				
b. The log likelihood value is practically 1.580.				

The results show that the 2-log likelihood value for the null hypothesis model is 0.000, which serves as a baseline. The general model has a 2-log likelihood value of 1.580, which is a measure of the fit of the model. The Chi-square statistic is reported as 0.000 with 173 degrees of freedom, and the significance value (Sig.) is 1.000. This high p-value (1.000) indicates that there is no significant difference between the null hypothesis and the general model, suggesting that the location parameters do not differ significantly across the response categories. The test assumes a logit link function, which is commonly used in ordinal regression. The log likelihood value of 1.580 is described as being "practically 0.580," which likely refers to a minimal difference from the null model, indicating a good fit of the model to the data. The results suggest that the assumption of parallel lines holds true, as there is no significant departure from the null hypothesis, meaning the model is appropriate for the data.

Parameter Estimates
Given that the threshold for estimation has been met, we proceed to present the parameter estimates. These values provide insights into the underlying model dynamics based on the available data.

Table 6. Parameter estimates.

		Estimate	Standard error	Wald	df	Sig.	95% confidence interval	
							Lower bound	Upper bound
Threshold	[OP = 1.00]	19.150	3.739	26.233	1	.000	11.822	26.478
	[OP = 1.11]	22.633	4.178	29.348	1	.000	14.444	30.821
	[OP = 1.22]	24.347	4.522	28.987	1	.000	15.484	33.210
	[OP = 1.67]	26.245	4.842	29.382	1	.000	16.755	35.735
	[OP = 1.78]	36.437	6.781	28.875	1	.000	23.147	49.728
Location	DPS	10.419	1.738	35.923	1	.000	7.012	13.826
Link function: Logit.								
DPS (digital payment systems)								

Digital Payment Systems (DPS): The DPS variable shows a positive association with operational performance, with an estimate of 10.419 and a very small standard error (1.738), which is highly significant (p = 0.000). A one-unit increase in DPS is associated with a 10.419 increase in the log-odds of a higher performance of own source revenue, holding other factors constant. This effect is statistically significant, and

the 95% confidence interval does not contain zero. Since the p-values for digital payment systems and performance was less than 0.05, the null hypothesis, there is no significant effect between digital payment systems and performance of own source revenue in county government of Kisii was rejected the alternative hypothesis, there is significant effect between digital payment systems and performance adopted.

Conclusion

The study concluded that digital payment systems are a significant positive predictor of operational performance, indicating that improvements in digital payment systems are linked to higher performance in own-source revenue.

Recommendations

Based on the study findings and conclusion, the study recommends that the county government of Kisii should:

☞ The county government should invest in robust and scalable digital payment platforms to facilitate seamless transactions.

☞ Ensuring these systems are accessible to a broad range of citizens (including mobile payment options) will increase compliance and enhance revenue collection.

☞ Develop and implement a fully integrated revenue collection system that connects various departments and revenue streams. This would streamline processes, reduce duplication of effort, and provide real-time data for informed decision-making.

Declarations

Author Contributions: RNM: Definition of intellectual content, literature survey, prepared the first draft of the manuscript, data collection, data analysis, manuscript preparation, and submission of the article; JM: Concept, design, statistical analysis and interpretation, coordination and review manuscript.
Conflict of Interest: The authors declare that they have no conflict of interest.
Consent to Publish: The authors agree to publish the paper in International Journal of Recent Innovations in Academic Research.
Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.
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