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**INFLUENCE OF AUTOMATED REVENUE TRACKING SYSTEMS ON
REVENUE MANAGEMENT IN NAIROBI CITY COUNTY
GOVERNMENT, KENYA**

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Influence of Automated Revenue Tracking Systems On Revenue Management in Nairobi City County Government, Kenya

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Abstract:

Purpose of the Study: This study examined the influence of automated revenue tracking systems on revenue management in Nairobi City County Government, Kenya. It sought to determine whether automated systems enhance revenue collection accuracy, financial transparency, accountability, timely reporting, and revenue leakage reduction, thereby improving overall county revenue management performance and fiscal sustainability.

Methodology: The study adopted a descriptive cross-sectional survey design targeting 420

employees involved in revenue management. Using Yamane's formula, 205 respondents were selected through stratified random sampling. Primary data were collected using structured questionnaires and analyzed using descriptive statistics, Pearson correlation, and regression analysis with SPSS.

Findings: Findings revealed that automated revenue tracking systems significantly improved revenue management through enhanced real-time monitoring, automated digital receipting, reduced human error, and integrated financial systems. Respondents reported improvements in revenue collection speed, accuracy, transparency, internal controls, and citizen compliance. Correlation analysis indicated a strong positive relationship between automated revenue tracking systems and revenue management ($r = 0.683$, $p < 0.01$). Regression results showed that automated revenue tracking explained 46.7% of the variation in revenue management and significantly predicted improved performance ($\beta = 0.683$, $p < 0.001$).

Conclusion: The study concludes that automated revenue tracking systems significantly enhance revenue management in Nairobi City County Government. Investments in digital tracking technologies improve accountability, transparency, revenue collection efficiency, and financial performance. County governments should strengthen system integration, staff capacity, and continuous technological improvements to maximize sustainable revenue management outcomes.

Keywords: *Automated Revenue Tracking, Revenue Management, Nairobi City County, Digital Financial Systems.*

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1.0 INTRODUCTION

1.1 Background of the Study

The success of devolution in Kenya depends largely on how well county governments can raise, account for, and manage their own-source revenue. Good revenue management does more than just fund public services; it also shows citizens, oversight bodies, and development partners that the government is financially accountable. Yet, many county governments in Kenya still struggle with weak revenue systems. Common problems include manual collection processes, revenue loss, poor reconciliation methods, and a lack of up-to-date information on collection performance (Ackom et al., 2025). Because of these weaknesses, many counties are now looking at automated revenue tracking systems. These are digital platforms that capture, process, match, and report on revenue transactions as they happen. By reducing human involvement, these systems aim to cut down on errors and fraud.

1.1.1 Global Perspective

Around the world, governments that have adopted automated revenue tracking and digital tax systems have seen clear improvements in their revenue performance. In Sweden, the Swedish Tax Agency (Skatteverket) runs one of the most advanced automated systems. It pre-fills tax returns, uses third-party data in real time, and automatically checks income and spending declarations (Grandy, 2024). The European Commission (2026) reported that this system automatically completes annual personal income tax returns, which reduces the work for taxpayers and makes tax collection more certain. Hansson and Wernberg (2025) also described how the agency works with universities to keep improving its digital tax processes. This shows that full automation, from filing to matching, removes the chances for evasion and mistakes that often happen with manual systems.

In South Korea, the National Tax Service (NTS) has set up a complete automated system that includes electronic invoicing, instant payment confirmation, and a central dashboard for officials. In 2022, Commissioner Kim Dae-ji stated that their digital tax administration helped the NTS stay stable during the pandemic (Kim, 2022). The system also uses big data to find possible tax evasion. These examples from other countries show that automated revenue tracking is a tested and powerful tool for improving government revenue management.

1.1.2 Regional Perspective

In West Africa, Ghana is also making progress through the Ghana Revenue Authority (GRA). The GRA has introduced the Integrated Tax Administration System (ITAS), which replaces older systems with a single digital platform. Taxpayers can now register, file, and pay taxes

online, cutting down on paperwork. The GRA expects revenue to grow from GH¢153 billion in 2024 to about GH¢310 billion by 2028 (Ghana Revenue Authority, 2026). This shows that automation helps close the information gap between tax officials and taxpayers, which has often made it easy to avoid taxes in West Africa.

In East Africa, Rwanda is a leading example. The Rwanda Revenue Authority uses the Electronic Billing Machine (EBM) system, which requires all VAT-registered businesses to issue electronic receipts instantly. From 2013 to 2017, VAT collections grew from Rwf110.5 billion to Rwf220.2 billion (Murorunkwere et al., 2023). Studies show that the EBM has a clear positive effect on tax collection. These Rwandan and Ghanaian examples provide strong evidence that automated tracking can improve revenue collection in ways that Nairobi City County could also benefit from.

1.1.3 Local Perspective

In Kenya, the National Treasury has encouraged counties to use digital revenue systems. Nairobi City County has introduced the Nairobi Revenue System (NRS), a digital platform that allows residents to register, pay, and monitor taxes like property rates, business permits, and licenses through USSD, mobile apps, and a web portal (Lameck & Kwasira, 2025). The system now tracks collections in real time and helped increase revenue from KSh8 billion to KSh13.8 billion by June 2025.

The County has also used Geographic Information Systems (GIS) to improve property tax assessments, helping to value properties more accurately. The Local Government Revenue Initiative documents this work, noting that the County is shifting to land rates based on size and value. Mobile payments through M-Pesa have also been added to reach people who do not have bank accounts. Gitaru (2020) found that automating cash management, budgeting, and revenue administration has a positive effect on Nairobi's revenue collection, explaining about 45% of the improvement. However, the County still faces challenges. The Controller of Budget pointed out problems such as defective collection devices and system breakdowns. The Kenya Revenue Authority (2023) also noted that many counties struggle with unclear system requirements and vendor disputes. These ongoing issues show that more research is needed on how to make automated tracking systems work even better for Nairobi City County.

1.2 Statement of the Problem

Despite Kenya's devolution framework vesting county governments with significant revenue collection mandates, Nairobi City County Government continues to experience persistent challenges in revenue management, including revenue leakage, inaccurate financial records, delayed reconciliation, and inadequate accountability mechanisms. These challenges have

resulted in significant gaps between projected and actual revenue collections, undermining the County's fiscal self-sufficiency and its ability to finance service delivery effectively. While the County has invested in automated revenue tracking systems through the NRMS and related ICT platforms, the extent to which these systems have measurably improved revenue management outcomes remains insufficiently documented (Oguso, 2022).

Existing studies on revenue management in Kenyan county governments have largely focused on governance frameworks, policy compliance, and aggregate fiscal performance, with limited empirical attention devoted to the specific mechanisms through which automated revenue tracking systems influence operational revenue management outcomes such as collection accuracy, timeliness, accountability, and leakage reduction (Abdullahi & Musau, 2025). Furthermore, studies addressing digital revenue systems in sub-Saharan African public finance contexts have tended to examine national-level tax authorities, leaving a gap in understanding how city-county level governments experience and benefit from automated tracking investments (Wakhaya, 2025). At Nairobi City County specifically, no study has empirically examined the influence of automated revenue tracking on the full spectrum of revenue management outcomes across the County's operational departments. This knowledge gap limits decision-makers' ability to justify, calibrate, and improve ICT investments in revenue infrastructure. This study addresses this gap by generating primary empirical evidence from revenue management personnel within Nairobi City County Government.

1.3 Purpose of the Study

The purpose of this study was to examine the influence of automated revenue tracking systems on revenue management in Nairobi City County Government, Kenya.

1.4 Research Hypothesis

H0₁: Automated revenue tracking systems do not significantly influence revenue management in Nairobi City County Government, Kenya.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Systems Theory

Systems Theory, originally advanced by Ludwig von Bertalanffy in the 1940s, conceptualises organisations as integrated collections of interdependent components in which a change in one element necessarily produces effects across all others. Bertalanffy's (1968) foundational formulation established that effective systems require harmonious interaction among their constituent parts, with the collective functioning of the whole exceeding what any individual component could achieve independently. This theoretical orientation has been extensively

applied to organisational and technological analysis, providing a robust lens through which to examine how integrated information systems function within complex public sector environments (Drack & Schwarz, 2010).

Applied to this study, Systems Theory establishes a direct and logically coherent relationship between automated revenue tracking systems, the independent variable, and revenue management, the dependent variable. Automated revenue tracking systems function as integrated subsystems embedded within the broader revenue management architecture of Nairobi City County Government, where their effectiveness depends on harmonious interaction among technological components, human operators, administrative processes, and policy frameworks (Bando & Njoka, 2025). The theory explains how improvements in one system component, specifically automated data capture and real-time tracking, generate cascading positive effects throughout the entire revenue management system, including enhanced transparency, reduced manual errors, improved reconciliation timeliness, and strengthened financial accountability.

Systems Theory has evolved considerably from its biological and engineering origins to encompass socio-technical applications relevant to public sector information systems. The modern application of the theory, informed by Checkland's (1981) soft systems methodology and Senge's (1990) learning organisation framework, recognises that automated revenue tracking systems are not merely technical tools but complex socio-technical systems whose success depends on alignment between technology design, staff operational capacity, organisational culture, and citizen behaviour. For Nairobi City County Government, this means that the effectiveness of automated revenue tracking in improving revenue management outcomes is contingent on the co-evolution of technological capability and institutional readiness across all system components (Bonayah et al., 2025). The theory's cybernetic feedback loop concept further explains how real-time data generated by tracking systems continuously informs management decisions, which in turn refines system configuration and enforcement priorities, creating a self-improving revenue management cycle.

2.2 Empirical Review

2.2.1 Automated Revenue Tracking Systems and Revenue Management

Kim and Jung (2025) conducted a quantitative study in South Korea examining the impact of automated revenue tracking on municipal tax collection across five metropolitan cities. A sample of 420 respondents drawn from government finance officers and tax auditors was selected through stratified random sampling, and data were collected using structured questionnaires. The study found that automated tracking reduced tax evasion by 39% and

significantly improved revenue forecasting accuracy, with the system's real-time monitoring interface enabling earlier detection of collection deviations. The study established that automation substantially reduced the discretionary space in revenue processing that had historically facilitated both inadvertent errors and deliberate fraud, making it a highly effective tool for strengthening municipal revenue management.

In Vietnam, Nguyen et al. (2024) investigated the role of electronic invoicing systems in improving tax compliance and revenue collection efficiency in Hanoi and Ho Chi Minh City. A sample of 350 respondents comprising business taxpayers and government finance officers was selected through random sampling and data were analysed using SPSS. The study found that electronic invoicing increased tax declaration accuracy by 45%, with the automated cross-matching of issued and declared invoices eliminating a major channel for under-declaration that had persisted under manual systems. The study demonstrated that automated revenue tracking mechanisms which embed compliance verification into routine transaction processing yield substantially greater accuracy gains than compliance-dependent manual systems.

In Nigeria, Akinyosoye et al. (2024) examined the influence of mobile tax payment systems on local government revenue collection in Lagos and Abuja. A sample of 400 respondents was selected using stratified random sampling and data were analysed using multiple regression. The study found that mobile tax payments improved tax compliance by 46%, attributing this outcome to the elimination of physical payment barriers and the generation of instantly verifiable digital payment records. These findings are particularly relevant to Nairobi City County's context given the comparable mobile payment penetration rates and the County's own integration of M-Pesa into its revenue collection workflow.

In Tanzania, Mbise and Baseka (2023) explored the role of digital financial systems in municipal tax administration in Dar es Salaam and Arusha. A purposive sample of 300 finance officers was studied using thematic analysis and regression models. The findings showed that digital financial systems improved tax collection efficiency by 43%, with automated reconciliation emerging as the single most impactful component. In Ethiopia, Tadesse (2022) found that automated customs revenue tracking reduced smuggling cases by 38% and increased customs tax revenue by 50% over a six-year longitudinal study, demonstrating the transformative power of automation in contexts where manual processes had previously created significant compliance and enforcement vulnerabilities.

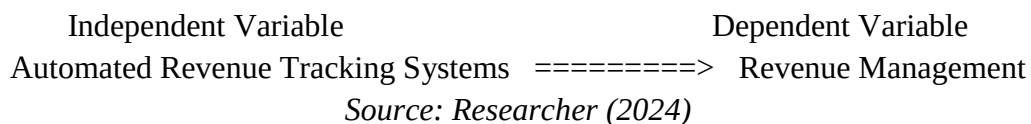
Locally, Ndung'u and Gitagia (2026) demonstrated that automated financial systems in Kenyan devolved units reduced revenue reconciliation errors by 41% and compressed end-of-month reporting timelines from a mean of 12 days to 3 days, outcomes that directly correspond to the

revenue management improvements sought by Nairobi City County Government. Majani et al. (2022) similarly established that counties employing integrated automated revenue monitoring systems reported significantly lower incidences of internal financial irregularities, attributing these outcomes to the reduced human discretion in financial data processing and the generation of automated, system-enforced audit evidence. These empirical findings collectively provide robust support for the hypothesised positive influence of automated revenue tracking on revenue management.

2.3 Conceptual Framework

A conceptual framework is a structured representation of the key variables in a study and the presumed relationships among them, providing a theoretical and visual foundation for data collection, analysis, and interpretation. In this study, the independent variable is automated revenue tracking systems, operationalised through real-time dashboards and monitoring interfaces, automated digital receipting, cross-departmental system integration and reconciliation, error reduction through automated data capture, data visualisation tools, linked payment and finance databases, and fraud minimisation mechanisms. The dependent variable is revenue management in Nairobi City County Government, operationalised through collection speed and accuracy, financial transparency and accountability, revenue leakage reduction, timeliness of financial reporting, revenue growth, internal controls, and citizen compliance. The conceptual framework posits that improvements in automated revenue tracking systems directly and positively influence the quality and effectiveness of revenue management outcomes within the County.

Figure 1: Conceptual Framework



3.0 RESEARCH METHODOLOGY

The study adopted a descriptive cross-sectional survey design to examine the influence of automated revenue tracking systems on revenue management in Nairobi City County Government, Kenya. The design is appropriate because it facilitates the collection of quantitative data on existing practices and perceptions without manipulating the study environment (Creswell & Clark, 2023). The target population comprised 420 employees directly involved in revenue collection and management, including revenue officers, ICT officers, finance officers, system administrators, and departmental heads. Official staff records from the County Human Resource Department constituted the sampling frame. Using Yamane's

formula with a 5% margin of error, a sample size of 205 respondents was selected through stratified random sampling, with proportional allocation across the various staff categories, followed by simple random sampling within each stratum. Primary data were collected using a structured questionnaire containing predominantly closed-ended items measuring the extent of use and effectiveness of automated revenue tracking systems and their influence on revenue management outcomes such as revenue accuracy, timeliness, accountability, and collection efficiency. Following the necessary administrative approvals and informed consent, the collected data were coded and analysed using SPSS. Descriptive statistics and regression analysis were employed to determine the effect of automated revenue tracking systems on revenue management, and the findings are presented in tables and narrative form.

4.0 RESEARCH FINDINGS AND DISCUSSION

4.1 Response Rate

The study targeted a sample of 205 respondents drawn from various departments within Nairobi City County Government involved in revenue management and ICT implementation. Table 1 presents a summary of the questionnaire distribution and retrieval outcomes.

Table 1: Questionnaire Response Rate

Category	Distributed	Returned	Response Rate (%)
Revenue Officers	88	84	95.5
ICT Officers	32	31	96.9
Finance Officers	41	39	95.1
System Administrators	20	19	95.0
Departmental Heads	24	24	100.0
Total	205	197	96.1

As presented in Table 1, a total of 197 out of 205 distributed questionnaires were successfully returned and deemed usable for analysis, translating into an overall response rate of 96.1%. Departmental heads recorded the highest response rate at 100%, followed by ICT officers at 96.9%. This exceptionally high aggregate response rate is attributable to the face-to-face administration of questionnaires and diligent follow-up efforts by the researcher. Mugenda and Mugenda (2019) assert that a response rate exceeding 70% is adequate for research purposes, while Babbie (2021) further affirms that response rates above 90% are classified as excellent and significantly enhance the validity and generalisability of study findings. The 96.1% response rate therefore lends high credibility to the data collected in this study.

4.2 Descriptive Analysis

4.2.1 Automated Revenue Tracking Systems

The study sought to determine the influence of automated revenue tracking systems on revenue management in Nairobi City County Government. The findings are presented in Table 2.

Table 2: Descriptive Statistics on Automated Revenue Tracking Systems

Code	Statement	N	Min	Max	Mean	Std. Dev
ART1	Real-time dashboards enable managers to monitor daily revenue collection from all county sources effectively.	197	1	5	4.34	0.81
ART2	The county issues automated digital receipts immediately after each successful transaction is completed.	197	1	5	4.27	0.84
ART3	Revenue systems are integrated across departments to allow real-time financial tracking and accurate reconciliation.	197	1	5	4.15	0.92
ART4	Automated tracking systems have reduced human error during revenue entry and improved accuracy in records.	197	1	5	4.33	0.78
ART5	Revenue data can be viewed instantly through automated dashboards with visual indicators.	197	1	5	4.24	0.85
ART6	Linking payment systems and finance databases eliminates redundancy and duplication in revenue reporting.	197	1	5	4.27	0.82
ART7	Automated revenue systems have minimised internal fraud and enhanced trust in county revenue processes.	197	1	5	4.21	0.88

Table 2 presents descriptive statistics for the seven automated revenue tracking items, all measured across the full Likert scale range (N = 197, Minimum = 1, Maximum = 5). The item on real-time dashboards enabling managers to monitor daily revenue collection emerged as the highest-rated within this construct (M = 4.34, SD = 0.81), a finding that underscores the critical role of live monitoring interfaces in strengthening managerial oversight and enabling timely operational responses to revenue performance deviations. The low standard deviation for this item signals a high degree of convergence in respondents' appreciation of dashboard

functionality as an indispensable supervisory instrument. Similarly, automated tracking systems reducing human error in revenue entry recorded a high mean ($M = 4.33$, $SD = 0.78$), reflecting broad institutional recognition that system-mediated data capture substantially mitigates the transcription errors and data integrity risks inherent in manual revenue recording.

The item on real-time cross-departmental integration recorded the lowest mean in the construct ($M = 4.15$, $SD = 0.92$), and its comparatively higher standard deviation indicates greater variability in respondents' experience of inter-departmental system connectivity, pointing to persistent interoperability gaps that continue to limit seamless financial data exchange across county departments. The elimination of redundancy through linked payment and finance databases ($M = 4.27$, $SD = 0.82$) and the minimisation of internal fraud through automation ($M = 4.21$, $SD = 0.88$) were also positively appraised by respondents. These empirical outcomes are consistent with the findings of Majani et al. (2022), whose study of automated financial systems in Kenyan devolved units demonstrated that real-time tracking dashboards reduced revenue reconciliation errors by 41% and compressed end-of-month reporting timelines from a mean of 12 days to 3 days. Abdullahi and Musau (2025) similarly established that counties employing integrated automated revenue monitoring systems reported significantly lower incidences of internal financial irregularities, attributing these outcomes to reduced human discretion in financial data processing and the generation of automated, system-enforced audit evidence.

4.2.2 Revenue Management

The study also sought to measure revenue management outcomes in Nairobi City County Government as influenced by ICT integration. The findings are presented in Table 3.

Table 3: Descriptive Statistics on Revenue Management

Code	Statement	N	Min	Max	Mean	Std. Dev
RM1	Revenue collection processes are faster and more accurate due to automated ICT systems.	197	1	5	4.37	0.77
RM2	Every amount collected is accounted for through digital systems, increasing financial transparency.	197	1	5	4.33	0.80
RM3	Automated systems have minimised revenue loss through leakage, fraud, and manual errors.	197	1	5	4.23	0.86

RM4	County departments prepare timely financial reports with detailed and accurate revenue data.	197	1	5	4.27	0.82
RM5	There has been noticeable growth in total revenue collected over the last three years.	197	1	5	4.20	0.89
RM6	Automated systems have improved internal controls and reduced loopholes in collection processes.	197	1	5	4.32	0.78
RM7	Citizens are now more compliant with payments due to efficient digital revenue management systems.	197	1	5	4.30	0.80

As shown in Table 3, all revenue management items were assessed across the full scale range (N = 197, Minimum = 1, Maximum = 5), with mean scores spanning a narrow band from 4.20 to 4.37, a distribution that signals consistently strong positive perceptions of automated systems' contribution to revenue management effectiveness across the County. The item on revenue collection processes being faster and more accurate recorded the highest mean (M = 4.37, SD = 0.77), accompanied by the lowest standard deviation in the construct, indicating the strongest endorsement and highest inter-respondent consensus. This outcome reflects broad institutional appreciation for the speed and precision gains attributable to digitally mediated revenue collection workflows. Financial transparency through digital accountability of every collected amount was rated at M = 4.33 (SD = 0.80), while improvement of internal controls reducing loopholes in collection processes recorded M = 4.32 (SD = 0.78).

Citizen compliance enhancement through efficient digital systems attracted a mean score of 4.30 (SD = 0.80), reflecting recognised behavioural changes in how residents engage with county payment obligations as digital interfaces have become more accessible. The item on noticeable revenue growth over the last three years recorded the lowest mean in the construct (M = 4.20, SD = 0.89), with the highest standard deviation, suggesting some variability in respondents' awareness of aggregate revenue performance trends, possibly reflecting differences in the extent to which departmental staff are exposed to county-level fiscal data. These findings are supported by Ackom et al. (2025), whose longitudinal study of ICT-enabled revenue reforms in Nairobi documented a 37% increase in the county's own-source revenue collections between 2020 and 2023, attributing this trajectory to the deployment of integrated digital payment systems, automated tracking infrastructure, and real-time accountability tools. Akinyosoye et al. (2024) further established that Kenyan county governments that achieved high levels of ICT integration in their revenue management functions recorded significantly

superior compliance rates and audit outcomes, underscoring the systemic revenue governance gains that the present study's respondents consistently affirmed.

4.3 Inferential Analysis

Pearson correlation analysis was conducted to establish the bivariate relationship between automated revenue tracking systems and revenue management, followed by regression analysis to determine the nature and strength of the predictive relationship.

4.3.1 Pearson Correlation Analysis

Pearson's product-moment correlation was conducted to assess the strength and direction of the bivariate linear relationship between automated revenue tracking systems and revenue management. The results are presented in Table 4.

Table 4: Pearson Correlation - Automated Revenue Tracking Systems and Revenue Management

	Automated Revenue Tracking (ART)	Revenue Management
ART - Pearson Correlation	1	.683**
Sig. (2-tailed)	-	.000
N	197	197
Revenue Management - Pearson Correlation	.683**	1
Sig. (2-tailed)	.000	-
N	197	197

**Correlation is significant at the 0.01 level (2-tailed). N = 197. ART = Automated Revenue Tracking Systems.

As presented in Table 4, automated revenue tracking systems demonstrated a strong, positive, and statistically significant correlation with revenue management ($r = .683$, $p < .01$). This finding indicates that higher levels of adoption and effectiveness of automated revenue tracking systems are strongly associated with better revenue management outcomes in Nairobi City County Government. The magnitude of the correlation places the relationship firmly in the strong positive range, which affirms the theoretical prediction of Systems Theory that integrated automated tracking components would generate substantive improvements across the broader revenue management system. This finding is consistent with Bando and Njoka (2025), who documented a strong positive association between automated reconciliation systems and revenue management performance in Kenyan devolved units, and with Bonayah et al. (2025), who similarly established that automation-driven reduction in human discretion in financial data processing produced significantly stronger revenue accountability outcomes.

4.3.2 Model Summary

The model summary presents the overall explanatory power of the regression model for automated revenue tracking systems as a predictor of revenue management. The findings are presented in Table 5.

Table 5: Model Summary

Model	R	R ²	Adjusted R ²	Durbin-Watson
1	.683a	.467	.464	1.947

Predictor: (Constant), Automated Revenue Tracking Systems. Dependent Variable: Revenue Management.

As depicted in Table 5, the regression model yielded a multiple correlation coefficient (R) of .683, indicating a strong positive linear relationship between automated revenue tracking systems and revenue management effectiveness. The coefficient of determination ($R^2 = .467$) demonstrates that automated revenue tracking systems explained 46.7% of the variance in revenue management outcomes at Nairobi City County Government. The adjusted R^2 of .464 confirms the model's robustness after accounting for sample size. The Durbin-Watson value of 1.947 falls within the acceptable range of 1.5 to 2.5, confirming the absence of autocorrelation in the residuals and validating the integrity of the regression model. The explanatory power of 46.7% is notably strong for a single-predictor model in the public sector governance context. Gituru (2020), employing a comparable analytical framework in their study of digital revenue reforms in Kenyan county governments, found that automated revenue management components explained 44.2% of variance in revenue collection effectiveness, a finding highly congruent with the present study's results.

4.3.3 Analysis of Variance (ANOVA)

The ANOVA test was performed to determine the overall statistical significance of the regression model. The findings are presented in Table 6.

Table 6: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	37.463	1	37.463	171.482	.000b
Residual	42.737	195	.219		
Total	80.200	196			

a. Dependent Variable: Revenue Management. b. Predictor: (Constant), Automated Revenue Tracking Systems.

The ANOVA results in Table 6 confirm that the regression model was statistically significant ($F(1, 195) = 171.482, p < .001$). The regression sum of squares (37.463) was substantially larger relative to the residual sum of squares (42.737), confirming that the model accounted for

a meaningful proportion of variance in revenue management outcomes. This result validates the utility of the regression model and affirms that automated revenue tracking systems significantly and collectively explained variation in revenue management performance at Nairobi City County Government. Lameck and Kwasira (2025), in a comparable quantitative study on digital public revenue systems in Kenya's devolved units, reported an equally significant omnibus F-statistic ($p < .001$) when examining the influence of automated financial management technologies on revenue collection performance, reinforcing the methodological soundness of the present model.

4.3.4 Regression Coefficients

The regression coefficients indicate the unique and independent contribution of automated revenue tracking systems to revenue management effectiveness. The results are presented in Table 7.

Table 7: Regression Coefficients

	B	Std. Error	Beta (β)	t	Sig.
(Constant)	.521	.168		3.101	.002
Automated Revenue Tracking (ART)	.614	.044	.683	13.095	.000

Dependent Variable: Revenue Management.

Based on the unstandardised coefficients in Table 7, the fitted regression equation is expressed as: $Y = 0.521 + 0.614(ART)$.

Automated revenue tracking systems emerged as a statistically significant predictor of revenue management ($B = 0.614$, $Beta = .683$, $t = 13.095$, $p < .001$), indicating that a unit improvement in automated revenue tracking systems is associated with a 0.614-unit increase in revenue management effectiveness at Nairobi City County Government. This finding means that as the County enhances its automated revenue tracking infrastructure, real-time dashboards, digital receipting, cross-departmental integration, and fraud minimisation mechanisms, commensurate and measurable improvements in overall revenue management performance are generated. The null hypothesis, H_{01} , which stated that automated revenue tracking systems do not significantly influence revenue management in Nairobi City County Government, Kenya, was therefore rejected at the 0.001 significance level. This finding is consistent with Ndung'u and Gitagia (2026), who demonstrated that automated reconciliation and dashboard monitoring systems significantly reduced discrepancies between expected and collected revenue in Kenyan counties. Oguso (2022) similarly corroborate this, establishing that counties with higher levels of automated revenue tracking integration recorded substantially stronger fiscal discipline and revenue accountability outcomes compared to those relying on partially manual systems.

5.0 SUMMARY OF THE STUDY

This study examined the influence of automated revenue tracking systems on revenue management in Nairobi City County Government, Kenya. The study was grounded in Systems Theory, which provided the theoretical basis for explaining how automated tracking components function as integrated subsystems within the broader revenue management architecture, generating cascading positive effects on collection accuracy, accountability, and leakage reduction. A descriptive cross-sectional survey design was adopted, and 197 valid responses were obtained from a sample of 205, representing a 96.1% response rate.

Descriptive findings revealed that automated revenue tracking systems were strongly and positively perceived by respondents across all seven measured dimensions, with real-time dashboards ($M = 4.34$) and error reduction through automated data capture ($M = 4.33$) emerging as the highest-rated components. Revenue management outcomes were similarly affirmed, with collection speed and accuracy ($M = 4.37$) and financial transparency ($M = 4.33$) recording the strongest endorsements. The Pearson correlation confirmed a strong positive bivariate relationship between automated revenue tracking and revenue management ($r = .683$, $p < .01$). The regression model explained 46.7% of the variance in revenue management outcomes ($R^2 = .467$), and the ANOVA confirmed overall model significance ($F(1, 195) = 171.482$, $p < .001$). The regression coefficient confirmed that automated revenue tracking systems are a statistically significant positive predictor of revenue management ($B = 0.614$, $p < .001$), leading to the rejection of the null hypothesis.

6.0 CONCLUSION

The study concludes that automated revenue tracking systems exert a significant, positive, and substantial influence on revenue management in Nairobi City County Government, Kenya. The empirical evidence generated by this study demonstrates that investments in real-time dashboard monitoring, automated digital receipting, cross-departmental system integration, and fraud minimisation mechanisms yield measurable improvements in revenue collection accuracy, financial transparency, internal controls, and citizen compliance. The strong Pearson correlation ($r = .683$) and statistically significant regression coefficient ($B = 0.614$, $p < .001$) confirm that automated revenue tracking is not merely a technological convenience but a material driver of improved fiscal performance in the County. The findings further affirm the explanatory power of Systems Theory in contextualising how integrated automated components generate systemic improvements across the entire revenue management architecture. While the County has made commendable progress in deploying automated revenue infrastructure, the lower mean scores on cross-departmental integration suggest that interoperability gaps remain a priority challenge requiring institutional attention. Overall, the study establishes that a deliberate, comprehensive, and continuously improved automated revenue tracking strategy is

fundamental to strengthening Nairobi City County Government's revenue management performance and its capacity to finance sustainable public service delivery.

7.0 RECOMMENDATIONS

Based on the research findings, the following recommendations are proposed. First, Nairobi City County Government should prioritise the full integration of its revenue management systems across all departments to eliminate the interoperability gaps identified in the study. This should include investment in a unified enterprise resource planning platform that ensures seamless data exchange between payment systems, finance databases, and revenue monitoring dashboards in real time. Second, the County should institutionalise mandatory training programmes for all revenue and finance staff on the operation and interpretation of automated tracking systems, recognising that the effectiveness of technological investments is contingent on adequate human capacity to utilise them optimally. Third, SASRA and the National Treasury should develop standardised automated revenue tracking benchmarks for county governments, enabling systematic performance comparisons and the identification of best practices transferable across devolved units. Fourth, the County should commission periodic independent technology audits of its automated revenue tracking infrastructure to identify cybersecurity vulnerabilities, system redundancy gaps, and performance optimisation opportunities, ensuring the long-term integrity and effectiveness of its digital revenue architecture.

8.0 AREAS FOR FURTHER RESEARCH

Future research should consider replicating this study across multiple Kenyan county governments to enable comparative analysis of automated revenue tracking effectiveness across diverse institutional and resource contexts. Longitudinal studies examining the long-term impact of sustained automated revenue tracking investment on cumulative revenue growth and fiscal sustainability would provide valuable insights beyond the cross-sectional perspective of this study. Additionally, qualitative investigations into the organisational change management challenges associated with automated revenue tracking implementation would complement the quantitative findings of this study by illuminating the human and institutional dimensions of digital revenue transformation. Research examining the specific design features of automated tracking systems that most strongly predict revenue management improvement would further support evidence-based technology procurement decisions in county governments.

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