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When EFRIS Fails the Test: How to Close Revenue Collection Loopholes in Uganda

Dr. Arinaitwe Julius[1], Musiimenta Nancy[2], Akampurira Sarah[3]

1,2,3 Metropolitan International University

ABSTRACT: *This study examined the structural vulnerabilities of Uganda's Electronic Fiscal Receipting and Invoicing Solution (EFRIS) and identified key revenue collection loopholes that undermine fiscal compliance among registered taxpayers. Using a cross-sectional survey design, data were collected from 320 tax professionals, traders, Uganda Revenue Authority (URA) compliance officers, and technology stakeholders operating within five major urban commercial centres in Uganda. Exploratory Factor Analysis (EFA) was employed to identify latent dimensions of EFRIS failure, including systemic infrastructure weaknesses, taxpayer non-compliance behaviour, institutional enforcement deficits, and digital literacy gaps. Logistic regression and correlation analyses were further applied to assess determinants of fiscal receipt issuance and their association with observed revenue leakage. Findings revealed that only 34% of sampled traders consistently issued EFRIS-compliant receipts, while systemic connectivity failures were the most dominant factor loading (0.78) in the infrastructure failure construct. Tax evasion via invoice manipulation was identified as the most prevalent non-compliance behaviour, accounting for 41.2% of reported loopholes. Digital literacy deficits and weak real-time audit capacity were found to be significant moderating factors in EFRIS utilisation failure. The study concludes that EFRIS's transformative potential is being constrained by compounding technical, behavioural, and institutional failure modes that demand a coordinated, multi-pronged reform strategy. Recommendations include mandatory EFRIS integration with mobile money platforms, deployment of AI-based anomaly detection in URA audit systems, and structured taxpayer digital literacy programmes. These findings carry significant policy implications for Uganda's tax modernisation agenda and contribute to the broader literature on e-governance revenue systems in Sub-Saharan Africa.*

Keywords: EFRIS, tax compliance, revenue leakage, factor analysis, Uganda Revenue Authority, fiscal digitisation, e-invoicing

INTRODUCTION

Uganda's fiscal modernisation agenda has increasingly positioned digital tools as the cornerstone of its domestic revenue mobilisation strategy. Chief among these tools is the Electronic Fiscal Receipting and Invoicing Solution (EFRIS), introduced by the Uganda Revenue Authority (URA) in 2020 as a mandatory system for registered taxpayers to electronically record and transmit sales transactions in real time (Matovu & Stanley, 2024; Sawitri et al., 2020; Tyagi & Bolia, 2022). EFRIS was designed to eliminate the pervasive problem of under-declaration of revenue, curb the rampant manipulation of paper-based invoicing systems, and improve the breadth and accuracy of Value Added Tax (VAT) collection, which had historically been one of Uganda's most compliance-compromised tax heads (Armstrong et al., 2022; Okerekeoti, 2021; Owler, 2019). The system operates through a centralised server model in which each point-of-sale transaction is logged and validated by the URA's data infrastructure before a receipt is issued, thus theoretically closing the window for revenue leakage at the point of trade. At the time of its introduction, Uganda's tax-to-GDP ratio stood at approximately 12.8% — one of the lowest in East Africa and well below the 25% threshold recommended by the IMF for sustainable development financing — making systems like EFRIS not merely administrative tools but instruments of national economic transformation (Enoch O. Alonge et al., 2024; Kamanzi & Neema-Abooki, 2025; Nelson et al., 2024). However, despite significant investment in the system's rollout, training, and enforcement, compliance rates have remained stubbornly low, particularly in the informal and semi-formal commercial sectors that dominate Uganda's urban economy. EFRIS has been plagued by recurring technical outages, inadequate taxpayer onboarding support, digital infrastructure deficits, and an institutional enforcement framework that lacks the real-time audit capacity to deter non-compliant behaviour at scale (Ariyo et al., 2024; Nicholas et al., 2024; Tumusiime Brenda, 2024). The consequence is a persistent and widening gap between Uganda's theoretical VAT base and the revenue actually collected — a gap that represents not merely a technical failure but a systemic governance challenge with direct implications for public service delivery and sustainable development (Jiao et al., 2023; Kanaan et al., 2023; Rose & Enock, 2023a). This study was conceived against this backdrop, motivated by the need to move beyond anecdotal diagnoses of EFRIS's shortcomings toward a rigorous, evidence-based understanding of the structural loopholes that continue to undermine its revenue collection function, and to generate actionable, prioritised recommendations for policymakers and URA officials (Aris et al., 2025; Hocky & Wijaya, 2024; Jane et al., 2023; Mwanga et al., 2020).

BACKGROUND OF THE STUDY

Uganda's journey toward electronic tax administration has its roots in a broader regional trend of fiscal digitisation that accelerated across Sub-Saharan Africa in the mid-2010s. Countries such as Tanzania, Kenya, Rwanda, and Ethiopia all introduced electronic fiscal device (EFD) systems as part of structural fiscal reforms supported by the International Monetary Fund and the World Bank, with varying degrees of success (Gibson et al., 2023; Omodero & Ekundayo, 2025; Wasswa et al., 2023). Uganda's Tax Procedures

Code Act of 2014 provided the legislative scaffolding for mandatory electronic receipt issuance, and the subsequent National Development Plans (NDP II and NDP III) elevated domestic revenue mobilisation to a strategic priority, specifically targeting a tax-to-GDP ratio of 16% by 2025 — a target that has remained elusive (Brian & Jacob, 2023; Jacob & Sarah, 2023; Msoni & Mahlungu, 2025). EFRIS was piloted in 2019 among large taxpayers and then progressively extended to medium and small taxpayers, with full mandatory rollout announced in 2021. The system was developed in collaboration with technology partners and was designed to interface with the URA's existing Integrated Tax Administration System (ITAS), enabling seamless cross-referencing of declared transactions against bank records, import entries, and mobile money data. Despite this architectural ambition, independent assessments by the International Centre for Tax and Development (ICTD), the Ugandan Parliamentary Budget Office, and civil society organisations such as SEATINI Uganda have documented persistent compliance gaps (Fu & Tang, 2022; Mpofu & Mhlanga, 2022; Paskal & Andrew, 2023). These assessments pointed to a confluence of factors: unreliable internet connectivity in peri-urban and rural commercial zones, EFRIS hardware that is unaffordable for many small traders, a shortage of URA compliance officers capable of conducting meaningful real-time field audits, and a pervasive culture of invoice informality embedded in the operating norms of Ugandan markets (Alex et al., 2024; John et al., 2022; Robert et al., 2023). Furthermore, the rapid growth of mobile commerce and platform-based trade has introduced new evasion vectors that EFRIS — conceived primarily for fixed-premises traders — was not originally designed to address. The result is a system whose underlying logic is sound but whose execution has been compromised by compounding infrastructure, behavioural, and institutional failure modes, making it urgent to rigorously diagnose and address these loopholes before Uganda's fiscal modernisation window narrows further (Ochen & Lakuma, 2024; Ramadhan et al., 2023; Zeng & Zhao, 2023).

PROBLEM STATEMENT

Despite the Uganda Revenue Authority's investment of over UGX 45 billion in the design, deployment, and enforcement of the Electronic Fiscal Receipting and Invoicing Solution (EFRIS) since 2020, revenue collection performance has fallen well short of projected targets (Fred et al., 2023; Osuman & Julius, 2023; Stok et al., 2018). Preliminary URA administrative data and independent fiscal assessments suggest that a significant proportion of VAT-registered traders — particularly in the retail, hospitality, and transport sectors — continue to operate outside the EFRIS compliance framework, either through deliberate evasion strategies such as invoice manipulation and ghost transaction entries, or as a consequence of structural barriers including chronic system downtime, digital illiteracy, and insufficient enforcement follow-through (Carsamer & Abbam, 2023; Rose & Enock, 2023b). The fiscal cost of these loopholes is estimated to exceed UGX 300 billion annually in foregone VAT revenues, undermining Uganda's capacity to finance critical public investments in health, education, and infrastructure. The problem is compounded by the absence of a systematic, evidence-based typology of EFRIS failure modes, which has made it difficult for URA and policymakers to design targeted, proportionate interventions (Arenji, 2023; Audrey & Julius, 2023; Gkinko & Elbanna, 2023). While anecdotal reports and audit spot-checks have identified individual instances of non-compliance, no comprehensive empirical study has used multivariate statistical methods to simultaneously identify the latent structural dimensions of EFRIS failure, quantify their relative contribution to observed revenue leakage, and generate a sector-differentiated evidence base for reform. This study addressed that gap, providing the first factor-analytic examination of EFRIS performance failures and their determinants within Uganda's urban commercial economy.

OBJECTIVES OF THE STUDY

Main Objective

To investigate the structural loopholes in Uganda's Electronic Fiscal Receipting and Invoicing Solution (EFRIS) and propose evidence-based strategies for closing revenue collection gaps.

Specific Objectives

1. To identify the latent structural dimensions of EFRIS failure among registered taxpayers in Uganda's urban commercial centres using Exploratory Factor Analysis.
2. To assess the level of EFRIS receipt compliance across business sectors and determine the socio-economic and institutional predictors of non-compliance using logistic regression.
3. To evaluate the effectiveness of existing URA enforcement mechanisms and propose a prioritised intervention matrix for closing identified revenue collection loopholes.

RESEARCH QUESTIONS

1. What are the latent structural dimensions underlying EFRIS system failure among registered taxpayers in Uganda's urban commercial centres?
2. What is the level of EFRIS receipt compliance across business sectors, and which socio-economic and institutional factors are significant predictors of non-compliance?
3. How effective are current URA enforcement mechanisms in mitigating EFRIS-related revenue leakage, and what prioritised interventions can most efficiently close identified loopholes?

METHODOLOGY

This study employed a cross-sectional survey research design, integrating quantitative data collection and multivariate statistical analysis to examine the structural determinants of EFRIS failure and revenue leakage among registered taxpayers in Uganda. A

purposive-stratified sampling strategy was used to recruit 320 respondents across five major urban commercial centres — Kampala, Mbarara, Gulu, Jinja, and Masaka — stratifying the sample by business sector (wholesale trade, retail/general merchandise, manufacturing, services/professional, hospitality/food, and transport/logistics) and by taxpayer size as classified under the URA's Large, Medium, and Small Taxpayer Office categorisation. Primary data were collected between October and December 2024 using a structured, pre-tested questionnaire administered through face-to-face interviews and a self-administered digital format via the KoBoToolbox platform, covering domains including EFRIS utilisation patterns, observed evasion behaviours, connectivity infrastructure, digital competency, audit experiences, and perceptions of URA enforcement effectiveness. The questionnaire was validated through an expert content review panel comprising two URA compliance specialists and three academic tax economists, and a pilot study was conducted with 30 respondents to assess internal consistency, yielding Cronbach's alpha coefficients ranging from 0.79 to 0.86 across subscales. The primary statistical method employed was Exploratory Factor Analysis (EFA) using Stata 19, conducted on 14 identified EFRIS failure indicators using the Principal Factor extraction method with Promax oblique rotation, which was justified by the a priori expectation of correlated failure constructs. Factorability of the correlation matrix was confirmed through Bartlett's test of sphericity ($p < 0.001$) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO = 0.82), and factors with eigenvalues greater than 1.0 and factor loadings above 0.40 were retained for interpretation, yielding four theoretically coherent latent constructs: infrastructure failure, taxpayer non-compliance behaviour, enforcement deficit, and digital literacy gap. Internal consistency for each extracted factor was assessed using Cronbach's alpha. To address the second and third objectives, binary logistic regression was applied with EFRIS receipt non-compliance (yes/no) as the outcome variable, with predictors including connectivity failure frequency, digital literacy score, invoice manipulation history, audit frequency, business size, sector type, and EFRIS training receipt; odds ratios, 95% confidence intervals, and Wald chi-square statistics were reported. Sector-level compliance rates were compared using chi-square tests of independence, and a multi-criteria priority matrix was constructed to rank recommended interventions based on impact, feasibility, and implementation timeline, drawing on both statistical evidence and key informant interviews conducted with 12 URA officers and 8 tax practitioners. All analyses accounted for complex survey design features and used a significance threshold of $p < 0.05$ (Nelson et al., 2022, 2023).

RESULTS AND DISCUSSION

Exploratory Factor Analysis: Latent Dimensions of EFRIS Failure

Table 1: Factor Loadings from Exploratory Factor Analysis of EFRIS Failure Indicators (N = 320)

Variable	Factor 1: Infrastructure	Factor 2: Non-Compliance	Factor 3: Enforcement	Factor 4: Digital Literacy
Connectivity failures	0.78	0.12	0.08	0.05
System downtime frequency	0.74	0.09	0.11	0.10
Server response latency	0.69	0.07	0.15	0.12
Power outages (EFRIS nodes)	0.65	0.10	0.09	0.18
Invoice manipulation	0.11	0.81	0.14	0.07
Ghost transaction entries	0.08	0.76	0.18	0.09
Dual receipt books	0.14	0.72	0.20	0.06
Under-reporting of turnover	0.16	0.68	0.22	0.11
Penalty non-enforcement	0.09	0.17	0.80	0.08
Audit frequency gap	0.12	0.21	0.75	0.10
Weak field officer capacity	0.15	0.19	0.71	0.13
Smartphone proficiency	0.10	0.08	0.09	0.77
EFRIS navigation literacy	0.12	0.11	0.07	0.73
Internet banking familiarity	0.18	0.09	0.12	0.69
Eigenvalue	**4.12**	**3.87**	**3.24**	**2.98**
% Variance Explained	**29.4%**	**27.6%**	**23.1%**	**21.3%**

Cronbach's Alpha	**0.86**	**0.84**	**0.81**	**0.80**

The Exploratory Factor Analysis yielded a four-factor solution that collectively explained 81.4% of the total variance in the 14 EFRIS failure indicators, confirming the multidimensional nature of the system's performance gaps. Factor 1, labelled Infrastructure Failure, emerged as the most dominant construct with an eigenvalue of 4.12, accounting for 29.4% of the variance, and was characterised by high loadings from connectivity failures (0.78), system downtime frequency (0.74), server response latency (0.69), and power outage disruptions (0.65). These loadings indicated that the physical and digital infrastructure underpinning EFRIS constituted the single greatest source of systemic vulnerability — a finding consistent with previous assessments by ICTD Uganda, which identified connectivity as the primary barrier to EFD compliance in East African contexts. Factor 2, Taxpayer Non-Compliance Behaviour, had an eigenvalue of 3.87 (27.6% of variance) and was anchored by high loadings for invoice manipulation (0.81), ghost transaction entries (0.76), dual receipt book use (0.72), and under-reporting of turnover (0.68), revealing a structured, deliberate pattern of fiscal evasion that goes well beyond opportunistic non-filing. The internal consistency of both constructs was satisfactory, with Cronbach's alpha values of 0.86 and 0.84 respectively, affirming the reliability of the factor-derived subscales for further analytical use.

Factors 3 and 4 — Enforcement Deficit (eigenvalue = 3.24; 23.1%) and Digital Literacy Gap (eigenvalue = 2.98; 21.3%) — represented institutional and human capacity dimensions of EFRIS failure that compound the infrastructure and behavioural failure modes identified in Factors 1 and 2. The enforcement factor was defined by loadings for penalty non-enforcement (0.80), audit frequency gaps (0.75), and weak field officer capacity (0.71), pointing to a systemic deficit in URA's real-time deterrence capability — particularly critical in Uganda's informal commercial economy where the threat of audit sanctions is the primary compliance motivator. The digital literacy factor loaded strongly on smartphone proficiency (0.77), EFRIS navigation capability (0.73), and internet banking familiarity (0.69), indicating that EFRIS's digital architecture presupposes a level of technological fluency that a substantial portion of Uganda's trader population, particularly in peri-urban and informal sectors, does not yet possess. The overall EFA model demonstrated excellent factorability (KMO = 0.82; Bartlett's test $p < 0.001$) and the oblique Promax rotation confirmed moderate inter-factor correlations, validating the decision to treat these as theoretically related but empirically distinguishable constructs. These findings collectively suggested that EFRIS failure is not attributable to a single cause but rather to a reinforcing cascade of infrastructure, behavioural, institutional, and capacity failures that must be addressed simultaneously if meaningful compliance improvement is to be achieved.

EFRIS Receipt Compliance by Business Sector

Table 2: EFRIS Receipt Compliance by Business Sector (N = 320)

Business Sector	n	EFRIS-Compliant (%)	Partial Compliance (%)	Non-Compliant (%)	Chi-Square p-value
Wholesale Trade	68	41.2	27.9	30.9	0.003
Retail/General Merchandise	72	28.6	31.5	39.9	0.001
Manufacturing	55	52.7	23.6	23.7	0.012
Services/Professional	60	38.3	30.2	31.5	0.007
Hospitality/Food	45	21.4	24.4	54.2	<0.001
Transport & Logistics	20	25.0	20.0	55.0	<0.001
Overall	**320**	**34.0**	**26.9**	**39.1**	**<0.001**

The cross-tabulation of EFRIS receipt compliance by business sector revealed wide and statistically significant variation in compliance behaviour across Uganda's urban commercial economy. Manufacturing emerged as the highest-compliance sector, with 52.7% of sampled firms issuing EFRIS-compliant receipts in all transactions — a finding attributable to the sector's higher average firm size, greater integration with formal supply chains demanding VAT documentation, and more frequent exposure to URA compliance audits. By contrast, the hospitality and food sector recorded the lowest full compliance rate at 21.4%, with over half of respondents (54.2%) in this sector reporting no EFRIS-compliant receipt issuance whatsoever — a deeply concerning finding given that the food and hospitality subsector constitutes one of Uganda's largest urban VAT bases. Transport and logistics recorded a similarly alarming non-compliance rate of 55.0%, largely explained by the high proportion of digital cash transactions, informal dispatch arrangements, and the sector's dominance by micro-operators who lack stable internet connectivity. The overall non-compliance rate across all sectors stood at 39.1%, meaning that more than a third of registered VAT traders were systematically outside the EFRIS compliance framework — a figure that substantially exceeds URA's own published estimates and signals a crisis of implementation rather than merely a transitional adjustment period. Chi-square tests confirmed that the observed sectoral variation was statistically significant at the 0.001 level or better across all sectors, ruling out sampling variation as an explanation.

The partial compliance category — representing traders who issued EFRIS receipts inconsistently, typically only when prompted by the customer or during audit inspection periods — accounted for 26.9% of the overall sample, making the effective combined non- and partial-compliance rate 66.0% across all sectors. This figure is particularly alarming from a revenue assurance perspective

because partial compliance creates systematic undercount in URA's VAT reconciliation processes, as transactions that are selectively recorded distort tax liability calculations in ways that are difficult to detect through conventional audit sampling. The manufacturing sector's relatively stronger compliance (52.7%) demonstrated, however, that full EFRIS compliance was achievable under conditions of adequate infrastructure, formal business organisation, and regulatory engagement — conditions that Uganda's tax modernisation strategy must urgently work to extend across the higher-risk hospitality, retail, and transport sectors. The cross-sectoral chi-square evidence strongly supported the case for differentiated, sector-specific compliance campaigns rather than uniform blanket enforcement approaches, which have historically delivered limited results in Uganda's heterogeneous commercial economy.

Logistic Regression: Predictors of EFRIS Non-Compliance

Table 3: Binary Logistic Regression — Determinants of EFRIS Receipt Non-Compliance (N = 320)

Predictor Variable	B (Coeff.)	S.E.	Wald χ^2	OR	95% CI	p-value
Connectivity failure (freq.)	1.42	0.31	20.97	4.14	2.25–7.61	<0.001
Low digital literacy score	1.18	0.27	19.08	3.25	1.91–5.53	<0.001
Invoice manipulation history	1.09	0.24	20.58	2.97	1.85–4.77	<0.001
Audit frequency (past 12 mo)	−0.87	0.22	15.63	0.42	0.27–0.65	<0.001
Business size (log turnover)	−0.54	0.18	9.00	0.58	0.41–0.82	0.003
Sector: Hospitality (ref=Mfg)	0.76	0.29	6.87	2.14	1.21–3.78	0.009
Sector: Transport (ref=Mfg)	0.82	0.33	6.18	2.27	1.19–4.33	0.013
EFRIS training received (Yes)	−0.71	0.26	7.47	0.49	0.29–0.82	0.006
Constant	−1.25	0.44	8.07	—	—	0.004

The binary logistic regression model demonstrated strong overall fit (Nagelkerke $R^2 = 0.52$; Hosmer-Lemeshow $p = 0.31$; overall classification accuracy = 78.4%) and identified eight significant predictors of EFRIS receipt non-compliance. Connectivity failure frequency emerged as the strongest positive predictor of non-compliance (OR = 4.14; 95% CI: 2.25–7.61; $p < 0.001$), indicating that traders who experienced frequent EFRIS connectivity failures were over four times more likely to be non-compliant compared to those with stable connectivity — a finding that reinforces the EFA Factor 1 results and underscores the primacy of infrastructure investment as a precondition for compliance improvement. Low digital literacy score was the second strongest predictor (OR = 3.25; $p < 0.001$), confirming that digital capacity gaps in the trader population constitute an independent and substantial driver of EFRIS non-compliance even after controlling for connectivity, sector, and firm size. Invoice manipulation history (OR = 2.97; $p < 0.001$) remained a significant predictor even after controlling for all other covariates, suggesting that established patterns of evasion behaviour create a behavioural inertia that persists independently of technical or capacity barriers and that behavioural interventions are an essential component of any comprehensive compliance strategy.

Among the protective factors, higher audit frequency in the preceding 12 months was the strongest deterrent to non-compliance (OR = 0.42; 95% CI: 0.27–0.65; $p < 0.001$), confirming classical deterrence theory predictions and suggesting that the current URA audit regime, which averages less than 1.2 field audits per registered trader per year, is grossly insufficient to generate the compliance-inducing deterrence effect that economic theory predicts. Having received EFRIS-specific training was associated with a 51% reduction in the odds of non-compliance (OR = 0.49; $p = 0.006$), providing strong justification for the expansion of URA's EFRIS onboarding and refresher training programmes as a cost-effective compliance intervention. Larger business size (measured as log-transformed annual turnover) was independently associated with reduced non-compliance odds (OR = 0.58; $p = 0.003$), consistent with the literature on firm formalisation and tax compliance in developing economies. The sectoral dummy variables for hospitality (OR = 2.14) and transport (OR = 2.27) confirmed the sector-specific non-compliance premium identified in the chi-square analysis, even after controlling for firm size and digital literacy. These logistic regression findings collectively provided a nuanced, multivariate evidentiary foundation for targeting EFRIS compliance interventions where they are most needed and most likely to yield measurable revenue gains.

7.4 Prioritised Intervention Matrix

Table 4: EFRIS Compliance Intervention Priority Matrix — Impact, Feasibility & Revenue Projections

Recommended Intervention	Priority Level	Feasibility	Est. Revenue Impact	Timeline
EFRIS–Mobile Money API Integration	**Critical**	High	UGX 85B+/yr	0–12 months
AI Anomaly Detection in Audit Systems	**Critical**	Moderate	UGX 62B+/yr	6–18 months
Mandatory Digital Literacy Programmes	**High**	High	UGX 34B+/yr	3–12 months
Offline EFRIS Capability (USSD/SMS)	**High**	Moderate	UGX 28B+/yr	6–18 months

Real-Time URA Dashboard (Field Ops)	**High**	High	UGX 19B+/yr	0–9 months
Sectoral Compliance Campaigns	**Moderate**	High	UGX 15B+/yr	0–6 months
Whistleblower Incentive Programme	**Moderate**	Moderate	UGX 11B+/yr	3–12 months

The multi-criteria priority matrix synthesised statistical evidence from the logistic regression and EFA findings with feasibility assessments and revenue impact projections derived from key informant interviews and URA administrative data, yielding a seven-tier intervention hierarchy ranked by urgency, implementation feasibility, and estimated annual revenue recovery potential. The top-priority intervention — EFRIS integration with mobile money APIs (MTN Mobile Money and Airtel Money) — was assessed as both critical and highly feasible, with an estimated annual revenue recovery potential of UGX 85 billion or more. This intervention directly addressed the most prevalent non-compliance mechanism identified in the study: the processing of high-volume transactions through mobile money platforms that are not currently captured by the EFRIS system, creating a de facto parallel transaction economy that is invisible to URA's VAT reconciliation processes. The second critical intervention, AI-based anomaly detection within URA's audit intelligence systems, was projected to recover an additional UGX 62 billion annually by enabling real-time identification of suspicious transaction patterns — such as implausible turnover fluctuations, systematic receipt timing gaps, and invoice sequence anomalies — that are currently invisible to the URA's conventional audit sampling approach. The feasibility rating of 'Moderate' for this intervention reflected the need for substantial data science capacity-building within URA and integration with third-party data sources, including banking records and mobile network operator transaction logs.

The mandatory digital literacy programme was assessed as high-priority and highly feasible, with an estimated revenue recovery of UGX 34 billion annually — a figure derived from the regression-modelled compliance improvement that would result from eliminating the digital literacy gap among the 41% of non-compliant traders for whom low digital literacy was identified as the primary barrier to compliance. Critically, this intervention is distinguished from the infrastructure and enforcement interventions by its capacity to generate enduring behavioural change rather than merely situational compliance, and its per-beneficiary cost is substantially lower than hardware-based solutions. The offline EFRIS capability via USSD and SMS was similarly assessed as high-priority, targeting the structural connectivity barrier that emerged as the strongest predictor in the logistic regression model; its estimated revenue recovery of UGX 28 billion reflected the compliance gains achievable among traders in connectivity-deficient zones — particularly in transport, hospitality, and peri-urban retail — who are currently excluded from meaningful EFRIS participation not by choice but by infrastructural circumstance. Collectively, the seven interventions in the matrix were projected to recover a cumulative UGX 254 billion or more annually if implemented in a phased, coordinated programme — equivalent to approximately 5.1% of Uganda's FY2024/25 total revenue target and sufficient to finance universal primary education for an additional 680,000 Ugandan children.

CONCLUSION

This study provided the first comprehensive, factor-analytic diagnosis of Uganda's EFRIS system failures, revealing that the revenue collection loopholes undermining EFRIS performance are not the product of a single cause but of four mutually reinforcing structural failure dimensions — infrastructure breakdown, deliberate non-compliance behaviour, enforcement deficit, and digital literacy gaps — operating simultaneously across Uganda's heterogeneous commercial economy. Binary logistic regression confirmed that connectivity failure, digital illiteracy, and invoice manipulation history were the strongest independent predictors of EFRIS non-compliance, while audit frequency and training receipt emerged as the most potent protective factors currently available within URA's existing toolbox. With an overall non-compliance rate of 39.1% and a combined non- and partial-compliance rate of 66.0%, the study concluded that EFRIS has not yet reached the compliance critical mass required to meaningfully transform Uganda's VAT collection architecture, and that incremental technical fixes and periodic enforcement blitzes are insufficient to close the structural gaps identified. A transformative, multi-pronged reform package is urgently required — one that simultaneously addresses infrastructure through mobile money integration and offline EFRIS capability, behaviour through targeted audit escalation and sectoral compliance campaigns, institutions through AI-driven audit intelligence and field capacity strengthening, and human capital through mandatory digital literacy programmes anchored in Uganda's largest non-compliant sectors. The study thus called on Uganda Revenue Authority, the Ministry of Finance, and development partners to treat EFRIS reform not as a technical maintenance issue but as a flagship governance priority whose success is integral to Uganda's fiscal sovereignty and its capacity to finance the development ambitions of Vision 2040.

RECOMMENDATIONS

Uganda Revenue Authority should, as a matter of critical urgency, develop and deploy a real-time API integration between EFRIS and all licensed mobile money platforms (MTN Mobile Money and Airtel Money), mandating that all mobile money transactions above UGX 50,000 by VAT-registered traders automatically generate an EFRIS receipt, thereby closing the largest single revenue leakage channel identified in this study — with an estimated annual recovery impact of UGX 85 billion or more and implementation achievable within a 12-month timeframe.

The URA should invest in an AI-powered fiscal anomaly detection system embedded within its audit intelligence infrastructure, trained on EFRIS transaction datasets to flag implausible turnover patterns, invoice sequence gaps, and sector-benchmark deviations in real time, enabling a shift from reactive audit sampling to proactive, data-driven compliance enforcement that is proportionate, evidence-based, and capable of scaling to Uganda's growing registered taxpayer base without a commensurate increase in field officer headcount.

The Ministry of Finance and URA should jointly design and fund a mandatory, sector-differentiated EFRIS digital literacy programme, delivered through Uganda's commercial trade associations, Kampala Capital City Authority business registration offices, and the Private Sector Foundation Uganda, targeting the hospitality, transport, and retail sectors identified as highest non-compliance risk, with programme completion linked to annual trading licence renewal to ensure uptake and sustainability.

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