

Journal of **Accounting** (JACC)

From Traditional Income to Strategic Revenue: Which Revenue Sources Actually Strengthen the Financial Stability of Kenyan Public Universities?



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From Traditional Income to Strategic Revenue: Which Revenue Sources Actually Strengthen the Financial Stability of Kenyan Public Universities?



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Accepted: 14th Aug, 2026, Received in Revised Form: 24th Aug, 2026, Published: 7th Sep, 2026



Abstract

Purpose: This study examines the relative contributions of five revenue sources, namely tuition and related revenue, research and innovation revenue, service revenue, asset-utilization revenue, and partnership revenue, to the financial stability of Kenyan public universities.

Methodology: The study adopted a positivist philosophy and a quantitative longitudinal panel-data design, using audited financial data from 22 public universities over seven financial years (2017/18–2023/24), yielding 154 university-year observations. Financial stability was measured using the Composite Financial Index (CFI). Descriptive statistics, pairwise correlations, and panel regression analysis were used, and the Fixed Effects (FE) model was selected following the Hausman specification test.

Findings: The results demonstrate substantial variation in the contribution of individual revenue sources. Tuition and related revenue was the strongest contributor to financial stability ($\beta = 8.675$, $p < 0.001$), followed by research and innovation revenue ($\beta = 3.256$, $p < 0.001$), asset-utilization revenue ($\beta = 1.983$, $p < 0.001$), and service revenue ($\beta = 1.701$, $p < 0.001$). Partnership revenue had a positive but statistically insignificant contribution ($\beta = 0.134$, $p = 0.415$).

Unique Contribution to Theory, Policy and Practice: The findings demonstrate that multiple revenue streams do not necessarily generate equivalent financial benefits. The study extends Resource Dependence Theory, Portfolio Theory, and Resource Mobilization Theory by emphasizing the differential financial value of individual revenue sources. It proposes a strategic revenue hierarchy that protects tuition income, prioritizes research and innovation, improves asset productivity, professionalizes services, and restructures partnerships around financially substantive outcomes. The study therefore advances a quality-over-quantity perspective on revenue diversification, emphasizing financial productivity, sustainability, and strategic value rather than the number of revenue sources.

Keywords: *Revenue Diversification, Financial Stability, Public Universities, Composite Financial Index*

JEL Codes: *G32, I21, H81, H82*

1. Introduction

Financial sustainability has become a central concern in higher education as universities face rising costs, shifting student demographics, growing expectations for research and innovation, and constraints on public spending. The financial environment for public universities has become particularly challenging because institutions are expected to expand access, maintain academic quality, invest in infrastructure, support research, and respond to labor-market and societal needs simultaneously. The OECD's assessment of higher education finance confirms that many systems face pressure from constrained public resources, shifting enrollment patterns, and rising costs, while revenue diversification is increasingly considered alongside efficiency and strategic resource allocation as a potential response (OECD, 2025).

These pressures are particularly significant for public universities in developing countries, where government funding remains a major share of institutional income (ADB, 2023). In Kenya, public universities have traditionally relied heavily on government funding and student tuition. However, the rapid expansion of the university system, rising enrollment, and constrained public financing have intensified the search for alternative revenue sources. Consequently, revenue diversification has become an important part of university financial strategy. Recent Kenyan literature confirms growing interest in revenue diversification as a response to the financial pressures facing public universities (Ayisi, Kivengea, & Ombakho, 2021; Inyanza, Okello, & Muthoni, 2023; Kimathi & Irungu, 2024).

The underlying proposition is that a university institution that derives income from several relatively independent sources should be less vulnerable to shocks affecting any one source. Resource Dependence Theory offers one explanation for this strategy, suggesting that organizations seek to reduce dependence on powerful external resource providers by developing alternative sources. Portfolio Theory similarly suggests that spreading exposure across different sources can reduce concentration-related risk. In higher education, these perspectives have encouraged universities to pursue research grants, consulting, continuing education, commercial activities, partnerships, endowments, philanthropy, and asset-based income, in addition to government funding and tuition.

Yet revenue diversification and financial stability are not synonymous. A university may draw income from many sources without becoming financially stronger. Some revenue-generating activities may carry high operating costs, require substantial upfront investment, produce irregular cash flows, or yield revenues too small to materially affect the institution's financial health. Diversification may therefore be beneficial, neutral, or even counterproductive, depending on the financial contribution of each revenue stream. This distinction is particularly important in the Kenyan context.

International evidence indicates that the effects of different revenue sources are unlikely to be uniform. Jaafar et al. (2023), examining 20 Malaysian public universities, found that revenue

diversification was significantly associated with financial sustainability when return on assets was used as the financial measure. Wekullo and Musoba (2020), studying public research universities in the United States, found substantial differences in financial health and that state and local appropriations and endowment resources were significantly associated with it. Research on Malaysian universities has also demonstrated persistent dependence on government funding and comparatively weak third-stream revenues (Altbach & Wit, 2020).

Existing studies have established that Kenyan public universities face significant financial sustainability challenges and have increasingly advocated for alternative income sources. For example, Kimathi and Irungu (2024) found a significant relationship between revenue diversification and financial sustainability among Kenyan public universities, although the direction of the relationship varied by the financial sustainability measure used. Riechi (2024) similarly identifies revenue diversification as an important potential response to the financial constraints facing Kenyan public universities. The literature therefore leaves an important question largely unanswered: which specific revenue sources contribute most to university financial stability?

1.1 Problem Statement

Financial stability is fundamental to public universities' ability to sustain teaching, research and innovation, infrastructure development, and other core institutional functions. However, Kenyan public universities continue to face financial pressures from inadequate and unpredictable public funding, rising operating costs, accumulated liabilities, and growing student enrollment. These pressures have heightened the need for universities to mobilize revenue beyond government funding through tuition and related income, research and innovation, services, asset utilization, and partnerships. While revenue diversification is widely advocated as a strategy for strengthening institutional financial resilience, the mere existence of multiple revenue sources does not necessarily mean they contribute equally or meaningfully to financial stability. Consequently, there remains a need to empirically determine which revenue sources contribute most to the financial stability of Kenyan public universities and which make relatively limited contributions.

Existing literature on higher education financing has largely treated revenue diversification as an aggregate concept, with comparatively little attention to the individual contributions of different revenue sources to institutional financial stability, particularly in the Kenyan public university context. Moreover, evidence from developed higher-education systems may not adequately reflect the financial, regulatory, and institutional conditions facing Kenyan universities. This creates an empirical and contextual gap regarding whether and to what extent tuition and related revenue, research and innovation revenue, service revenue, asset-utilization revenue, and partnership revenue contribute to financial stability. This study therefore disaggregates university revenue diversification and examines the contribution of each of the five revenue sources to the financial stability of public universities in Kenya, thereby providing evidence for developing a more strategic and financially productive approach to revenue diversification.

1.2 Objectives of the Study

The study's general objective was to examine the contribution of different revenue sources to the financial stability of public universities in Kenya. Specifically, the study sought to:

1. Examine the contribution of tuition and related revenue to the financial stability of public universities in Kenya.
2. Determine the contribution of research and innovation revenue to the financial stability of public universities in Kenya.
3. Assess the contribution of service revenue to the financial stability of public universities in Kenya.
4. Examine the contribution of asset-utilization revenue to the financial stability of public universities in Kenya.
5. Determine the contribution of partnership revenue to the financial stability of public universities in Kenya.

2. Literature Review

2.1 Revenue diversification and university financial stability

Revenue diversification is the distribution of institutional income across multiple sources rather than dependence on a single dominant source. In higher education, the concept encompasses government appropriations, tuition and fees, research grants, consulting and professional services, commercial activities, asset-based income, philanthropy, endowments, partnerships, and other third-party funding.

The rationale for diversification stems in part from risk management. An institution heavily dependent on a single source is exposed to changes affecting that source. For example, reductions in government allocations can directly affect universities that depend primarily on public funding, while institutions that rely heavily on tuition face enrollment changes, affordability constraints, and regulatory controls. Diversification can therefore buffer source-specific shocks. However, the financial sustainability literature increasingly emphasizes that diversification alone is insufficient. The OECD (2025) concludes that although revenue diversification remains a policy priority, efficiency, strategic planning, and alignment between institutional activities and revenue-generating capacity are equally important. This observation is particularly relevant to the present study because different revenue streams may have substantially different margins, volatility, and strategic value.

The international evidence is mixed. Jaafar et al. (2023) found a positive relationship between revenue diversification and financial sustainability in Malaysian public universities, with financial sustainability measured by return on assets. Conversely, Wekullo and Musoba (2020) found that not all alternative funding strategies were equally associated with financial health among U.S.

public research universities. These findings suggest that the financial consequences of diversification are context-dependent.

The Kenyan literature is similarly evolving. Kimathi and Irungu (2024) found that revenue diversification had varying effects depending on the financial sustainability indicator used. This matters because a simple claim that "diversification improves sustainability" may obscure substantial variation. The present study therefore departs from treating diversification as a homogeneous financial strategy. Instead, it evaluates how individual revenue streams contribute to a multidimensional measure of financial stability.

Tuition and related revenue is the most established form of university income, whether generated internally from students or from government or third-party payments. It includes student tuition payments, government-supported tuition income, and other student-related charges. In many higher education systems, tuition is a substantial component of institutional revenue, particularly where governments have shifted from direct institutional financing to cost-sharing arrangements.

The OECD (2025) reports that public funding remains dominant across OECD higher education systems, but household contributions through tuition and fees are an important additional component. The relative importance of tuition varies considerably by national policy, international enrollment, and cost-sharing arrangements. The World Bank (2022) found that tuition has an important advantage over many alternative sources because it is directly linked to the university's core educational function. Once student numbers and payment systems are sufficiently established, tuition revenue can provide relatively predictable recurring income. This explains why tuition is more financially consequential than newer revenue streams (Booker, 2021).

The disadvantage is concentration risk. Excessive reliance on tuition may expose universities to enrollment fluctuations, affordability constraints, government regulation, and fee caps. Hearn (2021) noted that changes in international student flows, fee regulation, and public financing can substantially alter institutional revenue mixes. Similarly, ADB (2023) noted that while tuition income can be financially powerful, it does not necessarily constitute genuine diversification. In the Kenyan context, the question is whether tuition's large contribution to financial stability reflects its reliability or simply the absence of sufficiently developed alternative revenue sources.

Research and innovation revenue includes competitive research grants, commissioned research, intellectual-property commercialization, and related research income. It has attracted increasing attention because research universities possess knowledge assets that can be converted into financial and social value.

Aina & Mhlanga (2022) noted that revenue can support financial stability through multiple channels. Research grants provide additional institutional resources, while commissioned research and commercialization can generate income beyond government and student sources. Research activity can also enhance institutional reputation, attract external collaborators, and increase access to international funding (Ayisi, Kivengea, & Ombakho, 2021).

International evidence suggests that research-intensive universities tend to have more diversified revenue portfolios because research generates access to third-party funding (African Union, 2024). Moreover, UNESCO (2025) found that research universities generally have greater capacity to attract third-party funding than less research-intensive institutions.

Sujata & Neha (2026), however, argued that research revenue is not necessarily equivalent to unrestricted financial income. Many research grants are restricted to specific projects and may not fully cover indirect or institutional costs. Therefore, the financial contribution of research depends on how fully universities recover the full economic costs associated with research. For Kenyan universities, the strategic challenge is to shift from primarily grant-dependent research to research that also generates commercialization, intellectual property, and industry-linked income (Kimathi & Irungu, 2024).

Service revenue encompasses consultancy, professional training, testing and laboratory services, accommodation, catering, conferences, continuing education and other services provided by universities. Service activities have considerable potential because they can utilize existing academic expertise and physical infrastructure. Unlike some research grants, services can generate relatively flexible income, allowing universities to price services appropriately and recover costs.

Riechi (2024) identifies consultancy, commercial activities, and other income-generating activities as potential diversification strategies for Kenyan public universities. Recent studies of Kenyan university financing similarly identify consultancy and entrepreneurial activities as potentially important sources of internally generated income. KPMG (2022) also warns universities not to underestimate the costs associated with service provision. Consultancy activities may involve staff time, administrative costs, and institutional overheads, while commercial services can face competition from private-sector providers. The financial significance of service revenue therefore depends on whether universities operate these activities profitably and efficiently, rather than treating them simply as ancillary academic functions (Botlhale, 2023).

Public universities hold significant physical assets, including land, buildings, housing, conference facilities, farms, laboratories, sports facilities, and other infrastructure. Asset-utilization revenue is income generated from the productive use of these assets. Asset-based revenue sources can provide substantial financial benefits by converting underutilized institutional resources into recurring income without necessarily requiring universities to create entirely new academic activities.

Olsen (2022) concluded that asset commercialization requires appropriate governance, investment appraisal, market assessment, and regulatory flexibility. Poorly designed commercial ventures can lead to losses rather than financial benefits. Asset utilization should therefore be assessed by net financial contribution rather than by gross revenue (Botlhale, 2023).

The growing international emphasis on institutional resource efficiency reinforces this point. The OECD (2021) argues that revenue diversification must be considered alongside efficient resource

use and strategic planning. For Kenyan universities, asset utilization may be important, but it requires professional management rather than ad hoc commercialization.

Partnership revenue comprises financial resources from university–industry partnerships, development partnerships, international collaborations, public-private arrangements, sponsored programs, and other institutional collaborations. Partnerships can provide universities with access not only to financial resources but also to technology, markets, expertise, and networks. They may therefore have strategic value beyond their immediate financial contribution (Chuluunbaatar & Amarbayasgalan, 2023).

Nevertheless, as Aina & Mhlanga (2022) found, partnerships often require long development periods and substantial institutional capacity. Contract negotiation, intellectual-property arrangements, risk sharing, and relationship management can delay financial returns. Some partnerships may also generate significant non-financial benefits without producing large immediate revenues. This distinction matters when interpreting the present results. A statistically insignificant financial effect should not automatically be interpreted as evidence that partnerships are unimportant. Rather, it may indicate that the existing scale, maturity, or structure of university partnerships has not yet generated sufficient direct financial returns.

2.2 Theoretical Framework

2.2.1 Resource Dependence Theory

Resource Dependence Theory (RDT), developed primarily by Pfeffer and Salancik (1978), explains how organizations depend on external actors for resources necessary for survival and how they seek to manage that dependence. The theory argues that organizations dependent on a dominant resource provider may face uncertainty and constraints on their autonomy. Therefore, they adopt strategies such as developing alternative resource sources and building external relationships to reduce vulnerability and increase control over critical resources. In public universities, dependence on government funding can expose institutions to fiscal constraints, funding delays, and policy changes, creating incentives to develop alternative revenue sources.

RDT is directly relevant to this study because tuition and related revenue, research and innovation, service, asset utilization, and partnership revenues represent alternative mechanisms through which universities can manage resource dependence. However, the theory also suggests that alternative resources are not necessarily equally valuable. Their strategic importance depends on their availability, reliability, controllability, and cost. This supports the study's disaggregated approach, which examines the extent to which individual revenue sources contribute to financial stability rather than assuming that diversification automatically improves institutional performance. RDT therefore provides the theoretical basis for understanding why universities diversify and how alternative revenue sources may reduce dependence on dominant external funding sources.

2.2.2 Portfolio Theory

Markowitz (1952) developed Portfolio Theory to explain how combining assets with different risk and return characteristics can improve an investment portfolio's overall risk-return profile. Its central proposition is that portfolio performance should be assessed not only by the returns of individual assets but also by the portfolio's composition and the extent to which its components expose it to common risks. Diversification can therefore reduce concentration risk, although diversification into low-return or costly assets may not necessarily improve overall performance.

Applied to higher education financing, Portfolio Theory conceptualizes university revenue sources as components of an institutional revenue portfolio. Tuition, research and innovation, services, asset utilization, and partnerships differ in predictability, risk, scalability, and potential financial returns. The theory is particularly relevant to this study because it provides a basis for examining whether different revenue sources contribute differently to financial stability. The findings that tuition and related revenue made the strongest contribution, followed by research and innovation, asset utilization, and services, while partnership revenue was insignificant, reinforce the proposition that the financial value of diversification depends on the quality and performance of individual revenue sources, rather than simply on the number of sources available.

2.2.3 Resource Mobilization Theory

Resource Mobilization Theory (RMT), primarily associated with McCarthy and Zald (1977), explains how organizations acquire, organize, and deploy resources to achieve their objectives. The theory holds that the mere presence of resources or organizational needs does not guarantee success; organizations must identify opportunities, mobilize resources, and deploy them strategically. Although originally developed to explain social movements, the theory's emphasis on organizational capacity and resource acquisition offers a useful lens for understanding how universities transform institutional resources into financial resources.

The theory is relevant to this study because universities possess substantial human, intellectual, physical, and relational resources that can be mobilized to generate income. Research expertise can support competitive grants and commissioned research; intellectual property can be commercialized; physical assets can generate rental and other commercial income; professional expertise can support consulting and training; and institutional networks can facilitate partnerships. RMT therefore helps explain why revenue sources may perform differently across institutions and why merely possessing assets, expertise, or partnerships does not guarantee significant financial returns. The theory complements RDT by explaining the internal capabilities through which universities mobilize resources, while Portfolio Theory explains the financial implications of combining different revenue sources.

The application of the three theories in the study offered a complementary explanation of university revenue diversification. RDT explains the external motivation for diversification and the need to reduce resource dependence; Portfolio Theory explains the importance of the revenue

portfolio's composition and financial productivity; and RMT explains the institutional capacity required to convert available resources into income. Their integration is particularly useful for explaining why diversification does not necessarily translate into financial stability.

The combined framework therefore shifts the focus from whether universities have multiple revenue sources to which sources generate meaningful financial returns and whether universities have the capabilities to develop those sources sustainably. This theoretical position underpins the study's finding that revenue sources contribute unequally to financial stability and supports the argument for strategic rather than merely numerical revenue diversification.

3 Research Methodology

3.1 Research design

The study used a quantitative longitudinal research design. The analysis covered 22 Kenyan public universities observed over seven fiscal years, 2017/18–2023/24. The panel structure enabled the study to examine both differences across universities and changes within universities over time. Panel data is particularly well suited to institutional financial research because it allows control for unobserved characteristics that remain relatively constant over time. Previous studies in higher education finance have likewise employed panel approaches to examine institutional financial health and revenue diversification. For example, Wekullo & Musoba (2020) used fixed-effects models to analyze alternative funding strategies and financial health among public research universities, while Jaafar et al. (2023) used panel data to examine revenue diversification and financial sustainability among Malaysian public universities.

3.2 Population and sample

The study focused on Kenyan public universities. It used purposive sampling to identify institutions with sufficient institutional history and financial records to support longitudinal analysis. The study included 22 universities that met the criteria. The study period comprised seven fiscal years, from 2018 to 2024. The full panel structure therefore potentially generated 154 university-year observations. The regression analysis reported in this article is based on 116 complete observations, representing the observations available for all variables included in the estimated model.

3.3 Measurement and Operationalization of Variables

3.3.1 Dependent Variable

Financial stability was measured using the Composite Financial Index (CFI). The CFI provides a snapshot of an institution's overall financial health by combining four key ratios: Primary Reserve Ratio (PRR), Net Operating Revenue Ratio (NORR), Return on Net Assets (RONA), and Viability Ratio (VR). Because these ratios use different units, they cannot be added directly. Instead, the CFI method converts each ratio into a Strength Factor (SF) before applying specific weights. Calculating the CFI involves four main steps. First, obtain the audited financial statements to

calculate each of the four ratios. Then, use benchmark values to convert each ratio into a Strength Factor (SF). Next, multiply each strength factor by its corresponding weighting factor. Finally, sum these weighted scores to obtain the institution's CFI (Prager et al., 2010).

Table 1 CFI Strength-Factor (SF) Calibration and Weighting

CFI Component	Benchmark for Strength Factor 1	Benchmark for Strength Factor 3	Benchmark for Strength Factor 10	Standard Weight
Primary Reserve Ratio (PRR)	0.133	0.4	1.33	35%
Net Operating Revenue Ratio (NORR)	1.30%	4.00%	13.00%	10%
Return on Net Assets (RONA)	2.00%	6.00%	20.00%	20%
Viability Ratio (VR)	0.417	1.25	4.17	35%
Total				100%

Source: Adapted from the Composite Financial Index methodology of Prager et al. (2010)

Table 1 presents the Weighted Score (WS) for each CFI component ratio, computed as $WS_j = SF_j * W_j$, where WS_j is the weighted score for component j , SF_j is the strength factor for component j , and W_j is the weight assigned to component j . For a university with long-term debt, the CFI is worked out as follows:

$$CFI = SF\{PRR\} * 0.35 + SF\{NORR\} * 0.10 + SF\{RONA\} * 0.20 + SF\{VR\} * 0.35.$$

For a university which has no long-term debt, the weight assigned to the Viability Ratio is redistributed among the remaining three ratios. Hence, PRR receives 55%, NORR 15%, and RONA 30%, with the three components collectively accounting for 100% of the CFI. Accordingly, the CFI is calculated as:

$$CFI = (SF * \{PRR\} * 0.55) + (SF * \{NORR\} * 0.15) + (SF * \{RONA\} * 0.30).$$

3.3.2 Independent Variables

Revenue diversification was defined using five distinct revenue categories: The first category was Tuition and Related Revenues (TR), which encompassed government transfers for students (GTR), tuition fees paid directly by students (STR), and additional tuition-related charges paid by students (TR3). The second category was Research and Innovation Revenues (RIR), divided into competitive external research grants (RIR1) and internally generated research overheads (RIR2). The third category was Services Revenues (SR), which included income from catering services (SRC), university income-generating units (SRIGU), and all other service-related revenue (SRO). The fourth category was Asset Utilization Revenues (AUR), which consisted of rental income (AURR), student accommodation (AURSA), bank interest earned (AURBI), and other sources (AUROI). The fifth and final category was Partnership Revenues (PR), which included income from endowment funds (PREF), agency fees charged (PRAF), and income from other

collaborating partners (PRCP). All revenue variables were expressed in natural logarithms (ln) to normalize their distributions and minimize heteroscedasticity.

3.4 Econometric Model

The general fixed-effects model was specified as: $FS_{it} = \beta_0 + \beta_1 \ln TR_{it} + \beta_2 \ln RIR_{it} + \beta_3 \ln SR_{it} + \beta_4 \ln AUR_{it} + \beta_5 \ln PR_{it} + \mu_i + \varepsilon_{it}$, where FS_{it} denotes financial stability of university i in year t ; μ_i captures university-specific time-invariant effects; and ε_{it} represents the error term.

Pooled OLS, fixed-effects, and random-effects specifications were considered. The Hausman specification test produced $\chi^2 = 12.316$ with $p = .031$. Because the p -value was below .05, the null hypothesis underlying the random-effects specification was rejected, and the fixed-effects estimator was preferred. This specification was important because universities differ systematically in their historical development, institutional culture, governance, geographic location, infrastructure, and organizational capability. The fixed-effects model controls for these time-invariant characteristics, allowing the analysis to focus on within-university variation over time.

4 Results and Discussion

4.1 Pairwise correlations

As shown in Table 2, financial stability showed positive, statistically significant pairwise correlations with tuition and related revenue ($r = 0.709$), research and innovation revenue ($r = 0.615$), service revenue ($r = 0.509$), and asset-utilization revenue ($r = 0.427$). The correlation between financial stability and partnership revenue was negative and statistically insignificant ($r = -0.015$). Among the explanatory variables, the strongest correlation was between tuition and research and innovation revenue ($r = 0.487$), followed by research and innovation and asset-utilization revenue ($r = 0.443$). Tuition and service revenue had the lowest positive correlation among the principal revenue sources ($r = 0.167$). The correlation between partnership revenue and research and innovation revenue was positive but statistically insignificant ($r = 0.084$).

Table 2 Pairwise correlations among financial stability and revenue sources

Variables	(FS)	(ln_TR)	(ln_RIR)	(ln_SR)	(ln_AUR)	(ln_PR)
FS	1.000					
ln_TR	0.709***	1.000				
ln_RIR	0.615***	0.487***	1.000			
ln_SR	0.509***	0.167*	0.418***	1.000		
ln_AUR	0.427***	0.409***	0.443***	0.322***	1.000	
ln_PR	-0.015	0.308***	0.084	0.174*	0.206**	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.2 Fixed-Effects Regression Results

Table 3 presents the fixed-effects regression results, showing that four of the five revenue sources had positive, statistically significant coefficients. Tuition and related revenue had the largest coefficient ($\beta = 8.675$, $p < .001$). Research and innovation revenue had the second-largest coefficient ($\beta = 3.256$, $p < .001$), followed by asset-utilization revenue ($\beta = 1.983$, $p < .001$) and service revenue ($\beta = 1.701$, $p < .001$). Partnership revenue had a positive coefficient of 0.134 but was not statistically significant ($p = .415$). Its 95% confidence interval ranged from -0.196 to 0.463 . The model's R^2 was 0.589, indicating that the five revenue variables and the university-specific effects in the fixed-effects specification explained approximately 58.9% of the variation in financial stability. Overall, the model was statistically significant ($F = 130.997$, $p < .001$).

Table 3: Regression Results

FS	Coef.	St.Err.	t-value	P-value	[95% Conf	Interval]	Sig
ln_TR	8.675	1.065	8.146	0.000	6.791	10.558	***
ln_RIR	3.256	0.619	5.260	0.000	2.025	4.488	***
ln_SR	1.701	0.048	35.438	0.000	1.696	1.87	***
ln_AUR	1.983	0.419	4.733	0.000	1.17	2.813	***
ln_PR	0.134	0.164	0.817	0.415	-0.196	0.463	
Constant	122.272	59.564	2.053	0.042	3.587	240.957	**
Mean dependent var	5.139			SD dependent var	2.588		
R-squared	0.589			Number of obs	116		
F-test	130.997			Prob > F	0		
Akaike crit. (AIC)	393.847			Bayesian crit. (BIC)	409.789		

*** $p < .01$, ** $p < .05$, * $p < .1$

4.3 Discussion of Findings

4.3.1 Contribution of Tuition and Related Revenue to Financial Stability

The study found that tuition and related revenue made the largest and most statistically significant contribution to financial stability among the revenue sources examined. The regression coefficient was 8.675 ($p < 0.001$), and the pairwise correlation with financial stability was also strong and positive ($r = 0.709$, $p < 0.01$). This indicates that tuition-related income remained the principal financial resource supporting the financial position of Kenyan public universities during the study period. This finding aligns with international higher-education financing evidence, including a

recent Organization for Economic Co-operation and Development (OECD) analysis showing that public universities continue to rely substantially on core public funding and student-related income despite increasing efforts to diversify revenue (OECD, 2025).

The finding is also consistent with evidence from Kenya, where Kimathi and Irungu (2024) reported mixed effects of revenue diversification on the financial sustainability of Kenyan public universities, while highlighting ongoing financial pressures from declining government grants and rising liabilities. Similarly, Riechi (2024) observed that inadequate government funding has increased the importance of alternative institutional revenue generation. The strong contribution of tuition in the present study can be explained by its close connection to universities' core academic activities, its recurring nature, and its relationship with student enrollment. Consequently, tuition revenue can provide relatively immediate resources to meet operating expenses and other financial obligations.

However, the finding should not be interpreted as evidence that universities should increase their dependence on tuition. Rather, it shows that revenue diversification should complement, rather than replace, the existing core revenue base. Excessive dependence on tuition may expose universities to enrollment fluctuations, changes in student financing arrangements, affordability constraints, and government regulation. Therefore, while tuition and related revenue should remain an important component of university financing, Kenyan public universities should also strengthen research and innovation, service, asset utilization, and partnership revenues so that these sources can progressively provide meaningful and sustainable contributions to financial stability.

4.3.2 Contribution of Research and Innovation Revenue to Financial Stability

Research and innovation income had the second-largest effect on financial stability, with a statistically significant positive coefficient of 256 ($p < 001$). Its correlation with financial stability was also positive and statistically significant ($r = 615$, $p < 01$). Accordingly, research grants, innovation activities, and related income may significantly enhance the financial well-being of public universities. According to OECD data, research-intensive universities are typically better positioned to attract competitive and third-party funding from governments, businesses, and international organizations (OECD, 2025).

According to the findings, institutional knowledge and research capacity are valuable assets that can be monetized, supporting the resource-based and knowledge-based views. Universities can generate additional revenue streams by leveraging competitive grants, sponsored research, intellectual-property development, innovation, and commercialization. However, as the OECD (2025) notes, competitive research funding can be resource-intensive, and external grants may not always cover the full economic cost of research. Therefore, the financial impact of research and innovation depends on the university's ability to manage and commercialize its research capabilities efficiently, as well as on the amount of funding secured.

Despite its substantial contribution to financial stability, research and innovation revenue accounted for only a small share of university revenue in the Kenyan context, making this finding particularly significant. This suggests that revenue diversification could be achieved through research and innovation, which is currently underdeveloped but has high potential. Therefore, Kenyan public institutions should strengthen their ability to secure competitive research funding, conduct commissioned and industry-funded research, market intellectual property, create innovation businesses, and build more robust university-industry relationships.

4.3.3 Contribution of Service Revenue to financial stability

Although tuition and research and innovation revenue contributed more to financial stability, service revenue also showed a beneficial and statistically significant correlation. The regression coefficient was 701 ($p < 001$), and the correlation with financial stability was 509 ($p < 01$). This indicates that service-related activities positively affected a university's financial stability, though their contribution remains relatively modest. The results align with international data, such as OECD (2025), which indicate that services offered by higher education institutions may provide an additional revenue source, though typically less important than core and research-related funding.

This finding also aligns with a Kenyan study that cited entrepreneurship and commercialization as potential ways to improve universities' financial sustainability (Kimathi & Irungu, 2024). Beyond tuition and government funding, universities can generate additional revenue from services such as consulting, lodging, hotels, farming, laboratory services, and other business services. However, the considerably smaller coefficient in this study indicates that these activities do not always yield substantial financial gains. Their value depends on factors such as pricing, cost management, operational effectiveness, market demand, and the extent to which they generate net financial returns rather than just gross revenue.

Therefore, the findings support the promise of university service activities while qualifying the notion that every income-generating activity necessarily improves financial sustainability. The most important consideration is each service's profitability after accounting for its operational and capital expenses. As a result, Kenyan public colleges ought to regularly assess the profitability and cost-effectiveness of their service units, strengthen commercial management and pricing mechanisms, and prioritize services with proven market demand and favorable financial returns. In this approach, service income would shift from a relatively small revenue source to a more significant and long-lasting element of the university's revenue diversification.

4.3.4 Contribution of Asset-Utilization Revenue to Financial Stability

Asset-utilization revenue showed a positive and statistically significant coefficient of 1.983 ($p < 0.001$) and a positive correlation of 0.427 ($p < 0.01$) with financial stability. Although the results indicate that institutional and physical university assets may contribute considerably to financial stability, their contribution was smaller than that of tuition and research and innovation revenue.

This finding supports the growing global focus on institutions maximizing their technological, intellectual, and physical resources. According to the World Bank's evaluation of financial sustainability, institutions must have sufficient resources to cover ongoing operating expenses and to maintain and invest in their physical, human, and intellectual capital (World Bank, 2022). The message is that assets should be viewed as potential vehicles for value creation within organizations, not merely as resources that require maintenance expenditures.

In the context of Kenya's public universities, asset use can involve using land, housing facilities, conference facilities, labs, farms, athletic facilities, research infrastructure, and other institutional resources for business purposes. Similarly, Riechi (2024) views alternative revenue-generating initiatives as crucial opportunities to enhance the sustainability of Kenya's public universities.

In this study, the positive coefficient indicates that universities that are more effective at converting their assets into profitable revenue streams may improve their financial standing. Nonetheless, the low contribution relative to research and tuition revenue shows that this potential remains largely untapped. Regulatory requirements, institutional governance arrangements, insufficient investment capital, poor commercialization capabilities, and prolonged approval processes can all limit the use of assets (Bothale, 2023). Thus, this finding contributes to the existing body of knowledge by showing, statistically, that asset utilization is not merely a theoretical diversification strategy but also has a quantifiable positive link to financial stability. Its comparatively low coefficient also indicates that universities should approach asset commercialization cautiously. Rather than commercializing assets simply to increase revenue streams, universities should prioritize assets with high market demand that generate positive net returns.

4.3.5 Contribution of Partnership Revenue to Financial Stability

Of the income sources evaluated, partnership revenue contributed the least to the financial stability of Kenyan public universities. The association with financial stability was not statistically significant, as shown by its coefficient of 0.134 and p-value of 0.415. Similarly, the pairwise correlation was negative and statistically insignificant ($r = -0.015$). Partnership revenue, as opposed to tuition, research, service, and asset-utilization revenue, did not contribute to financial stability in a statistically significant manner.

While existing literature underscores the importance of partnership revenue, this work's lack of a statistically significant contribution should not be taken as proof that partnerships are inherently useless (Hearn, 2021). It may suggest that partnership revenue hasn't yet reached sufficient scale or financial maturity within Kenyan public institutions to have a quantifiable impact on the university's financial health. Partnerships can take a long time to build, involve complex discussions and governance procedures, and may initially confer academic, research, or social advantages without generating much direct cash (Ayisi, Kivengea, & Ombakho, 2021).

The finding also supports the OECD's finding that institutions struggle to secure and retain third-party funding. Institutions may struggle to align external opportunities with their internal research

priorities, external funding may not cover the full economic cost of operations, and competitive funding processes may be resource-intensive. This study's lack of significance may reflect limited long-term potential rather than constraints on implementation and scale.

Because it treats partnership revenue as a potential rather than an established pillar of financial stability, the Kenyan outcome is particularly noteworthy. By shifting away from mostly academic or relationship-based alliances and toward organized partnerships with clearly defined financial and commercial goals, universities might increase their contribution. These may include joint innovation ventures, contract training, intellectual property licensing, technology transfer, professional development programs, international academic programs, and carefully built public-private partnerships.

4.3.6 Summary Interpretation of the Revenue Sources

Taken together, the findings summarized in Table 4 show that the five revenue sources did not contribute equally to the financial stability of Kenyan public universities. Tuition and related revenue emerged as the strongest contributor, followed by research and innovation revenue, asset-utilization revenue, and service revenue, while partnership revenue made no statistically significant contribution. The overall pattern suggests that the financial effectiveness of revenue diversification depends not merely on the existence or number of revenue streams, but on their scale, reliability, financial productivity, and capacity to generate sustainable returns. This supports the emerging literature, which views financial sustainability as requiring a combination of adequate core funding, diversified income, efficient resource utilization, and strategic financial management rather than diversification alone.

Table 4: Summary of Findings

Revenue source	Coefficient	p-value	Correlation with FS	Interpretation
Tuition & related revenue	8.675	<0.001	0.709*	Strongest contributor
Research & innovation revenue	3.256	<0.001	0.615*	Second strongest contributor
Asset-utilization revenue	1.983	<0.001	0.427*	Significant contributor with potential
Service revenue	1.701	<0.001	0.509*	Significant but relatively modest contributor
Partnership revenue	0.134	0.415	-0.015	No statistically significant contribution

The findings therefore provide a more nuanced understanding of revenue diversification than an aggregate measure alone. While tuition remains indispensable to current financial stability, research and innovation are especially promising because they contribute relatively strongly

despite their comparatively small share of total revenue. Asset utilization and service revenue also contribute positively but require greater commercial efficiency and strategic management. Partnership revenue, by contrast, requires substantial strengthening to translate its potential into measurable financial returns. The results consequently support a quality-oriented rather than a quantity-oriented approach to diversification, in which universities prioritize revenue streams by their financial productivity, sustainability and scalability.

5 Conclusions and Recommendations

5.1 Conclusion

The findings show that revenue sources contribute unequally to university financial stability. Tuition and related revenue was the strongest contributor, followed by research and innovation, asset utilization and services, while partnership revenue was statistically insignificant. The results therefore challenge the assumption that simply increasing the number of revenue sources automatically improves financial stability.

The study therefore advocates shifting from “more revenue sources” to “more financially productive revenue sources.” Tuition should remain a reliable foundation, while research and innovation should be the top diversification priority. Asset utilization and services should be managed more commercially, and partnerships should be reconfigured to prioritize high-value, financially sustainable relationships. The central lesson is that effective diversification depends on the quality, scale, sustainability, and financial productivity of individual revenue streams, not on diversification itself.

5.2 Recommendations

The study suggests that Kenyan public universities should pursue strategic revenue diversification rather than diversification for its own sake. Tuition should remain a core revenue source, while universities strengthen research commercialization, improve the profitability of service activities, unlock underutilized assets, and redesign partnerships around commercially viable, sustainable arrangements. The study's principal contribution is showing that multiple revenue sources do not necessarily yield equivalent diversification in financial outcomes. What matters is whether individual revenue streams generate meaningful, sustainable improvements in financial stability. This provides a stronger basis for university managers and policymakers to determine which revenue sources to protect, expand, restructure, or fundamentally redesign. The study therefore makes the following recommendations:

Protect and Improve the Quality of Tuition Revenue

The findings do not support reducing tuition revenue, which was the strongest contributor to financial stability. Universities should therefore strengthen fee collection, debtor management, realistic payment arrangements, and program alignment with market demand. However, tuition

should remain a core source rather than the sole institutional financing strategy, given the risks associated with enrollment, affordability, and changes in student financing.

Make Research and Innovation the Principal Diversification Priority

Research and innovation should become the principal strategic alternative to tuition, as they were the second strongest contributors to financial stability. Universities should strengthen research and development offices, competitive grant acquisition, industry-funded research, intellectual-property protection, technology transfer, commercialization, research consortia, and research-based enterprises to increase the financial returns from institutional research capacity.

Improve the Commercial Productivity of University Assets

The significant contribution of asset-utilization revenue indicates that universities should identify and better exploit underutilized assets. Regular asset audits should distinguish among strategically essential, academically productive, underutilized, and commercially viable assets. Commercialization decisions should be based on expected financial returns, costs, risks, and opportunity costs, not gross revenue alone.

Professionalize University Services

Service revenue made a significant but relatively modest contribution to financial stability. Universities should therefore improve the commercial efficiency of consultancy, professional training, laboratory services, conferencing, accommodations, and continuing education. Major service units should operate with clear business plans, appropriate pricing, cost-recovery requirements, revenue targets, and periodic financial performance assessments.

Reconfigure Partnership Strategy

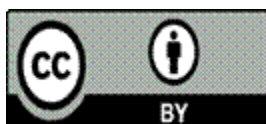
Partnership revenue was the only source that did not make a statistically significant contribution to financial stability. Universities should therefore move beyond simply increasing the number of partnerships and focus on high-value, financially substantive relationships. Priority should be given to industry-funded research, commercialization, technology transfer, joint programs, professional training, infrastructure development, international research consortia, and public-private partnerships, each supported by clear financial models and measurable outcomes.

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