

Does Innovation Matter? The Moderating Role of Institutional Innovation on the Relationship Between Financial Partnerships and Financial Sustainability of Public Universities in Kenya

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ABSTRACT

Background: Kenyan public universities face chronic financial distress despite diversifying revenue through government, donor, consultancy, and commercialization funding, indicating that funding diversity alone may not guarantee sustainability.

Aims: This study examined whether institutional innovation capacity moderates the relationship between four financial partnership streams and the financial sustainability of Kenyan public universities.

Method(s): A concurrent mixed-methods design was employed with 382 survey respondents across all 40 public universities, 30 key informant interviews, eight focus group discussions, and document analysis of audited financial statements (2013-2022); hierarchical moderated regression, following Aiken and West (1991), tested the moderating effect of innovation.

Results: Innovation significantly moderated the relationship between financial partnerships and financial sustainability, increasing explained variance by 7.9 percentage points ($\Delta R^2 = .079$, $p < .001$); all four partnership-by-innovation interactions were positive and significant, strongest for commercialization ventures ($\beta = .226$) and weakest for donor funding ($\beta = .162$).

Conclusions: Financial sustainability in Kenyan public universities depends not only on the volume of financial partnerships secured but on institutional innovation capacity to convert those partnerships into sustainable outcomes.

KEYWORDS: institutional innovation; moderation; financial partnerships; financial sustainability; public universities

INTRODUCTION

A companion study of the same national sample established that government funding, donor funding, consultancy funding, and commercialization ventures are each significantly associated with the financial sustainability of Kenyan public universities, yet collectively explain less than half of the observed variance, and that returns to nominally similar funding streams vary considerably across institutions (Ondiek, Oganda & Mogwambo, forthcoming-a). This unexplained variation motivates the question addressed here: does institutional innovation capacity condition how effectively financial partnerships translate into financial sustainability? Existing studies of university financing in Kenya and comparable contexts have tended to treat financial partnerships and sustainability as a direct relationship, without adequately testing whether institutional capabilities shape the strength of that relationship (Fernando, Wong & Tan, 2019; Chumba, 2020). Where innovation has been discussed, it is more often positioned as an additional independent predictor than as a variable that conditions the productivity of other resources. This study departs from that convention by explicitly testing innovation as a moderator of the relationship between financial partnerships and financial sustainability across a national sample covering all 40 Kenyan public universities. The general objective was to analyse the moderating role of innovation on the relationship between financial partnerships and financial sustainability of public universities in Kenya.

The study was anchored on Resource Dependence Theory (Pfeffer & Salancik, 1978), which explains why universities pursue external partnerships to reduce resource uncertainty but is largely silent on the organisational capabilities required to exploit those resources once acquired, and on Innovation Diffusion Theory (Rogers, 2003), which holds that organisations with stronger capacity to adopt and institutionalise innovative practices derive disproportionately greater benefit from available resources. Read together with Financial Sustainability Theory (Rodriguez-Bolivar, 2017), these perspectives suggest that innovation functions as the absorptive mechanism (Cohen & Levinthal, 1990) through which externally acquired resources are converted into sustainable institutional outcomes.

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METHODS

Design and Participants

The study used a pragmatist research philosophy and a concurrent mixed-methods design, combining quantitative survey data with qualitative interview and focus-group data collected in parallel and integrated at the interpretation stage (Creswell & Plano Clark, 2018). Primary data collection was cross-sectional, conducted between June and December 2025, while a longitudinal document-analysis component drew on audited financial statements for 2013-2022 across all 40 institutions to construct the objective financial sustainability index.

The target population comprised all 40 Kenyan public universities accredited by the Commission for University Education, together with four respondent strata: University Management Board members, senior administrative staff, academic staff, and student leaders. The minimum sample size was determined using Cochran's (1977) formula, yielding an adopted sample of 400 that accommodated an anticipated non-response rate of 15%. A three-stage sampling strategy was applied: a census of all 40 institutions, stratified proportionate random sampling of the 400-person questionnaire sample across the four strata, and purposive sampling of 30 key informants and eight focus-group discussion groups. Of the 400 questionnaires administered, 382 were returned complete and usable (95.5% response rate).

Measures

Innovation capacity was measured using 15 five-point Likert-scale items spanning three dimensions: process innovation, product and service innovation, and organisational innovation (Cronbach's $\alpha = .911$). The four financial partnership variables were each measured using five five-point Likert-scale items (α ranging from .835 to .908). Financial sustainability was measured both perceptually, through a nine-item scale ($\alpha = .925$), and objectively, through a composite index of operating margin, debt-to-asset ratio (reverse-coded), and tuition revenue growth computed from audited financial statements (composite $\alpha = .80$).

Analytic Strategy

Hierarchical moderated regression was used to test the moderation hypothesis, following Aiken and West (1991) and Hayes (2018). Predictor and moderator variables were mean-centred before computing interaction terms to reduce non-essential multicollinearity. Financial partnership variables, innovation, and institutional controls (age, size, region) were entered in an initial step to estimate a main-effects model, followed by a second step introducing the four innovation-by-partnership interaction terms. The statistical significance of the moderation was assessed via the change in R^2 (ΔR^2) and the associated F-change test. Diagnostic testing confirmed that the normality, linearity, homoscedasticity (Breusch-Pagan test, $p > .05$), and multicollinearity (all variance inflation factors below 5.0; range 1.35-1.63) assumptions of ordinary least squares regression were satisfied. Qualitative data from 30 key informant interviews and eight focus group discussions were analysed thematically following Braun and Clarke (2006) and triangulated against the quantitative results. Ethical approval was obtained from the JOOUST Institutional Ethics Review Committee and NACOSTI prior to data collection, and all participants gave written informed consent.

RESULTS

Overall Moderation Effect

The introduction of the innovation-by-partnership interaction terms significantly improved the explanatory power of the main-effects model (Table 1), confirming that innovation moderates the relationship between financial partnerships and financial sustainability.

Table 1. Summary of the Hierarchical Moderated Regression Model (N = 382)

Indicator	Value
Main-effects model R^2	0.412
Final model R^2 (with interactions)	0.491
Adjusted R^2 (final model)	0.474
Incremental variance explained (ΔR^2)	0.079
ΔF	11.47 ($p < .001$)
Overall model F	28.84 ($p < .001$)

Note. Model estimated with mean-centred predictors; institutional age, size, and region entered as controls. Source: field survey (2025) and document analysis (2013-2022).

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Moderating Effect by Individual Financial Partnership Stream

Disaggregating the interaction by partnership stream (Table 2) showed that innovation significantly and positively moderated the effect of all four financial partnership variables on financial sustainability, though the magnitude varied.

Table 2. Moderating Effect of Innovation on Individual Financial Partnership Streams (N = 382)

Interaction term	β	t	p	ΔR^2
Government funding $\times$ Innovation	0.186	3.60	< .001	0.021
Donor funding $\times$ Innovation	0.162	3.29	.001	0.017
Consultancy funding $\times$ Innovation	0.201	4.02	< .001	0.024
Commercialization ventures $\times$ Innovation	0.226	4.34	< .001	0.028

Note. β = standardized interaction coefficient (units: standard deviations). ΔR^2 = incremental variance explained by each interaction term after controlling for the main-effects model. Source: field survey (2025).

Commercialization ventures exhibited the strongest moderating effect ($\beta = .226$, $t = 4.34$, $p < .001$), followed by consultancy funding ($\beta = .201$), government funding ($\beta = .186$), and donor funding ($\beta = .162$, $p = .001$). Since all interaction terms were statistically significant and the overall change in R^2 was significant ($\Delta R^2 = .079$, $p < .001$), the null hypothesis that innovation has no statistically significant moderating effect was rejected.

Figure 1 presents an illustrative moderation plot showing predicted financial sustainability at low, moderate, and high levels of financial partnerships, plotted separately for universities with low and high innovation capacity, using the pattern of simple slopes implied by the interaction coefficients in Table 2.

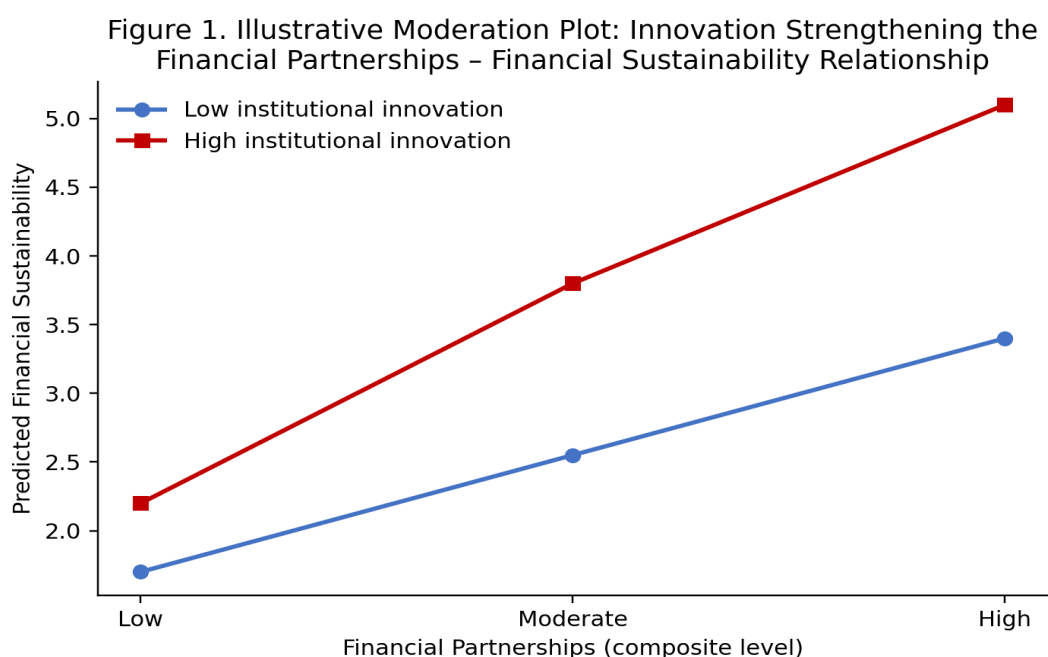


Figure 1. Illustrative moderation plot showing how institutional innovation strengthens the positive relationship between financial partnerships and financial sustainability. The steeper slope for high-innovation universities indicates that increases in financial partnerships produce larger gains in financial sustainability where innovation capacity is strong.

Qualitative Findings

Innovation emerged as the dominant cross-cutting theme in the qualitative analysis. Participants emphasised that innovation improved the effectiveness of all four financial partnership streams by enhancing efficiency, promoting commercialization, and strengthening resource utilisation. One interview participant remarked that “innovation determines whether resources become expenditure items or investment opportunities.” Another respondent observed that “two universities may receive similar funding levels, but the institution with stronger innovation capacity will always generate better financial outcomes.” Participants identified digital transformation, automation of administrative processes, incubation centres, interdisciplinary research collaboration, and

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industry partnerships as key drivers of innovation within public universities. University managers further reported that universities receiving comparable levels of government or donor funding achieved markedly different financial outcomes because of differences in innovation capacity, managerial efficiency, and entrepreneurial orientation, providing qualitative corroboration of the quantitative moderation results.

DISCUSSION

The hypothesis that innovation has no statistically significant moderating effect on the relationship between financial partnerships and financial sustainability is rejected for all four partnership streams: government funding, donor funding, consultancy funding, and commercialization ventures. The consistent direction and significance of all four interaction terms indicates that innovation functions as a general absorptive capability rather than a mechanism specific to any single funding stream.

The mechanism underlying this pattern is consistent with the theoretical account offered by Innovation Diffusion Theory (Rogers, 2003): universities with stronger capacity to adopt and institutionalise innovative administrative, financial, and commercialization practices are better able to convert externally acquired resources into recurring institutional benefit, whereas universities with weaker innovation systems tend to treat the same resources as one-off expenditure. This mechanism is directly reflected in the qualitative finding that innovation determines whether resources become “expenditure items or investment opportunities.” The finding that innovation strengthens the sustainability contribution of all four financial partnership streams, but does so most strongly for commercialization ventures and consultancy funding, is consistent with Siegel, Waldman and Link's (2007) observation from the United States that commercialisation becomes a meaningful sustainability contributor only where institutional innovation infrastructure -- technology-transfer offices, intellectual-property policy, and management expertise -- is fully developed.

The comparatively smaller, though still significant, moderating effect for donor funding may reflect the restricted, project-specific nature of most donor grants, which constrains the scope for innovative redeployment even in institutions with strong innovation capacity; this is consistent with the companion study's finding that donor funding's direct, unmoderated contribution to financial sustainability is also more limited than that of the other three streams. Where the results diverge from the direct-effects pattern is instructive: commercialization ventures showed the weakest direct, bivariate association with financial sustainability among the four streams in the companion study, yet the strongest interaction with innovation here, suggesting that commercialization's financial payoff is disproportionately conditional on institutional innovation capacity rather than being a reliable revenue source in its own right. Considered together with Azi and Usman's (2021) finding that commercial ventures were an insignificant contributor to university funding in a Nigerian sample lacking strong innovation infrastructure, this pattern supports the alternative explanation that institutional capacity, not the inherent value of commercialization activity, is the more decisive determinant of financial outcomes.

Two related possibilities should be considered as alternative or complementary explanations for the observed pattern. First, reverse causality cannot be ruled out given the cross-sectional design: universities that are already more financially sustainable may have greater slack resources to invest in innovation, rather than innovation being solely the cause of stronger sustainability outcomes. Second, because innovation, the partnership measures, and the perceptual sustainability measure were collected from the same respondents, common-method variance may inflate the observed interaction effects; this risk is partially, though not fully, mitigated by the convergent evidence from the objective, audited-statement-based composite sustainability index described in the companion study.

A further avenue for future work follows directly from these results: because the moderating effect was not uniform across partnership streams, future studies should examine which specific innovation sub-dimensions (process, product/service, or organisational innovation) drive the moderation most strongly for each partnership stream, since the present analysis tested innovation as a single composite moderator.

CONCLUSIONS

Institutional innovation capacity significantly and positively moderates the relationship between financial partnerships and financial sustainability in Kenyan public universities, across all four partnership streams examined, with the largest effects observed for commercialization ventures and consultancy funding. The most significant consequence of this finding is that financial sustainability in this sector is not simply a function of how much funding a university attracts, but of its capacity to convert that funding into durable financial outcomes through innovation; policy and institutional strategy should accordingly treat innovation capacity as a strategic investment priority rather than a peripheral concern.

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