
**INSURANCE DYNAMICS AND FINANCIAL
SUSTAINABILITY OF PRIVATE HEALTH SERVICE
PROVIDERS IN KAJIADO NORTH SUB-COUNTY**

¹Peter Musa Oguta, ²Maina Justus Nderitu & ³Rose Mugiira

Email of the corresponding author: peteroguta41@gmail.com

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ABSTRACT

Purpose of the study: The study examined the relationship between health insurance dynamics and the financial sustainability of private health service providers in Kajiado North Sub-County. It assessed enrolment rate, reimbursement days, claim approval rate, and out-of-pocket (OOP) burden, and examined the moderating effect of insurance scheme type.

Statement of the problem: Private health service providers help reduce patient overload and support universal health coverage in resource-constrained areas such as Kajiado North Sub-County. Their revenues depend partly on insured patients and the operational performance of insurance schemes. Reimbursement delays, claim rejections, and OOP payment burdens can undermine revenue stability. Understanding how these dynamics relate to provider sustainability across insurance scheme types is therefore necessary.

Research methodology: The study employed a cross-sectional research design. A sample of 102 providers was selected from a target population of 121 using simple random sampling. Key respondents were purposively selected within the sampled facilities, and data were extracted from audited reports. Descriptive statistics and hierarchical regression were used to analyse the data.

Findings: The mean enrolment rate was 64.43%, the mean reimbursement period was 74.01 days, the mean claim approval rate was 81.87%, the mean OOP burden was 25.71%, and the mean operating self-sufficiency ratio was 101.87%. The main effects regression model explained 63.1% of the variation in financial sustainability. Enrolment and claim approval were positively associated with sustainability, whereas reimbursement days and OOP burden were

negatively associated. The interaction between claim approval rate and insurance scheme type was significant ($\beta = 0.21$, $p < .001$).

Conclusion: The study concludes that provider financial sustainability is associated with insurance scheme type and the efficiency of insurance processes. The positive relationship between claim approval rate and sustainability was stronger among facilities dominated by the Social Health Insurance Fund.

Recommendations: The Social Health Authority should shorten reimbursement periods and improve claim approval rates through digital claims automation and provider support. Private providers should strengthen claims processing capacity and diversify their payer mix. Policymakers should develop support measures that reflect differences between insurance schemes.

Keywords: *Enrolment, reimbursement, claim approval, out-of-pocket burden, financial sustainability*

INTRODUCTION

Healthcare insurance schemes are a central pillar of modern health systems (Fenny et al., 2021). However, their effectiveness depends largely on their operational attributes. Well-functioning healthcare insurance schemes, such as those in Germany and the Netherlands, are characterized by high enrolment rates, efficient pooling of funds, and predictable purchasing arrangements that stabilize provider revenues (Allers et al., 2025; Thomson et al., 2024). In contrast, healthcare insurance schemes in many low- and middle-income countries face persistent operational challenges that result in shallow risk pools and unstable revenue bases (Odipo et al., 2024). In Kenya, enrolment in public insurance remains low, with overall coverage estimated at 20–26 percent of the population.

Reimbursement periods for empanelled providers typically range from 45 to 90 days, while claim approval rates fluctuate between 70 and 85 percent (Kenya Healthcare Federation, 2025). Private and commercial insurance schemes, although more flexible, cover a narrower segment of the population and operate alongside the Social Health Insurance Fund (SHIF) in a fragmented financing environment. These challenges are evident in peri-urban settings such as Kajiado North Sub-County. Public insurance schemes dominate service purchasing, with private health providers accounting for approximately 70–80 percent of empanelled providers (Rural and Urban Private Hospitals Association [RUPHA], 2025; Kajiado County Government, 2024).

STUDY OBJECTIVES

The study was guided by the following objectives:

- i. To determine the effect of enrolment rate on the financial sustainability of private health providers in Kajiado North Sub-County.
- ii. To assess the effect of reimbursement timeliness on the financial sustainability of private health providers in Kajiado North Sub-County.
- iii. To determine the effect of claim approval rate on the financial sustainability of private health providers in Kajiado North Sub-County.
- iv. To evaluate the effect of out-of-pocket payment (OOP) burden on the financial sustainability of private health providers in Kajiado North Sub-County.
- v. To examine the moderating effect of insurance scheme type on the relationship between insurance dynamics and the financial sustainability of private health providers in Kajiado North Sub-County.

LITERATURE REVIEW

The financial stability of health providers is positively associated with higher rates of health insurance coverage. However, the nature of this association and the mechanisms through which it operates depend on the context, provider type, and measure of financial stability (Kosgei & Ngahu, 2025). Kutzin's framework links greater enrolment to provider sustainability through increased service utilization and more sustainable revenue streams (Kutzin, 2001). Within this framework, timely reimbursement is fundamental to system stability (Nyawira et al., 2024). Cleverley's liquidity domain suggests that longer payment cycles destabilize cash flows and reduce operating self-sufficiency (OSS), emphasizing the need for timely reimbursement.

Adjagba et al. (2025) identified bottlenecks in public financial management as a major obstacle to the sustainability of universal healthcare and, by extension, private health providers. Administrative processes were often inflexible, and autonomy was limited. Similarly, Abu Al Hijaa (2023) linked reimbursement delays to structural financing bottlenecks that disrupt providers' cash flow cycles, compelling them to rely on expensive short-term borrowing or ration services. Together, these studies suggest that reimbursement delays are a systemic problem in many low- and middle-income countries. In Kenya, social health insurance reimbursement periods ranged from 45 to 90 days or longer, both before and after the

introduction of SHIF. These delays reduce liquidity buffers, increase working capital costs, and undermine the predictability needed for staff recruitment, procurement, and debt repayment.

Efficiency in claim approval is frequently cited as a key factor in revenue recovery and providers' financial well-being (Muriithi et al., 2025). Barasa et al. (2018) proposed standardized audits and electronic claims systems to reduce claim denials. High denial rates can compound financial pressures, contribute to service rationing, and reduce private providers' participation. Owoko (2025) reported that the Social Health Authority reimbursed only 53 percent of claims during some periods, linking limited reimbursement to financial strain and facility closures. These findings emphasize the financial pressures associated with claims that are not reimbursed.

High out-of-pocket (OOP) payment burdens can compromise household financial protection and provider revenue stability (Biruri, 2024). Voto et al. (2025) presented evidence linking OOP expenditure to poverty traps in Sub-Saharan Africa, while a Kenya-specific finding of 28 percent volatility in private clinics' revenues highlighted the associated financial instability. Together, these studies suggest that higher OOP shares, typically 25–40 percent of facility revenues, expose households to catastrophic spending and make provider cash flows more vulnerable to bad debt. In this mixed financing context, the present study quantified the relationship between the OOP burden at the provider level and OSS, and examined whether the dominant insurance scheme type moderated this association.

The Kutzin Health Financing Framework and the Cleverley Financial Viability Model provided the theoretical basis for this study. Kutzin's framework (Kutzin, 2001) identifies three health financing functions: revenue raising, pooling, and purchasing. These functions relate to the study's independent variables: enrolment rate reflects the extent of risk pooling and revenue mobilization; reimbursement days and claim approval rate measure purchasing efficiency; and OOP burden reflects financial risk that is not pooled. The study examined how the performance of these financing functions related to the stability of private providers' revenues under SHIF and private insurance schemes in Kajiado North Sub-County.

Cleverley's Financial Viability Model complements Kutzin's systems approach by proposing that long-term provider survival depends on a balance of profitability, liquidity, capital structure, and asset efficiency. The OSS ratio served as the study's measure of financial sustainability and was theoretically linked to Cleverley's liquidity and profitability domains. Longer reimbursement delays affect liquidity, lower claim approval rates increase transaction

costs and reduce realized revenues, and higher OOP burdens can increase revenue volatility. Resource dependence theory and agency theory support the examination of insurance scheme type as a moderator of cash flow predictability and principal–agent conflicts during claims settlement. Together, these theories provided a basis for examining the direct and moderated relationships between insurance dynamics and the financial sustainability of private health service providers.

RESEARCH METHODOLOGY

The study employed a cross-sectional research design and simple random sampling. The target population comprised 121 private health service providers in the study area. Yamane’s formula was used to determine a sample of 102 providers. Within the selected facilities, purposive sampling was used to identify key respondents who completed the data extraction sheet. The sheet captured information from audited reports on total operating revenue, net patient revenue, total operating expenses, annual debt payments, liquid cash reserves, and total revenue from OOP payments. These measures supported the calculation of the study variables. Hierarchical regression was used to examine the relationships between insurance dynamics and financial sustainability, including interaction effects. The hierarchical regression analysis comprised a main effects model, a model incorporating insurance scheme type, and a model including interactions between scheme type and the independent variables.

The main effects model was specified as follows:

$$OSS_i = \beta_0 + \beta_1 \text{Approval rate}_i + \beta_2 \text{Enrollment rate}_i + \beta_3 \text{Reimbursement Days}_i + \beta_4 \text{OOPBurden}_i + e_i \dots (i)$$

The model incorporating insurance scheme type was specified as follows:

$$OSS_i = \beta_0 + \beta_1 \text{Approval rate}_i + \beta_2 \text{Enrollment rate}_i + \beta_3 \text{Reimbursement Days}_i + \beta_4 \text{OOPBurden}_i + \beta_5 \text{Scheme Type}_i + e_i \dots (ii)$$

The final model examined interactions between insurance scheme type and the independent variables:

$$\begin{aligned}
 OSS_i = & \beta_0 + \beta_1 \text{Approval rate}_i + \beta_2 \text{Enrollment rate}_i \\
 & + \beta_3 \text{Reimbursement Days}_i + \beta_5 \text{OOPBurden}_i + \beta_1 (\text{Approval rate}_i \times \text{Scheme Type}_i) + \\
 & \beta_2 (\text{Enrollment rate}_i \times \text{SchemeType}_i) + \\
 & \beta_3 (\text{Reimbursement Days}_i \times \text{SchemeType}_i) + \\
 & \beta_4 (\text{OOPBurden}_i \times \text{SchemeType}_i) + \\
 & e_i \dots (iv)
 \end{aligned}$$

FINDINGS

This section presents the findings of the hierarchical regression analysis examining the relationship between health insurance dynamics and the financial sustainability of private health service providers, including the moderating effect of insurance scheme type.

Table 1: Hierarchical Regression Model Results

Predictor	Model 1			Model 2			Model 3		
	B	T	P	B	T	P	B	T	p
Intercept	36.78	7.54	< .001	28.32	5.98	< .001	28.32	5.98	< .001
Enrolment Rate	0.51	14.06	< .001	0.54	19.13	< .001	0.54	19.13	< .001
Reimbursement Days	-0.17	-9.54	< .001	-0.19	-12.58	< .001	-0.19	-12.58	< .001
Claim Approval Rate	0.58	11.52	< .001	0.68	14.83	< .001	0.68	14.83	< .001
Out-of-Pocket Burden (IV4)	-0.39	-7.54	< .001	-0.40	-9.37	< .001	-0.40	-9.37	< .001
Insurance Scheme Type	-	-	-	18.67	20.69	< .001	18.67	20.69	< .001
Enrolment Rate × Scheme Type	-	-	-	-	-	-	0.03	0.74	0.45
Reimbursement Days × Scheme Type	-	-	-	-	-	-	-0.01	-0.56	0.57
Claim Approval Rate × Scheme Type	-	-	-	-	-	-	0.21	4.59	< .001
Out-of-Pocket Burden × Scheme Type	-	-	-	-	-	-	-0.00	-0.10	0.91
R ²		0.631			0.932			0.933	
Adj. R ²		0.616			0.929			0.927	
F		41.44			264.85			162.0	
Df		4, 97			5, 96			9, 92	

Table 1 presents the hierarchical regression results for the relationship between health insurance dynamics and financial sustainability, measured through the operating self-sufficiency ratio. Model 1 included the four insurance dynamics and explained 63.1 percent of the variation in financial sustainability ($R^2 = .631$; adjusted $R^2 = .616$). Model 2 incorporated insurance scheme type, increasing the explained variation to 93.2 percent. Model 3 introduced the four interaction terms and explained 93.3 percent of the variation. Regarding the first objective, enrolment rate had a positive and statistically significant relationship with financial sustainability in Model 1 (coefficient = 0.51, $t = 14.06$, $p < .001$). This indicated that higher enrolment rates were associated with greater operating self-sufficiency, holding the other insurance dynamics constant. The relationship remained positive and statistically significant after insurance scheme type was introduced in Model 2 (coefficient = 0.54, $t = 19.13$, $p < .001$).

For the second objective, reimbursement days had a negative and statistically significant relationship with financial sustainability in Model 1 (coefficient = -0.17 , $t = -9.54$, $p < .001$). Longer reimbursement periods were therefore associated with lower operating self-sufficiency. Because reimbursement timeliness was measured using the number of days before payment, the negative coefficient indicated that slower payment was associated with poorer financial sustainability. This relationship remained statistically significant in Model 2 (coefficient = -0.19 , $t = -12.58$, $p < .001$).

Concerning the third objective, claim approval rate had a positive and statistically significant relationship with financial sustainability in Model 1 (coefficient = 0.58, $t = 11.52$, $p < .001$). Providers with higher claim approval rates tended to report greater operating self-sufficiency, holding the other insurance dynamics constant. After insurance scheme type was incorporated, the relationship remained positive and statistically significant (coefficient = 0.68, $t = 14.83$, $p < .001$). Regarding the fourth objective, out-of-pocket payment burden had a negative and statistically significant relationship with financial sustainability in Model 1 (coefficient = -0.39 , $t = -7.54$, $p < .001$). A higher out-of-pocket burden was associated with lower operating self-sufficiency. This negative relationship remained statistically significant in Model 2 (coefficient = -0.40 , $t = -9.37$, $p < .001$), indicating that the association persisted after accounting for insurance scheme type.

For the fifth objective, Model 3 examined whether insurance scheme type moderated the relationships between the four insurance dynamics and financial sustainability. The interaction

between claim approval rate and scheme type was positive and statistically significant (coefficient = 0.21, $t = 4.59$, $p < .001$). This indicated that the relationship between claim approval rate and financial sustainability differed according to insurance scheme type. Identifying which scheme had the stronger relationship required reference to the coding of the scheme type variable. The remaining interaction terms were not statistically significant. These comprised enrolment rate $\times$ scheme type (coefficient = 0.03, $t = 0.74$, $p = .45$), reimbursement days $\times$ scheme type (coefficient = -0.01 , $t = -0.56$, $p = .57$), and out-of-pocket burden $\times$ scheme type (coefficient rounded to -0.00 , $t = -0.10$, $p = .91$). Consequently, the reported results supported moderation only for the relationship between claim approval rate and financial sustainability.

CONCLUSION

The study concludes that health insurance dynamics are significantly associated with the financial sustainability of private health service providers in Kajiado North Sub-County. Enrolment rate and claim approval rate are positively associated with operating self-sufficiency, whereas longer reimbursement periods and a higher out-of-pocket payment burden are negatively associated with sustainability. Insurance scheme type is also a significant predictor and moderates the relationship between claim approval rate and operating self-sufficiency, with facilities predominantly financed by the Social Health Insurance Fund showing a stronger positive relationship than those dominated by private insurance schemes. The final hierarchical model accounts for 93.3 percent of the variation in financial sustainability, highlighting the relevance of insurance process efficiency and the predominant payer to the financial viability of private health service providers.

RECOMMENDATIONS

The Social Health Authority should implement a maximum reimbursement cycle of 30 days and raise claim approval targets to above 90 percent, supported by digital claims automation and provider liaison units. Private providers should strengthen their claims processing capacity and maintain a balanced payer mix. County and national policymakers should develop differentiated support measures that reflect the greater sustainability gains associated with claim approval efficiency in SHIF-dominant facilities. Professional associations, including the Kenya Healthcare Federation (KHF) and RUPHA, should facilitate joint advocacy and knowledge sharing on reimbursement best practices.

CONTRIBUTION TO THEORY, PRACTICE AND POLICY

The study contributes to theory by applying the Kutzin Health Financing Framework and Cleverley's Financial Viability Model at the facility level in a peri-urban Kenyan context. It provides evidence that revenue raising, pooling, and purchasing performance jointly explain a substantial proportion of the variation in private providers' OSS. It also shows that insurance scheme type moderates the relationship between claim approval efficiency and OSS. These findings inform resource dependence and agency theory by linking payer relationships and claims administration to providers' financial outcomes in a system combining public and private funding.

The findings identify practical priorities for managers of private health facilities. Investment in claims automation, documentation quality, and staff capacity may be especially beneficial for SHIF-dominant facilities, while payer diversification remains important for risk management. The estimated relationships involving enrolment, reimbursement delays, claim approval, and OOP burden provide a basis for monitoring and improving facilities' financial performance. At the policy level, the findings indicate that the design and administrative efficiency of SHIF have implications for private providers' viability and the achievement of universal health coverage (UHC). Policymakers should therefore prioritize enforceable reimbursement timelines, higher claim approval standards, and targeted support for providers whose financial sustainability depends heavily on the public scheme's performance.

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