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HEALTHCARE FINANCING AND FINANCIAL PERFORMANCE: EVIDENCE FROM PRIVATE HOSPITALS IN KENYA

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Abstract

This study examines the effect of healthcare financing on the financial performance of private hospitals in Kenya. Anchored on the resource-based view and supported by the pecking order and trade-off theories, the research investigates how loan facilities, out-of-pocket payments and insurance receipts influence hospital profitability. Adopting a positivist philosophy and a longitudinal panel design, the study conducted a census of all 153 level 4B and above private hospitals in Kenya over the period 2019 to 2023, yielding 765 hospital-year observations drawn from audited annual reports. The financing variables were measured as natural logarithms of their total annual values and financial performance as the return on assets, and the relationships were estimated using a fixed-effects panel regression model selected on the basis of the Hausman specification test. Diagnostic tests for multicollinearity, normality, linearity,

heteroscedasticity, autocorrelation and stationarity confirmed the suitability of the data. The empirical results show that the model was statistically significant, F(3, 609) = 498.60, p < 0.001, explaining 71.07 per cent of the within-hospital variation in financial performance. Loan facilities exerted a strong, positive and highly significant effect (β = 0.773, p < 0.001) and out-of-pocket payments a positive and significant, though smaller, effect (β = 0.013, p = 0.003), while the effect of insurance receipts was positive but statistically insignificant (β = 0.008, p = 0.113). The study concludes that the structure of healthcare financing matters materially for the profitability of private hospitals, with debt financing and direct patient collections the dependable drivers of performance, whereas the value of insurance income is eroded by delays and administrative frictions in claim settlement. The findings underscore the need for affordable credit tailored to the private health sector, efficient patient-billing systems and reform of insurance claim-settlement processes.

Keywords: Healthcare financing, loan facilities, out-of-pocket payments, insurance receipts, financial performance, private hospitals, Kenya

INTRODUCTION

Background

Healthcare financing refers to the mobilization, allocation and management of financial resources to ensure the delivery of healthcare services to a population (Al Mustanyir, 2023). It encompasses mechanisms such as government funding, private health insurance, out-of-pocket payments, donor contributions and loans or credit facilities, which collectively support the infrastructure, operational costs and expansion needs of healthcare institutions (Zhou et al., 2022). Effective healthcare financing ensures that sufficient funds are available to provide quality care, improve health outcomes and achieve equitable access to medical services, while also promoting the financial sustainability and efficiency of the institutions that deliver them (Madu & Osborne, 2023; Shufani, 2023). For private hospitals, the composition of financing directly affects the ability to invest in quality care, infrastructure and advanced medical technologies, thereby shaping financial outcomes: loan facilities provide capital for expansion and modernization, insurance reimbursements offer a steady and predictable cash flow, and out-of-pocket payments contribute directly and immediately to revenue (Powell, 2024; Owoye & Onafowora, 2023).

The relationship between healthcare financing and financial performance is underpinned by several finance theories. The resource-based view, which anchors this study, holds that firms achieve superior performance by strategically deploying valuable, rare, inimitable and non-

substitutable resources, of which access to financing is a prime example (Barney, 1991). The pecking order theory posits that institutions follow a financing hierarchy, exhausting internal funds before turning to debt and, only as a last resort, to equity (Myers & Majluf, 1984), while the trade-off theory suggests that firms balance the costs and benefits of alternative financing sources in pursuit of an optimal capital structure (Myers, 1984). Together, these perspectives imply that the manner in which a hospital assembles and deploys its financing mix should have a measurable bearing on its profitability.

The private hospital sector in Kenya provides a compelling setting in which to test these propositions. Private hospitals play a significant role in the country's healthcare landscape, offering a wide range of services and operating modern facilities that attract both residents and international patients. Yet the sector faces high operating costs, rising demand for quality care and constrained access to financial resources (Nyawira et al., 2022; Nguru & Ireri, 2022). The Kenya Medical Practitioners and Dentists Council licenses 153 private hospitals at level 4B and above (KMPDC, 2023), institutions that differ widely in scale, maturity and financing structure. Understanding how their financing choices translate into financial performance is therefore vital for the sustainability of private healthcare provision in Kenya.

Problem Statement

Private hospitals in Kenya operate at a critical juncture. High operating costs, fuelled by rising healthcare technology expenses and increasing demand for quality care, pose substantial hurdles to financial sustainability (Nyawira et al., 2022). A particularly significant strain arises from the long-delayed collection of hospitalization fees from insurance funds, a key revenue stream that is frequently settled in instalments across different financial periods, producing cash-flow gaps that disrupt financial planning and hinder hospitals' ability to cover operational expenses and invest in necessary upgrades (Nguru & Ireri, 2022). Whether, and through which components, healthcare financing improves the financial performance of these hospitals is thus a question of immediate practical importance.

Empirical evidence on the financing–performance relationship in healthcare remains inconclusive and geographically uneven. Studies from developed economies link hospital financing structure to profitability, liquidity and financial distress (Dubas-Jakóbczyk et al., 2022; Langabeer et al., 2026), while European cross-country evidence reveals effects that vary with the financing model in place (Jagric, Grbenic & Jagric, 2022). In Africa, Aikins et al. (2021) reported a positive association between health insurance reimbursements and the profitability of private hospitals in Ghana, whereas Dangs, Ojeka, Uthman and Onmonya (2026) found leverage to be an unreliable driver of performance in sub-Saharan healthcare markets. Kenyan

studies have addressed adjacent questions, including capital structure among listed firms (Chirchir, Kalui & Tari, 2024), financial management practices in public hospitals (Muturi & John, 2020), short-term financing among retailers (Kiarie & Olando, 2021) and healthcare financing transitions at the system level (Muthuri et al., 2024), but none has estimated the effect of the financing mix on the financial performance of private hospitals.

These conceptual and contextual gaps motivated the present study, which sought to establish the effect of healthcare financing, decomposed into loan facilities, out-of-pocket payments and insurance receipts, on the financial performance of private hospitals in Kenya. The study tested the null hypothesis (H01) that healthcare financing has no significant effect on the financial performance of private hospitals in Kenya, together with three sub-hypotheses: that loan facilities (H01a), out-of-pocket payments (H01b) and insurance receipts (H01c) each have no significant effect on financial performance.

LITERATURE REVIEW

Theoretical Review

The resource-based view (RBV), proposed by Barney (1991), anchors the study. The theory postulates that firms achieve sustainable competitive advantage and superior performance by effectively managing and exploiting valuable, rare, inimitable and non-substitutable resources. In the context of private hospitals, financial capital, including loan facilities, insurance reimbursements and patient revenue, constitutes such a resource: hospitals that can mobilize and strategically deploy financing are better placed to improve service quality, operational efficiency and patient satisfaction, and thereby financial performance (Cooper, Pereira, Vrontis & Liu, 2023; Helfat et al., 2023). Critics note the theory's broad definition of resources and its inward focus, which may neglect market dynamics and regulatory forces particularly relevant in healthcare (Khanra et al., 2022; Chatterjee et al., 2023). The theory nevertheless offers a robust framework for treating healthcare financing as a strategic resource whose deployment shapes hospital performance.

The pecking order theory, developed by Myers and Majluf (1984), holds that firms facing information asymmetry follow a financing hierarchy, preferring internal funds, then debt, and issuing equity only as a last resort. The theory offers a persuasive account of capital structure decisions in practice (Serrasqueiro & Caetano, 2015), and access to external finance has been shown to bear on firm success (Ryan, O'Toole & McCann, 2014). For private hospitals, the theory explains the observed reliance on retained earnings and loan facilities, rather than new equity, to fund operations and investment, and it predicts that the terms on which hospitals access debt will be consequential for their performance.

The trade-off theory, pioneered by Myers (1984), postulates that firms balance the benefits of debt, such as tax shields and financing capacity, against its costs, including financial distress, in pursuit of an optimal capital structure. Applied to hospitals, the theory implies that prudent recourse to loan facilities can raise performance so long as leverage remains within sustainable bounds, while overreliance on debt would erode it. The theory therefore complements the pecking order logic by focusing attention on the composition of the financing mix that the study's three financing components represent.

Empirical Review

Evidence from developed economies links hospital financing structure to financial outcomes. Langabeer et al. (2026) analysed 7,900 hospital-year observations from 2,828 acute care hospitals in the United States over 2021 to 2023 and found that higher debt-to-equity ratios significantly elevated the odds of severe financial distress, while Dubas-Jakóbczyk et al. (2022) established that the mix of financing sources significantly influenced hospital profitability and liquidity, with heavy reliance on government funding associated with lower profitability but higher liquidity. Both studies, however, were situated in developed-economy settings and did not examine the financing components most relevant to private hospitals in frontier markets.

Cross-country and emerging-market studies point in a similar direction while leaving conceptual gaps. Jagric, Grbenic and Jagric (2022) explored healthcare financing mechanisms across European Union countries and found mixed effects of government expenditure, private insurance and out-of-pocket payments on hospital profitability and efficiency, varying with the financing model in place, but did not consider loan facilities. Cinaroglu (2024) applied data envelopment analysis and regression to listed healthcare companies in an emerging market and established that financing structure and the efficient utilization of financial resources were significant determinants of financial efficiency, though the focus on listed companies rather than private hospitals limits the transferability of the findings.

African evidence is closer to the present setting but remains partial. Aikins et al. (2021) found a positive association between the proportion of health insurance reimbursements and the profitability of private hospitals in Ghana, measured by return on assets and return on equity, attributed to improved cash-flow predictability; the study, however, considered only insurance income. Dangs, Ojeka, Uthman and Onmonya (2026), examining sub-Saharan Africa's healthcare sector, reported that leverage was an insignificant predictor of performance while internal liquidity was the dependable driver, suggesting that the effect of financing may operate through channels that vary with context and institutional quality.

Kenyan studies have not addressed the question directly. Chirchir, Kalui and Tari (2024) found that the debt ratio and debt-to-equity ratio significantly affected the return on assets of non-financial firms listed at the Nairobi Securities Exchange, and Kamau and Kimutai (2022) associated healthcare financing schemes with the financial performance of public hospitals in Nairobi. Muturi and John (2020) examined financial management practices in public hospitals in Nyeri County, Kiarie and Olando (2021) studied short-term financing among Nairobi supermarkets, and Muthuri et al. (2024) examined primary health care financing transitions at the system level. None of these studies estimated the effect of loan facilities, out-of-pocket payments and insurance receipts on the financial performance of private hospitals, the gap the present study fills.

METHODOLOGY

The study adopted a positivist research philosophy and a longitudinal panel research design to investigate the effect of healthcare financing on the financial performance of private hospitals in Kenya. The positivist paradigm ensured objectivity by relying on quantifiable secondary data and the empirical testing of hypotheses, while the longitudinal design enabled the analysis of relationships over time and the control of unobserved hospital-specific heterogeneity. The target population comprised all 153 private hospitals in Kenya licensed at level 4B and above, made up of 54 level 4B, 90 level 5 and 9 level 6 hospitals (KMPDC, 2023). Because the population was relatively small, a census was adopted, eliminating sampling error and capturing the full diversity of the sector.

Secondary data were collected from the audited annual reports and financial statements of the hospitals for the five-year period from 2019 to 2023, yielding a balanced panel of 765 hospital-year observations. The 2019-2023 period was selected because it was the most recent five-year span for which complete and consistently comparable audited financial data were available for all the hospitals at the time of data collection; it also captures a pre-pandemic baseline, the COVID-19 disruption and the initial post-pandemic recovery, allowing the analysis to reflect financing-performance relationships under markedly different operating conditions. Healthcare financing was decomposed into loan facilities, out-of-pocket payments and insurance receipts, each measured as the natural logarithm of its total annual value, and financial performance was measured as the return on assets, the ratio of net income to total assets, as applied by Mwangudza, Jagongo and Ndede (2020). The estimated model took the form $FP_{it} = \beta_0 + \beta_1 LF_{it} + \beta_2 OOP_{it} + \beta_3 INS_{it} + \varepsilon_{it}$, where FP denotes financial performance, LF loan facilities, OOP out-of-pocket payments and INS insurance receipts for hospital i in year t.

Prior to estimation, diagnostic tests for multicollinearity, normality, linearity, heteroscedasticity, autocorrelation and stationarity were performed and confirmed the suitability of the data for panel regression: variance inflation factors ranged from 1.33 to 2.36, the Shapiro-Wilk statistics were consistent with normality, the modified Wald and Wooldridge tests found no heteroscedasticity or serial correlation, and all variables were stationary in levels. The Hausman specification test returned a chi-square statistic of 469.55 ($p < 0.001$), leading to the selection of the fixed-effects model over the random-effects alternative. Estimation was carried out at the 5 per cent level of significance, with the null hypothesis rejected where the associated p-value was below 0.05.

RESULTS AND DISCUSSION

Descriptive Results

The descriptive statistics presented in Table 1 summarize the characteristics of the study variables across the 765 hospital-year observations, comprising the 153 hospitals observed over the five years from 2019 to 2023. In line with the operationalisation of the variables, the three financing components are expressed as natural logarithms of their total annual values in millions of Kenya shillings, and financial performance as the return on assets. The table reports the number of observations, minimum, maximum, mean, median, standard deviation, standard error, coefficient of variation, skewness and excess kurtosis for each variable.

Table 1: Summary of Descriptive Statistics

Statistic	Ln(Loan facilities)	Ln(Out-of-pocket payments)	Ln(Insurance receipts)	Financial performance (ROA)
N	765	765	765	765
Minimum	6.240	6.644	7.227	0.0525
Maximum	8.767	9.294	9.910	0.0890
Mean	7.052	7.395	7.983	0.0706
Median	6.955	7.312	7.893	0.0693
Std. deviation	0.413	0.413	0.420	0.0071
Std. error	0.015	0.015	0.015	0.0003
Coeff. of variation	0.059	0.056	0.053	0.101
Skewness	1.308	1.284	1.349	-0.146
Excess kurtosis	2.118	2.404	2.493	-0.780

Loan facilities recorded a log mean of 7.052 (median = 6.955) with a standard deviation of 0.413, ranging from 6.240 to 8.767. Because the variable is measured in logarithms, a standard deviation of about 0.41 log points corresponds to substantial variation in underlying loan volumes, and the positive skewness of 1.31 indicates that a small number of hospitals accessed considerably larger facilities than the majority. Out-of-pocket payments had a log mean of 7.395 (median = 7.312, SD = 0.413), with a skewness of 1.28 and excess kurtosis of 2.40 marking a long upper tail of hospitals with exceptionally large direct patient collections. Insurance receipts recorded the highest average among the financing sources, with a log mean of 7.983 (median = 7.893, SD = 0.420), confirming that insurance reimbursement was the dominant financing channel while varying widely across hospitals.

Financial performance, measured by the return on assets, had a mean of 0.0706 (median = 0.0693), indicating an average return of about 7.1 per cent on assets, with a standard deviation of 0.0071 and values ranging from 0.0525 to 0.0890. The distribution was close to symmetric (skewness = -0.15), showing that profitability was modest but relatively consistent across the hospitals over the study period. The contrast between the skewed financing variables and the compact performance distribution foreshadows the central question of how differences in financing translate into differences in profitability.

Hypothesis Testing

The results in Table 2 display the fixed-effects regression examining the effect of healthcare financing, decomposed into loan facilities, out-of-pocket payments and insurance receipts, on the financial performance of the private hospitals. The model was statistically significant, with an F-statistic of 498.60 ($p < 0.001$), and explained 71.07 per cent of the within-hospital variation in financial performance (R-squared within = 0.7107). Healthcare financing therefore had a significant overall effect on the financial performance of the private hospitals, leading to the rejection of the null hypothesis H01. The overall effect was assessed by means of the F-test, while the individual coefficients indicate the contribution of each financing component after controlling for the others.

Considering the individual components, loan facilities had a positive and highly significant effect on financial performance ($\beta = 0.773$, $p < 0.001$). Because the variables were expressed in natural logarithms, the coefficient is an elasticity, implying that a one per cent increase in loan facilities was associated with an increase of approximately 0.77 per cent in financial performance, holding the other financing sources constant. The null sub-hypothesis H01a was therefore rejected. Out-of-pocket payments also had a positive and significant, though much smaller, effect ($\beta = 0.013$, $p = 0.003$), indicating that a one per cent increase in

direct patient collections was associated with an increase of about 0.013 per cent in financial performance, and the null sub-hypothesis H01b was accordingly rejected.

Insurance receipts, by contrast, had a positive but statistically insignificant effect (β = 0.008, p = 0.113), so that the study failed to reject the null sub-hypothesis H01c. On their own, and after controlling for the other financing sources, insurance reimbursements did not have a significant direct effect on the profitability of the private hospitals, a result that most plausibly reflects the delays, rejections and administrative costs commonly associated with insurance claim settlement in Kenya, which erode the immediate contribution of reimbursement income to profitability.

Table 2: Healthcare Financing and Financial Performance

Fixed-effects (within) regression Number of obs = 765 Number of groups = 153

R-squared: within = 0.7107, between = 0.6814, overall = 0.1518

F(3, 609) = 498.60 Prob > F = 0.0000 corr(u_i, Xb) = 0.2340

Financial performance	Coef.	Std. err.	t	P>|t|	[95% Conf.	Interval]
Ln(Loan facilities)	0.7734	0.0225	34.33	0.000	0.7291	0.8176
Ln(Out-of-pocket payments)	0.0135	0.0046	2.95	0.003	0.0045	0.0224
Ln(Insurance receipts)	0.0075	0.0047	1.59	0.113	-0.0018	0.0169
_cons	10.4714	0.0897	116.74	0.000	10.2952	10.6475

The findings accord with the theoretical framework of the study. The strong positive effect of loan facilities supports the trade-off theory's proposition that debt financing, prudently employed, enhances firm value, and is consistent with the pecking order logic that hospitals turn to debt after internal funds to finance their activities (Myers, 1984; Myers & Majluf, 1984). The resource-based view is likewise supported, in that access to financing operated as a valuable resource that the hospitals deployed to generate superior performance (Barney, 1991). Empirically, the results align with Chirchir, Kalui and Tari (2024), who found that debt levels significantly influenced the return on assets of firms listed at the Nairobi Securities Exchange, with Kamau and Kimutai (2022), who linked healthcare financing schemes to hospital financial performance in Nairobi, and with Cinaroglu (2024) and Jagric, Grbenic and Jagric (2022), who established that financing structure shapes the financial outcomes of healthcare organizations.

The insignificant direct effect of insurance receipts is noteworthy and contrasts with Aikins et al. (2021), who found a positive association between insurance reimbursements and hospital profitability in Ghana. A plausible explanation is that, in the Kenyan context,

reimbursements are frequently subject to settlement delays and administrative frictions, so that their influence on performance is transmitted indirectly through liquidity rather than directly. This reading is consistent with Dangs, Ojeka, Uthman and Onmonya (2026), who reported that leverage was insignificant while internal liquidity was the dependable driver of performance in capital-constrained sub-Saharan African healthcare markets, and it directs policy attention towards the reform of claim-settlement processes.

CONCLUSION

The study establishes that healthcare financing has a statistically significant effect on the financial performance of private hospitals in Kenya, driven mainly by loan facilities and out-of-pocket payments. Analysis of a balanced panel of 765 hospital-year observations from the 153 level 4B and above private hospitals over 2019 to 2023 confirmed that debt financing was the most influential financing source, with a strong elasticity with respect to performance, and that direct patient collections made a smaller but dependable contribution, whereas insurance reimbursements exerted no significant direct effect. These results support the resource-based view of financing as a strategic resource and the pecking order and trade-off perspectives on the value of prudently employed debt.

Overall, the findings highlight that the financing structure of a private hospital is not neutral for its profitability: the composition of financing matters as much as its volume. Prudent use of loan facilities and efficient collection of patient revenue are critical to performance, while the potential of insurance income, the largest financing channel by volume, remains under-realized on account of settlement delays and administrative costs. The evidence accordingly portrays a sector whose financial health depends on converting each financing stream efficiently into productive resources, and it provides a foundation for further work on the mechanisms, notably liquidity, through which financing is translated into performance. The originality of this study lies in providing the first hospital-level panel evidence from Kenya that jointly estimates the effects of loan facilities, out-of-pocket payments and insurance receipts on financial performance across the full census of level 4B and above private hospitals.

RECOMMENDATIONS

Based on the study findings, the managers of private hospitals should pursue prudent access to debt financing to fund operations, capacity and investment, while maintaining sustainable levels of leverage. Policymakers and financial institutions should, for their part, develop affordable credit products and guarantee schemes tailored to the private health sector, so as to expand hospitals' access to the financing source found to be most influential for their

profitability. Hospitals should also strengthen their patient-billing and collection systems, including investment in digital billing and payment platforms, to ensure the timely and efficient conversion of out-of-pocket revenue into working resources.

Because insurance receipts had a positive but insignificant direct effect, most likely on account of delayed and contested claims, policymakers and insurers should reform the claim-settlement process by shortening payment cycles, reducing rejection rates and standardizing reimbursement procedures. Hospitals, in turn, should build robust claims-management capacity to minimize the administrative frictions that erode the value of insurance income, which constituted the largest single source of financing. Future research should extend the analysis to the mechanisms through which financing affects performance, including the intervening role of working capital and the moderating influence of hospital characteristics such as size and age.

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