



## Cost management capability and financial sustainability of private schools in Lusaka Province, Zambia

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### ABSTRACT

Cost management capability, defined as the organisational ability to plan, monitor, control, and strategically reduce operational costs without compromising educational quality, is a fundamental determinant of institutional financial sustainability. Yet its specific effects on private schools in Zambia have not previously been empirically investigated. This study examines the impact of cost management capability on the financial sustainability of private schools in Lusaka Province, Zambia. Grounded in the Tuckman and Chang alongside financial vulnerability model and Bowman's financial capacity framework, the study employed an explanatory sequential mixed-methods design (QUAN→qual). Quantitative data were collected from 272 valid survey questionnaire responses drawn from school owners, principals, bursars, and accountants at 594 registered private primary and secondary schools across the six districts of Lusaka Province, using two-stage stratified random sampling guided by Yamane's formula. Qualitative data were gathered through 15 purposively selected semi-structured telephone interviews conducted to theoretical saturation. A Financial Sustainability Index (FSI) was computed using Principal Component Analysis, with a mean FSI of 0.53 (SD = 0.202) reflecting moderate financial fragility across the sector. Cost management capability items recorded consistently low mean scores, ranging from 1.68 to 1.77 on the five-point Likert scale, reflecting significant deficits in cost management practices across the sector. Exploratory Factor Analysis confirmed a strong single-factor structure (KMO = 0.941; chi-square = 1,580.00;  $p < .001$ ; eigenvalue = 5.26; variance explained = 75.16%). Pearson correlation analysis, supported by bias-corrected and accelerated bootstrap estimation with 5,000 resamples, revealed a moderate-to-strong, statistically significant positive relationship between cost management capability and the FSI ( $r = 0.550$ ;  $p < .001$ ; BCa 95% CI: 0.41–0.69), making it the second strongest predictor of financial sustainability after revenue diversification. Multiple regression analysis confirmed cost management capability as a significant and independent predictor of financial sustainability ( $R^2 = 0.41$ ;  $F(7,264) = 25.99$ ;  $p < .001$ ). Moderation analysis revealed that market competition significantly and positively moderated the cost management–financial sustainability relationship, while regulatory intensity had a marginally significant positive moderating effect. Qualitative findings strongly corroborated these results, with participants from more financially stable schools consistently identifying regular budget monitoring, quarterly operational expenditure reviews, strategic cost reduction initiatives, and proactive spending controls as the practices most closely associated with improved financial sustainability outcomes. The study concludes that cost management capability is a critical and significantly underutilised financial sustainability lever in Zambia's private school sector, and that systematic investment in cost management capacity is urgently required across the sector. This study recommends that private school administrators should prioritise the establishment of basic cost management infrastructure as an immediate and high-priority financial sustainability intervention.

**Keywords:** Cost Management Capability, Financial Sustainability, Mixed Methods, Operational Efficiency, Private Schools, Zambia

### I. INTRODUCTION

The capacity of an educational institution to manage its operational costs effectively constitutes a foundational prerequisite for financial sustainability. In private schools, where revenue is inherently constrained by the need to maintain fee affordability for families, and where major cost categories including staff salaries, utilities, facility maintenance, and teaching materials are largely fixed and structurally rising, cost management capability represents a critical financial survival competency. Without effective cost management, even schools with strong and diversified revenue portfolios can find themselves unable to generate the operating surpluses needed to build financial reserves, service financial obligations, invest in quality improvement, or absorb the effects of external financial shocks.

Private schools in Lusaka Province, Zambia, face particularly severe cost pressures in the current economic environment. Zambia's inflation rate, which has averaged above 10% annually since 2020, has significantly increased the kwacha cost of staffing, utilities, fuel, and teaching resources. Currency depreciation has raised the cost of imported educational inputs including textbooks, laboratory equipment, and information technology. Meanwhile, the expansion of free government education since 2022 has constrained private schools' ability to pass cost increases to families



through fee adjustments, creating a structural cost-revenue squeeze that threatens the financial viability of schools with no systematic cost management capability. The Zambia Open Private Schools Association (ZOPSA, 2022) documented that approximately 40% of private schools were experiencing financial distress under these conditions, providing institutional evidence of the sector-wide impact of inadequate cost management.

In this environment, the ability to manage costs strategically, not merely to cut costs reactively but to monitor, optimise, and plan expenditure systematically, has become an essential institutional financial competency for the private school sector. Cost management capability encompasses a range of interrelated practices: budgeting and financial planning, regular expenditure monitoring, identification and elimination of non-essential costs, supplier negotiation, operational efficiency improvement, and strategic cost reduction without compromising educational quality (Akindehinde, 2022; Oluwagbemiga et al., 2014). Together, these practices constitute a strategic organisational capability that directly determines the institution's ability to generate operating surpluses, maintain liquidity, and build the financial reserves needed for long-term sustainability.

Despite the critical importance of cost management in the private school context, cost management capability in private schools in Zambia remains largely unstudied. The academic literature on cost management and financial sustainability in educational institutions is dominated by studies of higher education institutions and large organisations, primarily in developed country contexts, with very limited empirical attention directed at private primary and secondary schools in sub-Saharan Africa. This study fills this critical gap by providing the first rigorous mixed-methods empirical investigation of the cost management capability–financial sustainability relationship in the Zambian private school sector.

### 1.1 Statement of the Problem

Cost management practices in most private schools in Lusaka Province are characterised by informality, reactivity, and strategic insufficiency. The majority of private schools lack formal cost management policies, do not employ regular budget monitoring reviews, have no documented cost reduction strategies, and manage operational expenditure primarily on an ad hoc basis in response to immediate cash flow pressures rather than through proactive, data-informed planning. This reactive approach to cost management increases operational inefficiency, creates financial vulnerability, and prevents schools from generating the surpluses needed to build institutional financial resilience.

The inadequacy of cost management practices is compounded by the limited financial management expertise of many private school administrators. Unlike commercial organisations, which typically employ professionally trained financial managers and accountants, many private schools rely on proprietors or teaching staff to perform financial management functions for which they have received little or no formal training. The resulting expertise gaps lead to suboptimal cost management, including under-utilisation of budgeting tools, failure to identify cost reduction opportunities, inability to distinguish essential from non-essential expenditure, and ineffective negotiation with suppliers. The empirical evidence quantifying the scale of cost management deficits in the Zambian private school sector and establishing their specific effects on financial sustainability outcomes has previously been absent from the literature. This study is designed to fill that evidence gap.

### 1.2 Research Objective

The primary objective of this study is to examine the impact of cost management capability on the financial sustainability of private schools in Lusaka Province, Zambia.

### 1.3 Research Hypothesis

$H0_i$ : Cost management capability is positively associated with financial sustainability of private schools in Zambia.

## II. LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.1.1 The Tuckman–Chang (1991) Financial Vulnerability Model and Cost Management

The Tuckman–Chang (1991) financial vulnerability model identifies low or negative operating margins as a primary indicator of organisational financial vulnerability, reflecting the theoretical argument that organisations unable to generate operating surpluses from their revenue streams are exposed to financial distress and unable to build the reserves needed for institutional resilience. Operating margins are directly and fundamentally determined by the relationship between revenue and costs: organisations with stronger cost management capability can maintain positive operating margins even under revenue pressure by identifying cost efficiencies and implementing targeted reductions, while those with weak cost management allow operational expenses to erode margins and generate the financial vulnerability that the model identifies as a primary precursor to institutional failure.



Applied to private schools in Zambia, the model predicts that schools with stronger cost management capability will exhibit higher FSI scores and demonstrate greater institutional resilience than those managing costs reactively, because they can preserve and improve their operating margins even as external pressures, including inflation, currency depreciation, and competitive fee constraints, tighten their cost-revenue position. The model further predicts that cost management capability interacts synergistically with other financial sustainability determinants: schools with better cost control are better positioned to generate the surpluses needed to invest in revenue diversification activities, strengthen governance systems, and build the institutional capabilities that underpin comprehensive financial sustainability.

### **2.1.2 Bowman's (2011) Financial Capacity Framework and Cost Management**

Bowman's (2011) financial capacity framework conceptualises cost management as a core component of short-term financial capacity, the immediate institutional ability to meet operational obligations and maintain educational service delivery. The framework argues that effective cost management is essential for generating the operating surpluses that constitute the raw material of long-term financial capacity: without cost efficiency, revenue cannot be converted into reserves, and without reserves, institutions cannot withstand financial shocks, invest in strategic development, or build the institutional quality needed for competitive differentiation.

For private schools in Zambia, Bowman's framework has two specific operational implications. First, it predicts that schools with stronger cost management capability will generate better financial sustainability outcomes because they convert a larger proportion of their revenue into institutional surplus available for reserve building and strategic investment. Second, it implies that cost management capability building is a high-leverage institutional investment, because it generates compounding financial sustainability returns: every unit of cost saved through improved efficiency becomes available for building the financial buffers needed to withstand future shocks and develop future institutional capacity. This compounding effect makes cost management capability a particularly cost-effective financial sustainability intervention in resource-constrained institutional settings.

## **2.2 Empirical Review**

### **2.2.1 Cost Management and Financial Sustainability**

Oluwagbemiga et al. (2014) analysed data on 40 manufacturing firms in Kenya and found a positive and significant association between cost management practices and firm performance. The core dimensions of cost management examined in their study included direct material cost management, direct labour cost control, production overhead management, and administrative overhead control, with performance measured through operating profit. The authors determined that cost reduction strategies, particularly those emphasising production and administrative overheads, are significant in profit maximisation. Although focused on performance rather than sustainability specifically, this study is relevant to the present investigation because long-term profitability is among the most commonly used indicators of financial sustainability in the broader literature.

Akindehinde (2022) provides a closer connection to financial sustainability specifically by examining manufacturing corporations in Nigeria. Employing measures of financial sustainability as liquidity and solvency, the study found that cost management had a major positive influence on both liquidity and solvency ratios. Statistically significant impacts were found on the current ratio, acid test ratio, debt ratio, gearing ratio, and interest coverage measures, leading the author to conclude that cost management plays a positive role in financial sustainability. This study is particularly valuable for the present investigation as it directly operationalises sustainability as liquidity and solvency capacity, the ability of the organisation to remain solvent and meet its financial obligations over time, which is consistent with the FSI dimensions employed in the present study.

### **2.2.2 Evidence from Strategic Cost Management Research**

Henri (2022) examined empirical evidence about the relationship between strategic cost management and financial performance, finding that results varied depending on whether executional cost management, focused on operational efficiency, was combined with structural cost management, focused on value-chain redesign and cost structure transformation. According to Henri's analysis, simple cost systems are not likely to enhance financial performance unless they result in the cost knowledge needed to support larger value-chain redesign and cost-structure enhancement. This contribution suggests that cost management capability cannot be perceived as simply standard cost cutting: financially sustainable organisations require both cost discipline in operations and a strategic redesign capability that uses cost information to inform broader institutional decisions.

Pavlatos (2022) found that strategic cost management techniques were positively correlated with financial sustainability, and that this relationship was contingent on contextual characteristics including environmental uncertainty, organisational structure, institutional strategy, size, and organisational life cycle. The study demonstrated that performance is enhanced not simply through the use of more cost management tools, but when cost management practices are deployed in ways that are relevant to the organisation's specific context. This observation implies that cost



management capability improves financial sustainability most effectively when it is executed in alignment with organisational requirements, competitive environments, and institutional structures, rather than mechanistically applied regardless of contextual fit.

### 2.2.3 Evidence from Educational Institution Research

Riachi (2021) found in a case study of Strathmore University in Kenya that cost management practices have the greatest influence on financial sustainability among the determinants examined. The study concluded that institutions must focus not only on revenue generation but also on rigorous cost control to achieve and maintain financial sustainability. Nalwoga (2021) found in qualitative research on Ugandan private universities that cost efficiency and strategic budgeting are crucial for financial sustainability, with institutions demonstrating more structured and disciplined cost management practices maintaining more stable financial positions than those managing costs informally.

Chiwodza et al. (2023) examined determinants of financial sustainability in Zimbabwe's public universities through a multivariate framework and found that cost management is among the key determinants of financial sustainability. The scholars concluded that improving cost-cutting measures can drive financial sustainability of public universities, providing directly analogous evidence from an educational institution context in southern Africa. Batizani (2026) similarly concluded that prudential cost control reinforces financial sustainability among educational institutions, based on mixed-methods research in Malawi. Katongo and Phiri (2023) found in a study of Zambian non-governmental organisations that effective cost management is crucial for financial sustainability, providing local contextual evidence of the cost management–sustainability relationship.

The literature also identifies important qualifications and contextual considerations. Pavlatos (2022) demonstrates that the relationship between cost management and financial sustainability is contingent rather than universal, with the strength and mechanism of the relationship varying according to organisational context and the sophistication of cost management systems employed. Henri (2022) suggests that excessive focus on cost reduction without strategic redesign may generate short-term efficiency gains at the expense of long-term capability development and institutional quality. These qualifications are particularly relevant in the educational context, where quality of educational provision is both a mission-critical goal and a key determinant of enrolment and revenue sustainability. Cost management in private schools must therefore be strategic rather than merely reductive, focused on improving efficiency and eliminating waste rather than compromising educational quality.

### 2.2.4 Moderating Environment: Regulatory Intensity and Market Competition

The relationship between cost management capability and financial sustainability does not operate in an environmental vacuum. Regulatory intensity, the degree of government regulation affecting private school operations, and market competition, the competitive pressure exerted by other private schools and free public schools, both shape the environment within which cost management decisions are made and the financial sustainability returns they generate (Adomako et al., 2017). Santos et al. (2019) found that in highly competitive educational markets, institutions that successfully differentiate through quality while maintaining cost efficiency achieved better financial sustainability outcomes than those that relied solely on price competition. Marimuthu et al. (2020) found that institutions in competitive markets demonstrated higher levels of cost control, with competitive pressure functioning as an external driver of cost management discipline.

Regulatory environments can also influence cost management effectiveness in educational institutions. Wang et al. (2024) demonstrated that regulatory frameworks shape the cost structures of educational institutions by imposing compliance costs and quality standards, creating both constraints and incentives for cost management. Stringent regulatory requirements for teacher qualifications, curriculum compliance, and facility standards impose fixed compliance costs that limit the scope for cost reduction, but also provide institutional discipline that may improve overall cost management practices. The interaction between regulatory intensity and cost management capability in determining financial sustainability outcomes requires empirical investigation to guide policy and practice in the Zambian private school context.

## 2.3 Research Gaps

The empirical review reveals four specific gaps that this study addresses. First, no previous study has empirically examined the cost management capability–financial sustainability relationship in private primary and secondary schools in Zambia. Second, the literature has not examined the moderating roles of regulatory intensity and market competition in shaping this relationship within the private school context. Third, most existing studies rely on single-dimension measures of either cost management or financial sustainability, limiting their ability to capture the full complexity of these constructs. Fourth, the consistent focus of existing research on manufacturing firms and higher education



institutions means that the findings may not transfer directly to the private primary and secondary school context, where cost structures, revenue sources, and institutional constraints differ substantially. This study addresses all four gaps.

### III. METHODOLOGY

#### 3.1 Research Philosophy and Design

The study adopted the pragmatist research philosophy and an explanatory sequential mixed-methods design (QUAN→qual), in which quantitative data collection and analysis preceded a qualitative phase designed to explain and contextualise the quantitative findings (Creswell & Creswell, 2022; Saunders et al., 2023). This design was particularly appropriate for investigating cost management capability and financial sustainability because the quantitative phase could establish the statistical significance and magnitude of the relationship, while the qualitative phase could illuminate the specific cost management practices, institutional processes, and contextual factors that explain the observed statistical patterns.

#### 3.2 Study Area, Population, and Sampling

The research was conducted across the six districts of Lusaka Province, where 594 registered private primary and secondary schools were identified as the target population (Ministry of Education, 2025). The study population comprised school owners, principals, bursars, and accountants, individuals with direct knowledge of and responsibility for cost management practices and financial sustainability outcomes. Using Yamane's (1973) formula at a 5% error margin and 95% confidence level, an adjusted sample of 300 schools was targeted, with 272 valid questionnaire responses retained after data cleaning, representing a response rate of 90.7%. Two-stage stratified random sampling ensured proportionate representation across districts and school levels. For the qualitative phase, 15 participants were purposively selected based on institutional role, years of experience, and school type, with theoretical saturation achieved at the fifteenth interview (Hennink et al., 2017; Braun & Clarke, 2022).

#### 3.3 Data Collection Instruments

The cost management capability scale comprised seven five-point Likert items measuring: effective monitoring and control of operational costs; regular budgeting process review for cost efficiency; establishment of clear cost control procedures across departments; existence of a dedicated cost management function; mechanisms for identifying and eliminating unnecessary costs; active pursuit of cost-saving opportunities without compromising educational quality; and the process for reviewing and adjusting costs based on changing circumstances. The scale was adapted from validated instruments in the cost management and financial sustainability literature (Chiwozwa et al., 2023; Akindehinde, 2022), contextualised for the private school setting, with a Cronbach's alpha of 0.87 and Average Variance Extracted of 0.60, confirming high internal consistency and acceptable construct validity.

Qualitative data were collected through semi-structured telephone interviews exploring: how the school monitors and manages its operational costs; the specific cost management practices employed; the challenges encountered in managing costs effectively; the perceived relationship between cost management and financial sustainability; and examples of cost management decisions that had meaningful financial sustainability impacts. Interviews lasted 30–45 minutes each and were audio-recorded with participant consent, with verbatim transcripts produced through professional transcription services.

#### 3.4 Data Analysis

Quantitative analysis proceeded through descriptive statistics, EFA for construct validation, Pearson correlation analysis with BCa bootstrap confidence intervals based on 5,000 resamples, and multiple regression analysis using PROCESS Macro version 4.2 (Hayes, 2013). Moderation analysis examined the effects of regulatory intensity and market competition on the cost management–financial sustainability relationship. All regression assumptions were verified prior to interpretation, including linearity, independence of errors (Durbin-Watson statistic: DW = 1.87), homoscedasticity, normality of residuals, and absence of multicollinearity (all VIFs below 2.0; all Tolerance values above 0.50). Qualitative data were analysed using Braun and Clarke's (2022) six-step reflexive thematic analysis framework, with NVivo version 15 supporting systematic coding and theme development.

### IV. FINDINGS & DISCUSSION

#### 4.1 Demographic Profile of Respondents

Table 1 presents the demographic characteristics of the respondents (N = 272) who participated in the study. This overview includes key variables such as age, gender, and educational background, providing context for the analysis of the study findings.

**Table 1***Demographic Characteristics of Respondents (N = 272)*

Variable	Category	Frequency (n)	Percentage (%)
<b>Gender</b>	Male	147	54
	Female	125	46
<b>Age Group</b>	31–50 years (combined)	158	58.1
	41–50 years (modal group)	85	31.3
<b>Education Level</b>	Undergraduate Degree	120	44.1
	Master's Degree	47	17.3
	Doctoral Degree	25	9.2
<b>Work Experience</b>	6–10 years	112	41.2
<b>Institutional Role</b>	Bursars/Accountants	114	41.9
	School Heads/Principals	102	37.5
	School Owners	56	20.6
<b>School Location</b>	Urban	112	41.2
	Rural	80	29.4
	Peri-Urban	50	18.4

Of the 272 valid survey respondents, 147 (54.0%) were male and 125 (46.0%) were female. The modal age cohort was 41–50 years (31.3%), with 58.1% of respondents aged between 31 and 50 years, reflecting a predominantly experienced, mid-career sample well positioned to provide informed responses on cost management practices. Regarding educational qualifications, 44.1% held undergraduate degrees, 17.3% master's degrees, and 9.2% doctoral degrees. Most respondents (41.2%) had 6–10 years of experience at their current schools. By institutional role, 41.9% were school bursars or accountants, 37.5% were school heads or principals, and 20.6% were school owners. School locations were distributed as urban (41.2%), rural (29.4%), and peri-urban (18.4%). These demographic characteristics confirm the respondents' direct institutional knowledge and experience relevant to cost management and financial sustainability.

#### 4.2 Financial Sustainability Index Results

Table 2 presents the Financial Sustainability Index (FSI) scores and the corresponding classification of the 272 participating schools. This table provides an overview of the financial sustainability status across the sample.

**Table 2***Financial Sustainability Index (FSI) and Classification of Schools (N = 272)*

Measure/Category	Statistic/Value	Percentage (%)
<b>FSI Descriptive Statistics</b>		
Mean FSI	0.53	—
Standard Deviation	0.202	—
<b>FSI Classification (Sazonov et al., 2015)</b>		
Absolute Financial Sustainability	42	15.4
Normal Financial Sustainability	106	39
Unstable Financial Sustainability	106	39
Critical Financial Sustainability	18	6.6
<b>Combined Risk Category</b>		
Unstable + Critical	124	45.6
<b>PCA and Psychometric Properties</b>		
KMO Statistic	0.922	—
Bartlett's Test of Sphericity	$p < .001$	—
Total Variance Explained	60.65%	—
Factor Loadings Range	0.76 – 0.81	—

The mean FSI of 0.53 (SD = 0.202) across the 272 sampled schools indicated moderate but fragile financial sustainability. Applying the Sazonov et al. (2015) classification criteria, 39% of schools were classified as having normal financial sustainability, 39% as unstable, 15.4% as having absolute financial sustainability, and 6.6% as experiencing critical financial sustainability. The finding that 45.6% of schools were in financially unstable or critical condition provides the primary motivation for understanding which financial management capabilities are most strongly associated with better financial sustainability outcomes. The PCA-derived FSI demonstrated strong psychometric



properties, with a KMO statistic of 0.922, Bartlett's Test significant at  $p < .001$ , and a single retained component explaining 60.65% of total variance with all item loadings between 0.76 and 0.81.

#### 4.2.1 Cost Management Capability Levels among Private Schools

Table 3 presents the descriptive statistics and results of the factor analysis for cost management capability among private schools. The analysis is based on responses from 272 participants.

**Table 3**

*Descriptive Statistics and Factor Analysis for Cost Management Capability (N = 272)*

Measure/Item	Mean (M)	Std. Dev. (SD)	Skewness	Kurtosis
The school actively seeks cost-saving opportunities without compromising quality	1.77	0.827	0.419	-0.095
The school has a process to review and adjust costs	1.68	0.802	0.734	-0.732
Other cost management capability items (combined range)	1.69–1.76	—	0.419–0.734	-0.732– -0.095
<b>Overall Interpretation</b>	Low (Disagree Range)	—	—	—
<b>Exploratory Factor Analysis (EFA)</b>				
KMO Measure of Sampling Adequacy	0.941	—	—	—
Bartlett's Test of Sphericity	$\chi^2 = 1,580.00$ ; $p < .001$	—	—	—
Eigenvalue	5.26	—	—	—
Variance Explained	75.16%	—	—	—
Factor Structure	Unidimensional	—	—	—

The descriptive statistics for cost management capability revealed consistently low mean scores across all seven items, ranging from 1.68 to 1.77 on the five-point Likert scale. These scores fall within the 'disagree' range of the scale, indicating that the great majority of respondents perceived their schools as lacking adequate cost management capabilities. The item 'The private school actively seeks cost-saving opportunities without compromising educational quality' recorded the highest mean ( $M = 1.77$ ;  $SD = 0.827$ ), while 'The private school has a process in place to review and adjust costs based on changing circumstances' recorded the lowest mean ( $M = 1.68$ ;  $SD = 0.802$ ), indicating the weakest perception of adaptive cost management practices.

The positive skewness values between 0.419 and 0.734 and negative kurtosis values between -0.732 and -0.095 confirm that response distributions were approximately normal, skewed towards the lower end of the scale, and appropriate for parametric inferential analyses. EFA confirmed the strong unidimensional structure of the cost management capability construct ( $KMO = 0.941$ ;  $\chi^2 = 1,580.00$ ;  $p < .001$ ; eigenvalue = 5.26; variance explained = 75.16%), with all seven items converging on a single dominant factor, confirming that the scale captured a coherent and robust measure of cost management capability. The high proportion of variance explained by a single factor (75.16%) is substantially higher than typically observed for multidimensional constructs, confirming the strong convergent validity of the cost management capability measure.

#### 4.2.2 Cost Management Capability and Financial Sustainability: Correlation Analysis

Table 4 displays the results of the Pearson correlation analysis between financial management capabilities and the Financial Sustainability Index (FSI) among the surveyed private schools ( $N = 272$ ).

**Table 4**

*Pearson Correlation Analysis between Financial Management Capabilities and Financial Sustainability Index (FSI) (N = 272)*

Variable	Correlation with FSI (r)	Std. Error	Bias	BCa 95% CI	p-value	Interpretation
Cost Management Capability	0.55	0.076	-0.001	0.41 – 0.69	< .001	Moderate-to-strong positive relationship
Revenue Diversification	0.799	—	—	—	< .001	Strong positive relationship
Governance & Financial Management Capability	0.449	—	—	—	< .001	Moderate positive relationship



Pearson correlation analysis revealed a moderate-to-strong, positive, and statistically significant relationship between cost management capability and the FSI ( $r = 0.550$ ;  $p < .001$ ; BCa 95% CI: 0.41–0.69). The bootstrap results confirmed the stability of this estimate, with a negligible bias of  $-0.001$  and a standard error of  $0.076$ . The BCa confidence interval from  $0.41$  to  $0.69$ , excluding zero entirely, provides strong evidence that the population relationship between cost management capability and financial sustainability is positive and significant. A correlation of  $0.550$  represents a practically meaningful effect size: it indicates that schools with stronger cost management capabilities are substantially more likely to achieve better financial sustainability outcomes than those with weaker capabilities, even after accounting for the constraining effects of the severe cost management deficits documented across the sector.

Cost management capability ( $r = 0.550$ ) ranks as the second strongest predictor of financial sustainability after revenue diversification ( $r = 0.799$ ), and substantially stronger than governance and financial management capability ( $r = 0.449$ ). This relative ranking is both theoretically coherent and practically informative. Revenue diversification is the strongest predictor because it directly addresses the structural income concentration that is the primary source of financial vulnerability in the sector. Cost management is the second strongest predictor because it directly determines operating margins and the efficiency with which available revenue is converted into institutional surplus. Governance capability, while significant, operates more through enabling and moderating other financial sustainability strategies than through a direct, immediate impact on the FSI.

### 4.3 Multiple Regression and Moderation Analysis

Table 5 presents the results of the multiple regression and moderation analysis examining the relationship between cost management capability and financial sustainability among private schools ( $N = 272$ ).

**Table 5**

*Multiple Regression and Moderation Analysis for Cost Management Capability and Financial Sustainability ( $N = 272$ )*

Model/Variable	B	SE	t	p-value	95% CI	Interpretation
<b>Overall Model Fit</b>						
R <sup>2</sup>	0.41	—	—	—	—	41% variance explained
F-statistic	F(7,264) = 25.99	—	—	< .001	—	Model statistically significant
<b>Main Effect</b>						
Cost Management Capability	0.12	0.02	7.23	< .001	0.09 – 0.15	Significant positive predictor
<b>Moderation Effects (PROCESS Model 2)</b>						
Market Competition × Cost Management	-0.09	0.04	-2.57	0.01	-0.16 – -0.02	Significant negative moderation
Regulatory Intensity × Cost Management	0.04	0.02	2.01	0.05	0.00 – 0.09	Marginally significant positive moderation

Multiple regression analysis confirmed cost management capability as a significant and independent predictor of financial sustainability in the full regression model ( $R^2 = 0.41$ ;  $F(7,264) = 25.99$ ;  $p < .001$ ;  $B = 0.12$ ;  $SE = 0.02$ ;  $t = 7.23$ ;  $p < .001$ ; 95% CI: 0.09–0.15). The direct effect of cost management capability on financial sustainability remained statistically significant after controlling for all other predictor and moderating variables, confirming that the cost management–sustainability relationship is not an artefact of shared variance with other financial sustainability determinants. The overall model explained 41% of the variance in financial sustainability, with cost management contributing a meaningful unique proportion of explained variance.

Moderation analysis using PROCESS Model 2 revealed significant moderating effects of both market competition and regulatory intensity. Market competition had a significant negative moderating effect on the cost management–financial sustainability relationship ( $B = -0.09$ ;  $SE = 0.04$ ;  $t = -2.57$ ;  $p = .010$ ; 95% CI:  $-0.16$  to  $-0.02$ ), indicating that in highly competitive market environments, the financial sustainability returns to cost management capability are partially reduced. This finding suggests that competitive pressures on pricing and enrolment can limit the extent to which improved cost efficiency translates into financial sustainability improvements, because competitive markets constrain the revenue-generating capacity that cost savings are intended to support. Regulatory intensity demonstrated a marginally significant positive moderating effect ( $B = 0.04$ ;  $SE = 0.02$ ;  $t = 2.01$ ;  $p = .050$ ; 95% CI:  $0.00$ – $0.09$ ), indicating that in more regulated environments, cost management improvements generate marginally better



financial sustainability outcomes, possibly because regulatory compliance requirements create institutional discipline that amplifies the effectiveness of cost management practices.

#### 4.4 Qualitative Findings: Cost Management Practices and Their Financial Sustainability Effects

The qualitative interviews provided rich contextual evidence of the specific cost management practices most closely associated with financial sustainability improvements, and of the institutional barriers that prevent many private schools from developing adequate cost management capabilities. Participant 2, a school principal, described the centrality of cost management to institutional survival: *“In our private school, cost management capability has become the central key to survival. Operation costs like utility bills, learning resources and staff costs are always under scrutiny to make sure that the resources utilised are used effectively. When the costs are managed, the school is in a better position to pay off and proceed on a normal basis even at times when the revenue inflows are not always constant”* (School Principal, 24<sup>th</sup> August, 2025).

Participant 6, a school principal with nine years of experience, described the specific operational practices through which cost management generated financial sustainability improvements: *“Good cost management provides the school with greater financial stability since it allows us to avoid waste and spend reasonably. We check our budget on a regular basis and find out areas where we can cut on spending without compromising the quality of education. This has assisted us in enhancing cash flow, using limited resources in a better way and maintaining the financial position of the school in the long run”* (School Principal on 24<sup>th</sup> August, 2025). This narrative illustrates the operationalisation of Bowman's (2011) framework: cost management practices generate operating surpluses that build long-term financial capacity.

Participant 9, a school owner with fourteen years of experience, provided comparative evidence across schools: *“I have noted that those schools that actively manage their expenses tend to be in a better financial capacity than the ones that do not. In our situation, the regular review of expenses and the corresponding change in spending according to the altering need has assisted in the minimisation of unnecessary costs. This has enabled the private school to maintain its programmes and handle financial pressures in a better way”*. (School Owner, 24<sup>th</sup> August, 2025). This testimony directly validates the theoretical prediction of the Tuckman–Chang (1991) model: schools with stronger cost management capability maintain better operating margins and demonstrate greater financial resilience.

Several participants also described the consequences of inadequate cost management, providing evidence of the financial sustainability costs of cost management deficits. Participant 8, an administrator, described a school experiencing the consequences of reactive rather than proactive cost management: *“The school is not in a state of financial failure, but it cannot be considered a highly sustainable one. The high reliance on school-fee income, which does not necessarily stay the same, is quite a risk. Late payments made by parents hinder normal running of day-to-day operations. Planning vulnerability is also increased by the lack of proper cost management systems. In line with that, the institution will continue to be vulnerable to financial shocks implying a medium to low sustainability”* (Administrator, 24<sup>th</sup> August, 2025).

Participant 3, a bursar, articulated the specific barriers preventing many schools from developing adequate cost management capabilities: *“One of the major issues we face is the absence of dedicated financial management expertise. Financial decisions are made reactively rather than strategically, because we lack the tools, systems and training needed to implement systematic cost monitoring and budgeting. This reactive approach means we often discover cost problems after they have already affected cash flow, rather than preventing them through proactive monitoring”* (Bursar on 24<sup>th</sup> August, 2025). This account directly illustrates the expertise gap identified in the problem statement and confirms that the cost management deficits documented in the descriptive statistics reflect genuine capability limitations rather than merely strategic choices.

#### 4.5 Discussion

The finding that cost management capability is positively and significantly associated with financial sustainability ( $r = 0.550$ ;  $p < .001$ ) is theoretically consistent with both the Tuckman–Chang (1991) model, which predicts that stronger cost control improves operating margins and reduces financial vulnerability, and Bowman's (2011) framework, which predicts that cost efficiency is essential for generating the surpluses that build long-term financial capacity. The finding aligns empirically with evidence from Kenya (Riachi, 2021), Zimbabwe (Chiwodza et al., 2023), Uganda (Nalwoga, 2021), Malawi (Batizani, 2026), Zambia (Katongo & Phiri, 2023), Nigeria (Akindehinde, 2022), and the broader organisational cost management literature (Oluwagbemiga et al., 2014; Pavlatos, 2022).

The ranking of cost management capability as the second strongest predictor of financial sustainability ( $r = 0.550$ ) after revenue diversification ( $r = 0.799$ ) is both theoretically coherent and practically significant. It reflects a fundamental financial sustainability logic: revenue diversification addresses the structural income vulnerability that is the primary source of financial fragility, while cost management determines the efficiency with which available revenue is converted into institutional surplus. These two strategies are complementary rather than competing: diversification



expands and stabilises the revenue base, while cost management ensures that the expanded revenue base is converted into meaningful financial sustainability improvements. Schools that develop both capabilities simultaneously should achieve substantially better financial sustainability outcomes than those focusing on either strategy alone.

The severe cost management deficits documented in the descriptive statistics, with all seven cost management items recording mean scores below 1.8 on a five-point scale, represent the most critical practical finding of this study. These deficits indicate that the great majority of private schools in Lusaka Province are managing costs primarily reactively, responding to immediate cash flow pressures rather than proactively monitoring, planning, and strategically optimising their cost structures. This reactive approach means that these schools are systematically failing to capture available cost efficiency improvements, perpetuating financial vulnerability that more proactive cost management could substantially reduce.

The theoretical framework developed by Henri (2022) and Pavlatos (2022) suggests an important distinction between executional cost management, focused on operational efficiency, and structural cost management, focused on value-chain redesign and cost-structure transformation. The qualitative evidence from this study suggests that most Zambian private schools are operating at an even more basic level than executional cost management, with many schools lacking even the fundamental budgeting, monitoring, and control systems needed for basic cost tracking. This suggests that the initial priority for cost management capability building in the sector should be the establishment of basic cost monitoring and budgeting systems before progressing to more sophisticated strategic cost management approaches.

The moderation finding that market competition negatively moderates the cost management–financial sustainability relationship is an important theoretical contribution that extends beyond the existing literature. This finding indicates that competitive pressure, particularly from free public schools and other private schools, constrains the financial sustainability returns to cost management improvement, because competitive environments limit both pricing flexibility and enrolment growth, capping the revenue potential that cost savings are intended to support. This finding has important policy implications: it suggests that cost management improvements alone may be insufficient to achieve financial sustainability in the most competitive educational markets, and that complementary strategies to differentiate institutional offerings, develop non-tuition revenue streams, or reduce competitive intensity through market positioning may be required.

The positive moderating effect of regulatory intensity, while marginal in statistical terms, suggests that more regulated environments may create institutional conditions that amplify the financial sustainability returns to cost management. A plausible mechanism is that regulatory compliance requirements create financial discipline and accountability systems that complement internal cost management practices, making well-regulated institutions more effective at translating cost management capability into financial sustainability improvements. This finding is consistent with the institutional theory argument that regulatory environments shape organisational practices in ways that affect financial performance (Wang et al., 2024).

The qualitative evidence provides essential contextual texture to these statistical findings. The accounts of school administrators consistently illustrated three mechanisms through which cost management capability affects financial sustainability: first, through direct cost reduction that improves operating margins; second, through improved cash flow predictability that reduces the financial volatility associated with irregular fee collection; and third, through the development of institutional financial intelligence that enables informed decision-making about resource allocation priorities. These mechanisms correspond to the operational dimensions of Bowman's (2011) framework, which conceptualises cost management as a core component of short-term financial capacity that enables the accumulation of long-term financial capacity.

Comparing the present findings with the existing literature reveals both confirmatory and distinctive elements. The direction and significance of the cost management–financial sustainability relationship is consistent with findings from Kenya (Riachi, 2021), Zimbabwe (Chiwodza et al., 2023), and Nigeria (Akindehinde, 2022). However, the severity of cost management deficits documented in this study, with mean scores below 1.8 on a five-point scale, is more extreme than typically reported in the higher education literature, likely reflecting the smaller institutional size, more limited financial management expertise, and more informal operational practices characteristic of private primary and secondary schools compared to universities. This contextual difference underscores the importance of developing cost management improvement interventions that are appropriately calibrated to the scale, capacity, and resource constraints of private primary and secondary schools rather than adapted from higher education models.

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusion

This study provides the first rigorous empirical investigation of the cost management capability–financial sustainability relationship in private primary and secondary schools in Zambia, generating findings of significant theoretical, policy, and practical importance. The moderate-to-strong positive relationship between cost management



capability and financial sustainability ( $r = 0.550$ ;  $p < .001$ ), confirmed through both quantitative analysis of 272 survey respondents and qualitative interviews with 15 school administrators, establishes that cost management capability is the second most important predictor of financial sustainability in private schools in Lusaka Province, after revenue diversification. The severe cost management deficits documented across the sector, with all items recording mean scores below 1.8 on a five-point scale, identify a critical and urgent capability building challenge. H4 is supported. The study makes an original contribution to the literature by providing the first empirical quantification of cost management capability levels and their financial sustainability effects in the Zambian private school context, and by demonstrating the significant moderating effects of market competition and regulatory intensity on the cost management–sustainability relationship.

## 5.2 Recommendations for Practice

Private school administrators should prioritise the establishment of basic cost management infrastructure as an immediate and high-priority financial sustainability intervention. The minimum cost management capability required to meaningfully improve financial sustainability includes: a monthly budget monitoring process comparing actual against planned income and expenditure across all major cost categories; a systematic quarterly expenditure review identifying variances and opportunities for cost reduction; written cost control procedures covering all major expenditure categories; a designated individual responsible for cost management oversight; and a mechanism for reviewing and adjusting cost plans in response to changing financial circumstances. These basic capabilities are achievable even in small, resource-constrained schools and represent the foundational platform on which more sophisticated strategic cost management can subsequently be built.

School administrators should also develop a comprehensive understanding of their schools' cost structures, identifying the major cost drivers and categorising expenditures as essential or discretionary. This cost intelligence is the foundation of strategic cost management: without knowing where costs are incurred and which costs are most susceptible to reduction, schools cannot develop evidence-based cost reduction strategies. Cost benchmarking against comparable schools, facilitated through private school associations, would enable administrators to identify cost categories where their schools are spending above sector norms and to learn from the cost management practices of more efficient comparators.

The Ministry of Education should incorporate minimum cost management standards into the registration and licensing requirements for private schools, ensuring that all schools maintain basic financial records, conduct regular budget reviews, and report annually on their financial position. These standards should be proportionately designed for the scale and resource constraints of private primary and secondary schools, and should be accompanied by accessible capacity building support to enable schools to achieve compliance without imposing excessive administrative burdens. Private school associations such as ZOPSA should facilitate peer learning networks that enable school administrators to share cost management practices, tools, and experiences, building sector-wide cost management capability through collaborative rather than purely individual approaches.

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