THE EFFECT OF PUBLIC BUDGET PARTICIPATION ON OPERATIONAL EFFICIENCY OF PUBLIC UNIVERSITIES IN SOUTH SUDAN

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ABSTRACT

Public universities in South Sudan are essential to national progress, driving innovation, human capital development, and societal transformation. However, since independence in 2011, they have faced persistent inefficiencies that hinder their core mandates. This scholarly inquiry examined the influence of public budget participation on the operational efficiency of public universities in South Sudan. It specifically assessed the effect of budget participatory mechanisms. Grounded in accounting theory, the study embraced a pragmatist philosophy and employed a triangulated methodology, drawing upon both qualitative and quantitative data. Information was gathered from five financial controllers representing all public universities through a census approach, utilizing structured questionnaires, interviews, and institutional records from the 2022–2023 fiscal year. Analytical techniques included descriptive statistics, correlation analysis, and multiple regression. The findings revealed that public budget participation exerted a statistically significant and positive effect on operational efficiency ($p < 0.05$), the final model demonstrated strong explanatory power (Adjusted $R^2 = 0.923$). The study concludes that effective budget management practices significantly enhance public university performance, advocating a governance model where ethical stewardship and technical precision converge. Recommendations include institutionalizing budget transparency through open-book practices, strengthening participatory budgeting, reinforcing accountability via performance-linked audits, optimizing control systems with real-time monitoring. Theoretically, the research advances the literature on public financial management by incorporating legislative oversight into models of institutional performance. Empirically, it offers nuanced insights from a fragile and hitherto under-examined context. Methodologically, it contributes through the deployment of triangulated data collection, moderation modelling, and stringent diagnostic validation. The study's implications for public sector governance are profound, advocating for strengthened budgetary management practices to bolster operational outcomes within higher education institutions in post conflict settings such as South Sudan.

Key words: Public Budget Participation, Accounting Theory, Operational Efficiency, Public Universities, South Sudan.

INTRODUCTION

Universities are widely recognized as engines of development and growth due to their capacity to foster research, innovation, and knowledge creation (Bouhajeb et al., 2018). Their role extends beyond academia to influence both public and private sectors, contingent on strong collaboration with governments and industry (Choyubekova et al., 2019). Institutions of higher learning contribute to national development through human capital formation, patent generation, and business incubation (Olo et al., 2021). Public universities, unlike private enterprises, operate under business constraints while serving societal needs. Their core mission includes producing graduates, generating new knowledge, and transforming communities (Comrie, 2021). To fulfill this mission, they require adequate funding, infrastructure, and efficient operations (Wang et al., 2021).

Public universities face multifaceted challenges including financial sustainability, globalization, technological integration, and governance. Their viability depends on efficient spending and resource utilization (Tsou, 2024). Inefficient use of limited resources hampers knowledge production and undermines institutional mandates (Gutierrez et al., 2020). Globalization and massification further strain resources, while ICT and entrepreneurial initiatives remain underfunded. To meet legal and developmental obligations, universities must diversify income sources and minimize operational costs (Olo et al., 2019). Efficient financial management is essential for survival and success in a competitive educational landscape.

The operating expense ratio (OER) is a key metric for assessing institutional efficiency, with a benchmark of 50% or below indicating sound financial management (Faisal et al., 2021). A lower OER reflects streamlined operations and better cost control, enabling strategic investments in academic quality (Kakumba, 2022). While disparities exist, some universities have achieved exemplary ratios: University of Warsaw (48%), Charles University (47%), and University of Porto (49%) (EUA, 2022; EHEA, 2020). These institutions benefit from centralized services, lean administration, and strong national funding (Kosor et al., 2019; Eurostat, 2020). Their success underscores the importance of operational discipline and resource optimization in higher education.

Globally, public universities demonstrate varied levels of operating expense efficiency. In the United States of America, the adjusted operating margin ratio for public universities in 2022 was 4%, marking optimal performance (Wadhwani & Moses, 2023). Canada's public colleges and universities reported an operating expense ratio of approximately 42% in 2019, aligning with the efficiency benchmark of 50% or below (Auditor General of Ontario, 2021). The University of New Hampshire achieved an exceptional ratio of 10.9% in 2021, reflecting superior cost management (Fichtenbaum, 2021). These figures underscore the importance of strategic budgeting and lean operations in achieving financial sustainability. Institutions in North America benefit from robust funding mechanisms and transparent financial reporting systems.

Across Asia and Latin America, several public universities have maintained efficient operating expense ratios due to centralized funding and streamlined administrative models. The University of São Paulo in Brazil reported a ratio of 46% in 2020 (UoSP, 2021; World Bank, 2020), while the University of Malaya in Malaysia maintained a ratio near 48% (UNESCO, 2021; UoM, 2021). The National Autonomous University of Mexico operated with a ratio close to 49% (UNAM, 2021), reflecting effective budget allocation. These institutions benefit from strong government support and cost-effective infrastructure. Their financial models prioritise academic delivery with minimal overhead, enabling them to maintain efficiency while expanding educational services.

Regionally, African public universities show mixed outcomes in operating expense efficiency. While most institutions report ratios above 60%, some have achieved benchmarks below 50% through centralized budgeting and sustainability practices. The University of Free State in South Africa maintained a ratio of 48% between 2015 and 2019 (Serfontein, 2022), and Isa Mustapha Agwai Polytechnic University in Nigeria reported 47% (Adagye et al., 2024). In contrast, the University of Cape Town and Makerere University recorded higher ratios of 68% and 65%, respectively (UCT, 2021; UNESCO, 2021; MU, 2020). The University of Nairobi operated at 60% in 2020 (UoN, 2021). These disparities reflect differences in funding models, governance, and institutional priorities across the continent.

Locally, South Sudan's public universities have struggled with high operating expense ratios, undermining their educational effectiveness. Since independence in 2011, institutions have faced poor infrastructure, underfunding, and staff shortages, compromising teaching quality (Oywak et al., 2019; Tadeo, 2023). Operating expense ratios for fiscal years 2018–2019, 2020–2021, and 2022–2023 stood at 92%, 91.9%, and 85.5%, respectively (Mabiordit, 2018; Lual, 2020; Chol, 2023). These figures reflect inefficient cost management and reliance on unpredictable budget flows (UNESCO, 2023; UNICEF, 2019). Without reform, South Sudanese universities risk contributing minimally to national development. This situation underscores the need to evaluate public budget management practices to improve operational efficiency.

Statement of the Problem

Institutions of higher learning are vital engines of progress in both developed and developing nations, fostering innovation and comprehensive knowledge (Bouhajeb et al., 2018). In South Sudan, despite decades of resilience, public universities face significant challenges in delivering quality education, resulting in impaired operational efficiency (Oywak et al., 2019). The country's poor performance on the U.N. Education Index in 2021 (34.5%) reflects these inefficiencies (Stiftung, 2024). High operating expense ratios - 92%, 91.9%, and 85.5% over recent fiscal years - indicate poor utilisation of financial resource (Mabiordit, 2018; Lual, 2020; Chol, 2023). These inefficiencies stem from flawed prioritisation and resource allocation, undermining transparency and accountability (Nelson & Tolani, 2021). The issue necessitates research into budget management practices and operational efficiency in South Sudanese universities (George & James, 2021). Efficient public resource administration is crucial for national prosperity (Haeruddin et al., 2021).

Existing literature reveals methodological gaps in studying the link between budget management and university efficiency. Eleuwarin and Muslim (2024) lacked census sampling and philosophical grounding, while Almagtomea et al. (2019) excluded educational institutions and triangulated methods. Li and Guo (2022) used purely quantitative methods without cross-sectional analysis. Iyoha (2021) and Alade et al. (2020) omitted philosophical frameworks and triangulation. These limitations highlight the need for a more integrative, pragmatically grounded approach, which the current study adopts. It ensures exhaustive representation of South Sudanese public universities through census sampling and mixed methods.

Comparative analysis of methodologies shows diverse approaches to operational efficiency. Atukunda et al. (2024) used document reviews without sector specificity, while Mutabari & Warui (2023) applied regression analysis without triangulation. Shuaib & Olanrewaju (2020) and Da Silva et al. (2020) relied on descriptive statistics and secondary data, lacking inferential depth. Stanimirovic (2022) used efficiency ratios but missed philosophical and qualitative dimensions. Ballesteros & Bisogno (2022) employed benchmarking with limited methodological plurality. In contrast, the current study uses operating expense ratios within a triangulated, pragmatically anchored framework, offering sector-specific insights.

Unlike prior studies focused on private or non-educational institutions, this research targets public universities in South Sudan using a tailored metric - operating expense ratio. It incorporates census sampling, inferential statistics, and pragmatism to ensure contextual relevance. Research from other countries (Kimani, 2020; Al-Khatib et al., 2023) cannot be directly applied due to contextual differences. Moreover, many studies ignored key budget practices like strategic planning and transparency (Osei-Tutu & Amponsah, 2021; Dlamini & Moyo, 2022). This study fills those gaps, offering a comprehensive analysis of budget management and institutional efficiency (Back et al., 2022).

Research Objective

The effect of public budget participation on operational efficiency of public universities in South Sudan

LITERATURE REVIEW

Theoretical Review

Kaplan and Norton (1996) advanced accounting theory as a means of establishing rigorous standards by which accounting methodologies and procedures might be evaluated, thereby offering a framework to be consistently applied in routine financial practice. This theoretical construct aids in anticipating the outcomes of budgetary decisions, recognising that the budget serves as a strategic planning instrument which provides a structured mechanism for feedback and control over financial operations. Accordingly, it must rest upon sound accounting principles that support the formulation, implementation, and subsequent appraisal of the financial plan (Mohamed et al., 2015). Accounting theory further furnishes the essential foundations for the accurate recording, reporting, and interpretation of financial data. Within the context of public universities, it underpins the preparation of financial statements, budgetary projections, and audit processes, thereby ensuring consistency, comparability, and reliability in financial disclosures - qualities indispensable for assessing institutional efficiency (Sargiacomo & Gomes, 2020). The existing accounting standards and a number of rational rules that constitute accounting guidelines and references are explain by the Accounting theory to better understand and develop sound accounting practices and make effective organizational appraisal, which affects positively on financial information produced by an institution (Adeleke, *et al*, 2018).

The theory of accounting is essential in decision-making as sound practices depend on sound theory, while financial control requires legitimation which made accounting theory becomes a necessity for fruitful functional society through preparation of a sound, comprehensive and inclusive public participatory budget. Accounting theory is a crucial philosophy because it is associated with accounting research as any research without a theory can result into mess of the data and inadequate outcome (Al-Adeem, 2010). Accounting theory is a system that explains the logic behind the existing accounting practices which makes the job of specialists of accounting simple. Thus, accounting theory makes preparation of the public budget simple and easy for budget officers as there must be a logic behind each budget line and amount considered in the public budget preparation (Ram & Tapria, 2019; Unegbu, 2014).

Accounting theory is criticized due to lack of consensus around one acceptable accounting theory, while others dispute existence of accounting theory on earth; though the theory present useful accounting practices and set of standards which is guiding the work of accounting professionals today (Adebayo, et al, 2022). On similar note, others claim that accounting theory doesn't affect financial performance of business organizations and doesn't improve their financial reporting quality and performance (Osho, & Adebambo, 2018). This theory supports public budgetary participation as preparation of a public budget must be based on set procedures and standards which can form a framework of references that can assist in public budget feedback, but must attain legitimacy from public and stakeholders through their representatives from parliament or direct participation during the budget preparation processes.

Empirical Review

Budget participation is widely acknowledged as a vital mechanism within public sector institutions, fostering teamwork, enhancing information exchange, and promoting the alignment of organisational objectives. Owusu et al. (2014) assert that engaging employees in budget formulation clarifies financial goals, reduces ambiguity, and facilitates the coordination of institutional undertakings, thereby improving both individual and organisational performance. In a similar vein, Eleuwarin and Muslim (2024) examined the influence of public participation on the control of school fiscal resources in Makassar City. Their qualitative study, however, found no significant impact of community involvement on financial oversight, suggesting limitations in the effectiveness of participatory budgeting in that context.

Park et al. (2023) explored the implications of direct citizen involvement in budget preparation on the financial health of local governments in South Korea. Employing an explanatory design and secondary qualitative data, the study revealed a deterioration in financial conditions associated with increased public participation. The authors attributed this to inadequate statistical rigour and the absence of essential diagnostic tests, thereby questioning the reliability of their findings. Nonetheless, the study's focus on local government financial capacity offers conceptual relevance to the operational efficiency of public universities. Conversely, Bandiyono (2020) conducted a quantitative investigation in Tangerang City, demonstrating that budget participation significantly enhanced the quality of financial reports. The study also identified internal control mechanisms as a moderating factor that amplified the positive effects of participatory budgeting, although it too lacked methodological breadth by excluding qualitative insights.

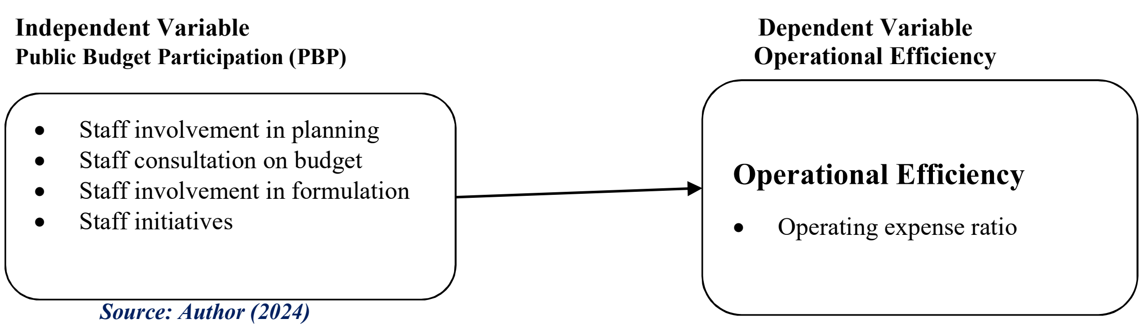
Wardhani et al. (2019) investigated the role of stakeholder engagement and internal control systems in shaping university governance in Indonesia. Grounded in agency theory and utilising structured questionnaires and compound regression analysis, the study found that participatory budgeting and robust internal controls significantly improved governance outcomes. Internal control emerged as the most influential determinant of institutional integrity and management efficacy. While the study underscored the value of public involvement in financial planning as a pillar of Good University Governance (GUG), it focused more on governance structures than on operational performance. Moreover, despite conducting a multicollinearity test, the omission of other diagnostic assessments limited the study's analytical robustness.

Widiawati and Yanuar (2019) posited that budget participation positively influences managerial performance, organisational commitment, and job satisfaction within universities. They argued that effective financial governance is a prerequisite for achieving managerial excellence, thereby linking budget participation to broader institutional efficiency. However, the study's reliance on qualitative methods and its poorly articulated methodology weaken its empirical contribution. Similarly, Fakhrurraji et al. (2019) employed a qualitative case study approach to examine public fund management in Indonesian universities. Their findings highlighted persistent misalignments between budget formulation and strategic planning, leading to inefficiencies and suboptimal financial practices. The absence of quantitative data and performance indicators further constrained the study's evaluative depth. In contrast, the current research aims to adopt a mixed-methods approach to assess public fund utilisation, transparency, and efficiency in South Sudanese public universities, thereby addressing the methodological gaps identified in prior studies and enriching the discourse on financial governance in emerging educational systems.

Conceptual Framework

The interconnection between different research variables is stated below in conceptual framework model. The conceptual framework model elaborated the relationships among explanatory variables that include public budget transparency, public budget participation, public budget accountability, and public budgetary control; while operational efficiency of public universities is considered as the moderator as indicated below.

Figure 1: Conceptual framework



Source: Author (2024)

RESEARCH METHODOLOGY

This study compiled a mixed dataset from both primary and secondary sources, with qualitative data from questionnaires and interviews, and quantitative data from annual university reports (Bryman, 2016). Methodological triangulation was employed to enhance reliability by integrating diverse data types and validating or refuting hypotheses through converging evidence (Heale & Forbes, 2013; Noble & Heale, 2019). Researchers obtained permits from Kenyatta University and NACOSTI before collecting data from five South Sudanese public universities (Dzwigoł & Barosz, 2020; Dzwigol, 2022). The data covered budget management practices, operational spending, and income for the fiscal year 2022–2023. A structured data sheet and approved instruments guided the collection process.

The study employed evocative statistics and interpretative analysis to enhance flexibility across social sciences (Greener & Martelli, 2018). Descriptive statistics such as mean, maximum, minimum, standard deviation, variance, skewness, and kurtosis were used to convert raw data into actionable insights for organizational planning and evaluation (Cooper & Schindler, 2014). Inferential statistics, including Pearson's multiple correlation, regression, and cross-sectional analysis, facilitated exploration of variable relationships to understand causal dynamics (Greener & Martelli, 2018). Qualitative data was numerically coded to assess the association between budget participation and universities' operational efficiency (Hernández et al., 2012; Simister & James, 2020), with interviews and questionnaires compared for validation (Srnka & Koeszegi, 2007; Hochwald et al., 2023). Correlation coefficients quantified the strength and direction of relationships, ranging from +1 (perfect positive) to -1 (perfect negative), with 0 indicating no association (Gogtay & Thatte, 2017). This comprehensive statistical approach supported evidence-based decision-making in public university management (Cooper & Schindler, 2014).

The simple regression analysis was employed to assess the impact of public budget particpation on operational efficiency, modeling how variations in one variable predict changes in another (Bazdaric et al., 2021; Ali & Younas, 2021). Regression served as a diagnostic tool to clarify relationships between dependent and independent variables. Additionally, cross-sectional analysis was used to evaluate operational efficiency across South Sudanese public universities by interpreting data from a subset of the population at a specific time (Zheng, 2015; Wang & Cheng, 2020). The analysis combined descriptive and analytical approaches to examine inefficiencies and their associations with budget practices.

Data Analysis and Results

Descriptive Analysis
Quantitative Analysis

Table 1: Public Budget Participation

Public Budget Participation (PBP)	SA	A	NS	D	SDA	M	S.D.
Finance and personnel staff, College Deans and Head of Departments of the university have been always given right of access to budget information during preparation and after approval of the university budget.	60.0%	40.0%	0.0%	0.0%	0.0%	4.60	0.55
Finance and personnel staff, College Deans and Head of Departments of the university have been always given right to be consulted in budgeting processes during the university budget preparation on annual basis.	60.0%	40.0%	0.0%	0.0%	0.0%	4.60	0.55
Finance and personnel staff, College Deans and Head of Departments of the university have been always given right of being involved in budgeting processes	60.0%	20.0%	0.0%	20.0%	0.0%	4.00	1.22

during preparation of the budget.							
Finance and personnel staff, College Deans and Head of Departments of the university have been always given right to initiate and allow to propose projects and programmes during university budgeting processes.	40.0%	40.0%	0.0%	20.0%	0.0%	3.80	1.64
PBP Average Score	60.0%	30.0%	0.0%	10.0%	0.0%	**4.25**	**1.14**

Source: Field Data (2025).

The quantitative findings in Table 1 indicate a strong perception of inclusive budget participation within South Sudanese public universities. The highest agreement was recorded for access to budget information, with 60% of respondents strongly agreeing and 40% agreeing (M = 4.60, SD = 0.55). Identical results were found for stakeholder consultation during annual budget preparations, suggesting institutionalised practices. However, perceptions of active involvement were less consistent, with 20% disagreeing (M = 4.00, SD = 1.22), and the lowest score was observed for empowerment to propose projects (M = 3.80, SD = 1.64), indicating variability across institutional contexts (Bryson, Crosby, & Bloomberg, 2014).

The composite score for Public Budget Participation was (M = 4.25, SD = 1.14), reflecting high perceived access and consultation, but comparatively lower and uneven perceptions of involvement and empowerment. These results suggest that while universities have made commendable efforts to institutionalise participatory budgeting, deeper engagement remains limited to senior stakeholders. The higher standard deviations highlight disparities in participatory experiences, pointing to the need for inclusive governance mechanisms (Fung, 2006). Strengthening bottom-up contributions and broadening participatory rights across departments and hierarchical levels would promote a more equitable and effective budgeting framework (Arnstein, 1969).

Qualitative Findings

Qualitative responses from five public universities in South Sudan reveal consistent and affirmative practices of public budget participation, particularly among senior academic and administrative stakeholders. Thematic analysis identified high staff involvement and initiative inclusion, with Deans, Heads of Departments, and finance personnel actively engaged in budget preparation and consultation through formal structures such as the Deans' Board, budget committee, and University Council (Bryson et al., 2014). Respondents confirmed that participation includes tangible contributions, such as project proposals initiated by academic units and faculty inclusion in budgeting committees. Participant narratives - e.g., *"all budget processes are undertaken through the Dean's board and council" (Participant 1)* and *"they are part and parcel of the budget preparation" (Participant 5)* - underscore the procedural and substantive nature of engagement. However, this participatory culture appears concentrated at higher institutional levels, with limited involvement from junior academic or support staff, suggesting a stratified model of inclusion (Fung, 2006). While the structural framework for participation is robust, its reach remains uneven, potentially undermining broader democratic engagement. These findings highlight the need for more inclusive mechanisms to ensure equitable representation across all university tiers (Arnstein, 1969).

Integrated Interpretation

The integration of quantitative and qualitative data reveals a coherent and affirming picture of public budget participation within South Sudanese universities, highlighting structured involvement of finance staff, College Deans, and Heads of Departments across budgeting stages. Survey responses confirmed strong consensus on access to budget information, consultation, and contribution rights, while qualitative narratives underscored the procedural and cultural embedding of inclusivity through formal bodies like the Deans' Board and University Council (Bryson, Crosby, & Bloomberg, 2014). Academic units were found to initiate budget proposals, reflecting substantive engagement. However, both data strands indicate that participation is largely concentrated among senior staff, with limited access for junior or non-academic personnel, suggesting stratified inclusivity (Fung, 2006). This marginalisation risks undermining democratic budgeting ethos. The findings advocate for broader stakeholder engagement through capacity-building, transparent feedback loops, and bottom-up proposals. Theoretically, they affirm that effective participation depends on organisational culture and governance dynamics, not merely policy adoption (Denhardt & Denhardt, 2000). Thus, while participatory infrastructure is functional, its reach must be expanded for equitable representation.

Operational Efficiency - Descriptive Statistics Summary

This section outlines the total income, overall operational expenditures, and Operating Expense Ratios (OER) for five public universities in South Sudan. The data highlights notable variations in funding levels and expenditure trends across institutions, with the majority of universities demonstrating substantial operational cost pressures.

In this case, the Operating Expenses Ratio (OER) was calculated using the standard formula:

$$\mathbf{OER} = \frac{\textbf{Total Operating Expenses}}{\textbf{\textit{Total Income}}}$$

The descriptive statistics summarized the financial data of five public universities in South Sudan, focusing on total income, operating expenses, and efficiency ratios. This overview highlights disparities in funding and spending patterns across institutions. It provides a foundation for evaluating fiscal sustainability and operational effectiveness.

Table 2: Descriptive Statistics Summary

Metric	Mean	Median	Minimum	Maximum	Standard Deviation
Total Income	5,510,152,190.83	3,321,405,000.00	1,751,490,849.00	12,146,300,579.15	4,095,060,393.92
Total OE	4,923,779,431.96	3,314,405,000.00	1,739,329,685.00	9,868,275,440.79	3,327,982,317.65
OER	0.9431	0.9931	0.8125	0.9979	0.0801

Source: Field Data (2025)

The average Operating Expense Ratio (OER) of 0.9431 across South Sudan's public universities far exceeds the recommended benchmark of 0.50, indicating that nearly all institutional income is consumed by operational costs, leaving limited fiscal space for strategic investments in infrastructure, research, or innovation. The low standard deviation (SD = 0.0801) suggests uniform financial practices shaped by centralized governance and standardised budgetary frameworks. While this reflects consistent fiscal management, it also signals financial vulnerability and restricted long-term growth potential (Musah & Gariba, 2020; Ogbogu, 2019). The uniformity may stem from disciplined planning and reliance on predictable government funding, yet it underscores the need for expenditure reform to support sustainability and academic excellence.

Inferential Statistics

Pearson Correlation Analysis

Table 3: Pearson Correlation Matrix

Variable	OE	PBP
OE	1.000	0.805*
PBP		1.000

Note. *p* < 0.05 (2-tailed).
OE = Operational Efficiency; PBP = Public Budget Participation.

Table 3 reveals strong, positive, and statistically significant correlations between operational efficiency and three key dimensions of public budget management: participation (r = 0.805, p < .05), transparency (r = 0.810, p < .05), and accountability (r = 0.734, p < .05), with transparency showing the highest impact, underscoring the importance of accessible financial information. Conversely, control systems (r = 0.128, p > .05) and legislative oversight (r = 0.047, p > .05) showed weak, non-significant relationships, suggesting underutilisation in current university operations. Strong inter-variable correlations were found between transparency and accountability (r = 0.800, p < .05), and participation and transparency (r = 0.439, p < .05), indicating interconnected budget practices. However, negative correlations between transparency and control systems (r = –0.347, p < .05) and accountability and control systems (r = –0.269, p > .05) suggest potential misalignments. These findings highlight the need for reforms and capacity-building to enhance the effectiveness of control and oversight mechanisms (Musah & Gariba, 2020; Ogbogu, 2019).

7.2.3 Simple Regression Analysis.

Table 4: Consolidated Linear Regression Results and Model Fit Summary

Hypotheses	Operational Efficiency	β	SE	t	p
	Intercept	-0.4311	0.0868	-4.97	0.001
H_{01}	Public budget participation	0.1450	0.0222	6.54	0.001

Model Fit Statistics

Statistic	Value
R	0.965
R^2	0.931
Adjusted R^2	0.925
F-statistic	153.00
Prob > F	0.000
AIC (Akaike Information Criterion)	-159
BIC (Bayesian Information Criterion)	-147
RMSE (Root Mean Square Error)	0.0440

Source: Field Data (2025).

The regression analysis revealed a statistically significant model {$F = 153.00$, $p < 0.05$}, demonstrating that public budget management practices are strong predictors of operational efficiency in South Sudanese public universities. The model explained 92.5% of the variance in operational efficiency ($R^2 = 0.931$; Adjusted $R^2 = 0.925$), supported by excellent fit statistics including a high correlation coefficient ($R = 0.965$), low RMSE (0.0440), and favourable AIC (–159) and BIC (–147) values, confirming its adequacy and parsimony (Musah & Gariba, 2020; Ogbogu, 2019). Individually, public budget participation ($\beta = 0.1450$, $t = 6.54$, $p < 0.05$), which demonstrated significant positive effects on operational efficiency. These results underscore the importance of inclusive engagement, timely financial disclosure, institutional accountability, and robust internal controls in driving performance. Collectively, the findings affirm that well-regulated and participatory budgetary practices are essential for enhancing institutional effectiveness and sustainability (Denhardt & Denhardt, 2000).

Results Discussion

This study examined the influence of public budget participation on the operational efficiency of public universities in South Sudan. Participatory budgeting is widely acknowledged as a strategic governance tool that fosters transparency, accountability, and collective ownership of financial decisions. Within the university context, the inclusion of academic staff, administrative personnel, and government representatives in budget formulation and execution is posited to enhance institutional clarity, align priorities, and improve coordination. The empirical findings, derived from multiple regression analysis ($\beta = 0.1450$, $t = 6.54$, $p < 0.05$), revealed a positive and statistically significant relationship between budget participation and operational efficiency, thereby leading to the rejection of the null hypothesis. These results affirm that inclusive budgeting practices contribute to improved service delivery, administrative cohesion, and optimal resource utilisation, particularly in public sector institutions grappling with governance and capacity constraints.

The study's findings are consistent with the work of Wardhani et al. (2019), who demonstrated that stakeholder involvement in budgeting significantly enhanced university governance in Indonesia. Although their focus was on governance rather than operational efficiency, their conclusions imply that participatory budgeting fosters sound institutional management, which indirectly supports efficient operations. Similarly, Widiawati and Yanuar (2019) found that budget participation positively influenced managerial performance, organisational commitment, and job satisfaction—factors closely tied to operational outcomes. The present study builds upon these insights by employing a more rigorous methodology, incorporating both primary and secondary data, and applying inferential statistical techniques to substantiate the link between participatory budgeting and operational efficiency. Bandiyono (2020) further supports this view, noting that participatory budgeting enhances the quality of financial reporting, although his study lacked diagnostic testing and focused solely on quantitative data. In contrast, the current research contextualises these financial improvements within a broader operational framework, thereby offering a more comprehensive understanding of institutional performance.

Conversely, Eleuwarin and Muslim (2024) reported that public participation did not significantly affect financial control in high schools in Makassar City, Indonesia—a finding limited by its qualitative design and focus on secondary education. Park et al. (2023) similarly observed that citizen involvement in budget preparation adversely impacted the financial health of local governments in South Korea, though their study suffered from methodological weaknesses and lacked relevance to higher education institutions. Fakhrurraji et al. (2019) highlighted the challenges of budget formulation in Indonesian universities, attributing inefficiencies to poor strategic and financial planning. While their study underscored the difficulties of participatory budgeting, the current research advances the discourse by quantifying its positive impact on operational outcomes. In sum, the findings underscore the critical role of inclusive budgeting in enhancing institutional efficiency, particularly within the evolving governance landscape of South Sudan, and contribute meaningfully to the literature on participatory public sector management.

Conclusion

This study examined how public budget management practices affect operational efficiency in South Sudanese public universities, with a focus on the moderating role of legislative oversight. Using multiple regression, moderation testing, and slope diagnostics, the findings provided empirical insights into financial governance and institutional performance. Public budget participation was found to significantly enhance operational efficiency. Involving academic, administrative, and financial stakeholders in budget formulation and execution fosters institutional cohesion and ownership of financial decisions. This inclusive approach improves alignment between strategic goals and resource allocation. Stakeholder engagement clarifies budgetary objectives and reduces implementation challenges. The study highlights participatory financial governance as a key driver of responsive and effective institutions. These conclusions offer valuable guidance for improving higher education management.

Recommendations

The study revealed that public budget participation significantly enhances operational efficiency in public universities. Based on this, practical and policy recommendations were proposed to improve stakeholder engagement and institutional performance. Universities should involve faculty, staff, and students in budget formulation, execution, and monitoring to promote accountability and resource optimization. Transparent practices like timely financial disclosures and open access to budget documents are essential. Participatory budgeting fosters ownership, aligns fiscal decisions with institutional goals, and strengthens service delivery. At the policy level, government agencies should institutionalise inclusive budgeting frameworks and amend regulations to mandate public consultations. Advisory committees with diverse representation should be established to reflect varied development needs. These reforms aim to embed transparency and inclusivity in university financial governance. Ultimately, they support improved operational efficiency across South Sudanese public universities.

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