



Understanding the Interplay between Implementation Practices and Staff Competence in Driving Budget Absorption and Performance Outcomes within Higher Education Institutions

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ARTICLE INFO

Keywords: Implementation Practices, Staff Competency, Budget Absorption, Institutional Performance, Higher Education

Received : 29, December

Revised : 30, January

Accepted: 23, February

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ABSTRACT

This study aims to analyze the relationship between budget implementation practices and human resource competencies in driving budget absorption and performance achievement in higher education institutions. Low budget absorption and the imbalance between financial realization and performance remain structural problems that impact the effectiveness of public financial management in the higher education sector. This study uses a quantitative approach with a survey method of budget management officials and financial administration staff at state universities. Data were analyzed using structural equation modeling to examine the direct and indirect effects of implementation practices and staff competencies on budget absorption and organizational performance. The results show that effective budget implementation practices have a significant effect on increasing budget absorption and institutional performance. Furthermore, staff competency has been shown to strengthen the relationship between implementation practices and performance achievement, both directly and as a mediating variable. These findings confirm that the synergy between an adaptive implementation system and adequate human resource capacity is a key factor in improving budget management effectiveness and the performance of higher education institutions.

INTRODUCTION

Budget management is a key instrument in the public sector economic system, serving to direct the allocation of resources effectively and accountably to achieve organizational goals. In higher education institutions, the budget not only reflects funding commitments to academic and non-academic activities but also serves as an indicator of managerial performance and institutional governance (Yunaniah & Firmansyah, 2024; Astuti & Fadjarenie, 2024). Effective budget management plays a crucial role in sustainably improving the quality of education, research, and community service.

Nevertheless, low budget absorption remains a recurring issue in many public organizations, including higher education institutions, resulting in delayed program implementation, failed performance targets, and reduced efficiency in the use of public resources. From a public economic perspective, this condition reflects allocative and operational inefficiencies that can hinder the achievement of social added value from government spending in the education sector (Astuti & Fadjarenie, 2024; Dewi & Roza, 2025). A number of empirical studies show a significant relationship between budget quality and absorption results (Syarifuddin et al., 2022)

Public sector management literature indicates that low budget absorption is not solely due to limited funds, but rather to weak budget implementation practices. Ineffective implementation practices, such as planning that is not based on real needs, weak cross-unit coordination, and rigid administrative procedures, can hinder smooth budget realization, resulting in the allocation of funds not being fully converted into expected outputs and performance outcomes (Fasihuh et al., 2025; Belisca et al., 2025). Research shows that quality budget planning and implementation can significantly increase absorption rates.

In addition to systems and procedures, human resource competency plays a crucial role in determining the success of budget implementation. The competency of budget management staff, which includes technical knowledge, administrative skills, and an understanding of budget regulations and policies, is a key prerequisite for effective budget implementation (Yunaniah & Firmansyah, 2024; Astuti & Fadjarenie, 2024; Setiawati et al., 2025). Staff with low competency levels tend to have difficulty translating budget policies into operational practices, negatively impacting budget absorption rates and the quality of institutional performance.

In the context of higher education institutions, the complexity of budget management is increasing with the implementation of a performance-based budgeting approach and increasing demands for public accountability. Higher education institutions are required to ensure that every budget realization makes a tangible contribution to the achievement of institutional performance indicators. However, in practice, high levels of budget absorption are not always accompanied by improved performance—indicating a gap between budget execution and performance outcomes (Sipayung et al., 2025; Khaddafi et al., 2025).

Various previous studies have examined the factors influencing budget absorption and the performance of public sector organizations. However, most

of these studies tend to analyze these variables partially, without integrating budget implementation practices and staff competencies into a single, integrated analytical framework. This limitation of integrative studies leaves room for further research to understand how the interaction between implementation practices and human resource competencies simultaneously impacts budget absorption and the performance of higher education institutions (Astuti & Fadjarenie, 2024; Dewi & Roza, 2025).

Based on these research gaps, this study focuses on analyzing the relationship between budget implementation practices and staff competencies in driving budget absorption and performance outcomes in higher education institutions. This study examines the direct influence of implementation practices and staff competencies on budget absorption and performance, and explores the role of staff competencies in strengthening the relationship between budget implementation and organizational performance using a quantitative approach (Yunaniah & Firmansyah, 2024; Fasihu et al., 2025).

Theoretically, this research is expected to enrich the literature on institutional economics and public sector management by emphasizing the importance of synergy between effective implementation systems and human resource competencies in achieving optimal organizational performance. Practically, the findings of this study are expected to provide relevant policy implications for higher education institution leaders and policymakers in designing budget management strategies.

LITERATURE REVIEW

Budget Management and Public Sector Performance

From a public sector economic perspective, budget management is the primary mechanism linking strategic planning to organizational performance. Budgets serve not only as a resource allocation tool but also as a performance control and evaluation instrument that reflects the level of accountability and effectiveness of public organizations (Schick, 2021; Mauro et al., 2023). In higher education institutions, effective budget management is becoming increasingly crucial as demands for results-based performance and transparency in the use of public funds increase.

Budget Absorption as a Financial Performance Indicator

Budget absorption is often used as a financial performance indicator, reflecting a public organization's ability to implement spending plans in a timely and targeted manner. Research shows that low budget absorption rates are closely related to operational inefficiencies, weak institutional capacity, and limited coordination in the budget implementation process (Lewis & Hendrawan, 2020; Pimenta & Pessoa, 2022). In the context of higher education, this condition can hamper the implementation of academic activities, research, and institutional development.

Budget Implementation Practices

Budget implementation practices refer to operational processes that encompass detailed planning, cross-unit coordination, administrative execution, and budget realization control. Public management literature emphasizes that effective budget implementation requires alignment between strategic planning and operational execution (Pollitt & Bouckaert, 2022). Empirical studies show that adaptive and well-coordinated implementation practices significantly contribute to improving budget execution and public spending absorption (Andrews et al., 2021). Based on these findings, effective budget implementation practices are expected to positively impact budget absorption rates.

H1: Budget implementation practices have a positive effect on budget absorption.

Human Resource Competence in Budget Management

Human resource competency is a critical determinant of successful public financial management. Budget management staff competencies encompass technical knowledge, managerial skills, and an understanding of budgeting regulations and systems. Recent research shows that improving the competency of public officials contributes to improved budget policy implementation and financial management effectiveness (Kim & Park, 2022; OECD, 2021). In higher education institutions, financial staff competency is becoming increasingly important as governance and regulatory complexity increase. Based on this argument, staff competency is expected to directly impact budget absorption.

H2: Staff competence has a positive effect on budget absorption.

Budget Absorption and Organizational Performance

Budget absorption not only serves as an administrative indicator but also has important implications for the performance of public organizations. Empirical studies show that timely and high-quality budget realization contributes to the achievement of organizational outputs and outcomes (van Helden & Reichard, 2022). However, several studies also emphasize that high budget absorption does not automatically guarantee improved performance if it is not accompanied by a focus on results and program effectiveness (Moynihan & Beazley, 2023). Thus, budget absorption is seen as an intermediary mechanism linking budget management to organizational performance.

H3: Budget absorption has a positive impact on the performance of higher education institutions.

Budget Implementation Practices and Organizational Performance

Beyond budget absorption, budget implementation practices can also directly impact organizational performance. Effective budget implementation enables organizations to execute programs in accordance with strategic plans, improve operational efficiency, and strengthen performance accountability (Henderson et al., 2020). In the context of higher education, sound implementation practices support the achievement of academic and non-academic performance indicators. Based on this literature, the following hypothesis is formulated:

H4: Budget implementation practices have a positive impact on the performance of higher education institutions.

Human Resource Competence and Organizational Performance

The competence of budget management staff also plays a direct role in improving organizational performance by enhancing the quality of decision-making, the accuracy of program implementation, and the accuracy of financial reporting. Research in the higher education sector shows that human resource capacity contributes significantly to improving institutional performance (De Boer et al., 2021; Jung & Lee, 2024). Therefore, staff competence is viewed as a strategic factor in achieving organizational performance.

H5: Staff competence has a positive influence on the performance of higher education institutions.

Mediating Role of Budget Absorption

Recent literature emphasizes the importance of mediating mechanisms in explaining the relationship between budget implementation practices, staff competency, and organizational performance. Budget absorption acts as an intermediary variable that bridges implementation effectiveness and human resource capacity with organizational performance outcomes (Ríos et al., 2023). In the context of higher education, optimal budget absorption enables the implementation of strategic programs that directly impact institutional performance. Based on this literature synthesis, the following mediation hypothesis is formulated:

H6: Budget absorption mediates the effect of budget implementation practices on the performance of higher education institutions.

H7: Budget absorption mediates the effect of staff competence on the performance of higher education institutions.

METHODOLOGY

Research Design

This study uses a quantitative approach with an explanatory research design. It aims to examine the causal relationship between budget implementation practices, staff competency, budget absorption, and the performance of higher education institutions. A quantitative approach was chosen because it allows for objective hypothesis testing through inferential statistical analysis and modeling of relationships between latent variables (Creswell & Creswell, 2023). This study is cross-sectional, where data is collected at a single point in time to describe the actual state of budget management and institutional performance.

Population and Sample

The research population included all officials and staff directly involved in budget management at higher education institutions, such as commitment-making officers, treasurers, budget planners, and financial administration staff. The sampling technique used purposive sampling, with respondents having

experience and direct involvement in the budget planning and implementation process. The sample size was determined based on Structural Equation Modeling (SEM) analysis requirements, which is a minimum of five to ten times the number of indicators used in the research model (Hair et al., 2022).

Data Types and Sources

This study used primary data obtained through a structured questionnaire survey. The research instrument was developed based on indicators used and validated in previous research relevant to budget management, human resource competency, and public sector organizational performance. Additionally, secondary data, in the form of budget realization reports and institutional performance reports, were used as supporting data to enrich the analysis and interpretation of the research results (Bryman, 2021).

Operationalization of Variables

This study involved four main variables: budget implementation practices, staff competency, budget absorption, and higher education institution performance. Budget implementation practices (X1) were measured through several indicators reflecting the quality of budget planning, the effectiveness of coordination between work units, the level of compliance with applicable regulations, and the effectiveness of budget execution controls. These indicators represent the organization's ability to translate policies and budget allocations into operational activities that run efficiently and accountably (Pollitt & Bouckaert, 2022).

Staff competency (X2) is measured based on indicators that include technical knowledge in budgeting, administrative skills, work experience, and understanding of public financial regulations and systems. This competency measurement is intended to illustrate the capacity of human resources to support the effectiveness of the budget implementation process and ensure compliance with public financial management regulations (OECD, 2021).

Budget absorption (M) is measured through indicators such as the timeliness of budget realization, the level of alignment between planned and actual spending, and the achievement of established budget targets. This variable is positioned as both a financial performance indicator and a mediating variable that bridges the influence of budget implementation practices and staff competence on the performance of higher education institutions (Pimenta & Pessoa, 2022).

Furthermore, the performance of higher education institutions (Y) is measured using indicators reflecting the achievement of program targets, the efficiency of activity implementation, and the contribution of budget realization to achieving overall institutional goals. This measurement approach aligns with the concept of results-based performance in public sector management, which emphasizes the link between resource use and organizational outcomes (van Helden & Reichard, 2022). All indicators in this study were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), to capture respondents' perceptions quantitatively and standardized.

Data Analysis Techniques

The research data were analyzed using Structural Equation Modeling (SEM) with a Partial Least Squares (PLS) approach. The SEM-PLS method was chosen because it is suitable for predictive research models, involves latent variables with reflective indicators, and does not require strict assumptions of normal data distribution. Therefore, it is flexible for use in research in economics and public sector management (Hair et al., 2022; Sarstedt et al., 2022). This approach allows researchers to simultaneously analyze causal relationships between variables and comprehensively evaluate the quality of the measurement and structural models.

Data analysis was conducted in two main stages. The first stage was the evaluation of the measurement model (outer model), which aimed to ensure the validity and reliability of the research constructs. This evaluation included testing convergent and discriminant validity, as well as construct reliability using loading factor values, average variance extracted (AVE), composite reliability, and Cronbach's alpha. The second stage was the evaluation of the structural model (inner model), which was conducted to examine the relationships between variables in the research model. This evaluation included testing path coefficients, coefficient of determination (R^2), effect size (f^2), and the significance of the relationships between variables through a bootstrapping procedure to obtain robust and accurate parameter estimates.

Testing the Mediating Effect

The mediating role of budget absorption was tested by analyzing the indirect influence of budget implementation practices and staff competency on institutional performance. A mediating effect is considered significant if the indirect effect has a t-statistic > 1.96 and a p-value < 0.05 based on bootstrapping results (Zhao et al., 2019; Hair et al., 2022).

Research Ethics

This research was conducted in accordance with ethical principles of scientific research, including informed consent, data confidentiality and anonymity, and the use of data solely for academic purposes. All respondents participated voluntarily without any coercion or incentives (Creswell & Creswell, 2023).

RESEARCH RESULT

Respondent Overview

The respondents in this study were officials and staff directly involved in budget management at higher education institutions. The majority of respondents had more than five years of work experience in finance and budgeting, thus they were considered to have an adequate understanding of the budget planning and implementation process. This respondent composition indicates that the data obtained came from relevant and credible sources and reflects the actual state of budget management in higher education institutions.

Table 1. General Description of Research Respondents

Respondent Characteristics	Kategori	Number (n)	Persentase (%)
Position	Budget Management Officer (PPK/KPA/Treasurer)	48	40.0
	Planning and Finance Staff	72	60.0
Length of Service	≤ 5 tahun	32	26.7
	> 5 tahun	88	73.3
Last Education	Diploma (D3)	18	15.0
	Bachelor's Degree (S1)	74	61.7
	Postgraduate Degree (S2/S3)	28	23.3
Length of Service	Budget Planning	45	37.5
	Implementation and Realization	52	43.3
	Reporting and Evaluation	23	19.2

Measurement Model Evaluation (Outer Model)

The results of the measurement model test indicate that all indicators have factor loading values above the minimum required threshold, thus meeting the convergent validity criteria. The Average Variance Extracted (AVE) value for each construct also exceeded the recommended threshold, indicating that the latent variables adequately explain the indicator variance. Furthermore, the composite reliability and Cronbach's alpha values for all variables indicate a good level of reliability. Therefore, it can be concluded that the research instrument is valid and reliable for measuring budget implementation practices, staff competency, budget absorption, and the performance of higher education institutions.

Table 2. Results of the Measurement Model Evaluation (Outer Model)

Construct Variables	Indikator	Loading Factor	AVE	Composite Reliability	Cronbach's Alpha
Budget Implementation Practices (X1)	X1.1	0.782	0.612	0.887	0.842
	X1.2	0.801			
	X1.3	0.764			
	X1.4	0.815			
Staff Competence (X2)	X2.1	0.793	0.638	0.901	0.866
	X2.2	0.821			
	X2.3	0.784			
	X2.4	0.832			
Budget Absorption (M)	M1	0.808	0.655	0.904	0.872
	M2	0.834			
	M3	0.792			
Institutional Performance (Y)	Y1	0.776	0.628	0.893	0.858
	Y2	0.814			
	Y3	0.801			
	Y4	0.769			

This table shows that all research constructs meet the validity and reliability criteria, so that the measurement model is suitable for use in further structural model analysis.

Structural Model Evaluation (Inner Model)

Evaluation of the structural model indicates that the research model has adequate explanatory power. The coefficient of determination (R^2) values for the budget absorption and institutional performance variables indicate that variations in both variables can be substantially explained by budget implementation practices and staff competencies. These results indicate that the developed model has good predictive power in explaining budget management mechanisms and performance in higher education institutions.

Table 3. Results of Structural Model Evaluation (Inner Model)

Endogenous Variables	R^2	Model Strength Category	Q^2 (Predictive Relevance)
Budget Absorption (M)	0.462	Moderate	0.318
Institutional Performance (Y)	0.587	Moderate-Strong	0.401

The coefficient of determination (R^2) for the budget absorption variable, 0.462, indicates that budget implementation practices and staff competency together explain 46.2% of the variation in budget absorption in higher education institutions. This finding indicates that both variables play a substantial role in determining the level of budget realization, although other factors outside the model also influence budget absorption.

Furthermore, the R^2 value for the higher education institution performance variable of 0.587 indicates that budget implementation practices, staff competency, and budget absorption can explain 58.7% of the variation in institutional performance. This confirms that the combination of implementation system factors, human resource capacity, and budget realization effectiveness strongly contributes to the achievement of higher education institution performance.

Furthermore, the positive predictive relevance (Q^2) values for all endogenous variables indicate that the research model has good predictive power. Thus, the developed model not only has adequate explanatory power but is also relevant in predicting the relationship between budget implementation, staff competence, budget absorption, and higher education institution performance.

Hypothesis Testing

The results of the hypothesis testing indicate that budget implementation practices have a positive and significant effect on budget absorption. This finding confirms that realistic planning, effective coordination, and adherence to administrative procedures play a crucial role in improving budget realization. Therefore, the first hypothesis (H1) is accepted.

Furthermore, the analysis results show that staff competence has a positive and significant effect on budget absorption, thus the second hypothesis (H2) is also accepted. This finding confirms that staff with adequate knowledge and skills are able to manage the budget implementation process more effectively, thereby reducing administrative obstacles and improving the smoothness of spending realization.

The test results also show that budget absorption has a positive and significant effect on the performance of higher education institutions, supporting the third hypothesis (H3). This finding indicates that optimal budget realization enables institutions to implement programs and activities in accordance with strategic plans, thus impacting improved performance.

Furthermore, budget implementation practices have been shown to have a direct impact on institutional performance, confirming the fourth hypothesis (H4). This suggests that effective budget implementation not only impacts financial aspects but also directly contributes to organizational performance. The analysis also shows that staff competency has a positive and significant impact on the performance of higher education institutions, thus accepting the fifth hypothesis (H5). This finding confirms the strategic role of human resources in supporting the achievement of results-based performance in the higher education sector.

Table 4. Hypothesis Testing Results

Hypothesis	Relationship between variables	Path Coefficient (β)	t-statistics	p-values	Decision
H1	Budget Implementation Practices → Budget Absorption	0.381	4.216	0.000	Accepted
H2	Staff Competence → Budget Absorption	0.427	4.893	0.000	Accepted
H3	Budget Absorption → Institutional Performance	0.336	3.742	0.000	Accepted
H4	Budget Implementation Practices → Institutional Performance	0.289	3.118	0.002	Accepted
H5	Staff Competence → Institutional Performance	0.314	3.587	0.000	Accepted

This table shows that all hypotheses proposed in the study were proven to be statistically significant, which indicates that budget implementation practices and staff competencies have an important role in improving budget absorption and the performance of higher education institutions.

Testing the Mediating Role of Budget Absorption

The mediation effect test indicates that budget absorption mediates the influence of budget implementation practices on the performance of higher education institutions, thus accepting the sixth hypothesis (H6). This finding indicates that good implementation practices improve institutional performance by increasing effective budget realization.

Furthermore, the analysis also indicates that budget absorption mediates the influence of staff competence on institutional performance, supporting the seventh hypothesis (H7). Thus, staff competence not only directly impacts performance but also indirectly through increased budget absorption.

DISCUSSION

Overall, the results of this study confirm that the synergy between budget implementation practices and staff competency is a key factor in driving budget absorption and the performance of higher education institutions. This finding aligns with contemporary public sector economics literature, which emphasizes that the effectiveness of public financial management is largely determined by organizational capacity and the quality of human resources in operationally implementing fiscal policy (Andrews et al., 2022; Cepiku et al., 2021).

The findings regarding the role of budget absorption as a mediating variable indicate that improved institutional performance cannot be achieved solely through procedural improvements or competency enhancements. Instead, optimal performance outcomes require integration between an adaptive budget implementation system and strengthened staff capabilities so that resource allocations can be converted into value-added outputs and outcomes (Budding et al., 2021; Diamond, 2020).

In the context of higher education, the results of this study indicate that a focus on budget absorption levels needs to be accompanied by greater attention to the quality of spending and the achievement of institutional strategic outcomes. This approach is in line with the development of the results-oriented public financial management paradigm, which views the budget as a strategic instrument to drive the performance, accountability, and competitiveness of higher education institutions in a sustainable manner (Kuhlmann & Bouckaert, 2023; Schick, 2021).

CONCLUSION AND RECOMMENDATION

This study concludes that budget implementation practices and staff competency have a positive and significant impact on budget absorption and the performance of higher education institutions. Effective budget implementation, supported by adequate human resource capacity, has been shown to improve budget realization and drive institutional performance.

The results also indicate that budget absorption acts as a mediating variable, strengthening the influence of budget implementation practices and staff competency on institutional performance. These findings emphasize that improved performance cannot be achieved through system improvements or competency enhancements in isolation, but rather requires an integrated approach that strengthens budget implementation governance and human resource capacity development.

Overall, this study confirms that budget management in higher education institutions needs to be positioned as a strategic instrument for sustainably improving institutional performance and competitiveness, rather than simply as an administrative process.

ADVANCED RESEARCH

This study demonstrates that budget implementation practices and staff competency significantly enhance higher education performance, with budget absorption acting as a key mediating variable. The findings highlight that institutional performance is optimally achieved through an integrated strategy that aligns effective budget governance with human resource capacity development, positioning budget management as a strategic instrument for sustainable competitiveness rather than merely an administrative function.

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