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Governance Drivers of Financial Performance and Institutional Sustainability in Muhammadiyah Universities

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ABSTRACT

This study analyzes how core governance practices influence financial performance and long-term institutional sustainability in Muhammadiyah universities in Indonesia. The research focuses on Planning (PL), Transparency (TP), Accountability (AB), Supervision (SV), Effectiveness (EF), and Efficiency (EY), and examines their direct and indirect relationships with Financial Performance (FP) and Financial Sustainability (FS). Data were collected from 153 respondents representing financial managers and institutional leaders across the Muhammadiyah university network. Structural Equation Modeling (SEM) was employed to assess the proposed relationships. The results show that PL, TP, AB, SV, and EF have positive and statistically significant effects on FP, which in turn strengthens institutional FS. FP functions as an important mediating mechanism linking governance practices to sustainability outcomes. Efficiency, however, does not demonstrate a significant contribution to FP, suggesting that cost control alone is insufficient to secure long-term institutional stability. The findings indicate that institutional sustainability in higher education depends not only on financial outcomes, but also on the quality of governance structures that guide planning, reporting, oversight, and program implementation. By situating financial governance within a broader institutional sustainability perspective, this study contributes to discussions on sustainable development in higher education and offers practical implications for strengthening governance systems in private university networks.

1. INTRODUCTION

Sustainability reporting has expanded the traditional function of financial accounting by incorporating economic, social, and environmental dimensions into institutional disclosure. In higher education, particularly within Universitas Muhammadiyah in Indonesia, such reporting does not merely present financial figures; it also reflects how institutions organize resources, pursue strategic objectives, and demonstrate responsibility to stakeholders. In this sense, sustainability reporting operates as a governance mechanism through which long-term institutional direction becomes visible. Financial performance (FP), therefore, is not only an assessment of resource utilization but also a basis for sustaining institutional continuity. This perspective corresponds with the principles of good financial governance, which are grounded in Planning (PL), Transparency (TP), Accountability (AB), Supervision (SV), Effectiveness (EF), and Efficiency (EY).

Within this framework, accountability signifies the obligation to justify decisions, activities, and outcomes to both internal and external stakeholders through systematic and verifiable reporting [1]. Supervision functions as a control mechanism designed to ensure that implementation aligns with established plans and regulatory standards, while strengthening internal oversight structures. Transparency requires that financial information be disclosed accurately, promptly, and in a manner accessible to those affected by institutional decisions. Despite the existence of these governance principles, practical limitations remain. In many private universities, financial management units encounter constraints in technical expertise and institutional capacity, which may result in weak budgeting practices, inappropriate allocation of funds, and underutilization of available resources. Observations within Universitas Muhammadiyah indicate that fundamental accounting procedures—such as journaling, posting, and maintaining subsidiary records—are not consistently applied in accordance with organizational guidelines. These inconsistencies reduce the reliability of financial reporting, thereby affecting both managerial decision-making and institutional credibility.

Effective financial management in higher education encompasses a comprehensive cycle that includes planning, resource mobilization, allocation, monitoring, and reporting. The quality of this cycle influences service delivery and institutional sustainability [2]. Transparency and accountability are central to maintaining financial discipline and reducing the risk of mismanagement. At the same time,

they contribute to building trust among stakeholders, particularly in institutions that depend heavily on tuition fees and external funding. However, many Muhammadiyah universities continue to exhibit a high level of dependence on limited revenue sources and relatively low financial autonomy. Such structural conditions expose institutions to financial vulnerability and complicate long-term sustainability planning.

In light of these conditions, this study develops a model that extends the analysis of financial governance beyond performance outcomes to include institutional sustainability. Specifically, it examines the direct and indirect effects of planning, transparency, accountability, supervision, effectiveness, and efficiency on FP, and subsequently on financial sustainability (FS). By covering the Muhammadiyah university network across Indonesia, the study captures variations within a shared governance environment and provides a broader institutional perspective. The analysis aims to identify how governance practices contribute to strengthening FP and sustaining institutional continuity within private Islamic higher education.

2. LITERATURE REVIEW

2.1 Agency theory and prospect theory

Agency theory explains the relationship between principals and agents that arises from the delegation of authority and the potential conflict of interests embedded in that relationship. Principals assign agents to manage resources and expect performance outcomes, while agents are required to carry out managerial responsibilities and account for the results of their actions [3]. Although initially developed in the private-sector context, this framework is equally applicable to the public sector, where society functions as the principal and government institutions act as agents responsible for public resource management. The theory is grounded in several assumptions: individuals are inclined toward self-interest, possess bounded rationality, and exhibit risk aversion; organizations contain internal conflicts and pursue efficiency; and information asymmetry exists between principals and agents [4]. In practical settings, such asymmetry creates the need for monitoring and control mechanisms to safeguard accountability and reduce opportunistic behavior [5].

Prospect theory complements agency theory by explaining how individuals make decisions under conditions of uncertainty. Individuals assess potential gains and losses before selecting alternatives that maximize perceived utility. Within public financial management, structural officials evaluate whether participation in budget formulation aligns with personal incentives and career considerations. When perceived benefits outweigh risks, participation becomes more likely; otherwise, individuals may limit their involvement. This behavioral dimension indicates that governance effectiveness is influenced not only by institutional design but also by individual motivation and risk perception [6].

2.1.1 Planning

The importance of planning in educational finance is reinforced by Law No. 20 of 2003, Article 48, which mandates that the management of educational funds adhere to principles of fairness, efficiency, transparency, and accountability. Planning constitutes a fundamental managerial function that defines objectives, formulates strategies, and determines operational steps for implementation. In practice, limitations in financial literacy and managerial competence may weaken planning quality. Contemporary economic conditions have expanded the scope of planning beyond short-term budgeting to encompass medium- and long-term financial stability. Indicators of effective planning include clearly defined objectives, specified time horizons, alignment between identified problems and allocated resources, and the formulation of policies that are realistic and implementable [7].

2.1.2 Transparency

Transparency refers to openness in the management of financial information, covering revenue sources, expenditure allocations, and accountability processes that are accessible to stakeholders. It is not merely an ethical principle but also a legal obligation under Law No. 14 of 2008 concerning Public Information Disclosure. In higher education institutions, transparency is reflected in the availability of financial reports to students, society, and regulatory authorities. Its practical implications include strengthening public trust, reducing opportunities for corruption, and fostering institutional legitimacy. Conceptually, transparency comprises three dimensions: informativeness, openness, and disclosure [8]. Operational indicators include information that is clear, accurate, timely, comparable, and easily accessible.

2.1.3 Accountability

Accountability involves the obligation of agents to report, disclose, and justify the use of resources entrusted to them by principals. It functions as a core control instrument in ensuring effective public service delivery. Accountability encompasses legal, managerial, programmatic, policy, and financial dimensions [9]. In public-sector practice, accountability operates both vertically to higher authorities and horizontally to society, emphasizing financial integrity, adherence to regulations, and transparent reporting [10]. Universities are therefore required to produce periodic accountability reports aligned with approved budget plans. The essential conditions for accountability include transparency, measurable performance standards, and meaningful public participation.

2.1.4 Supervision

Supervision serves as a mechanism to ensure that financial policies and activities are implemented in accordance with approved plans and regulatory frameworks. In the regional administrative system, oversight of the APBD is assigned to DPRD under Law No. 32 of 2004. Supervision extends throughout the budget cycle, from planning and execution to reporting and accountability, and may take preventive (pre-audit) or corrective (post-audit) forms [8]. Oversight structures are typically divided into internal supervision conducted by institutional auditors and external supervision performed by independent bodies such as the Badan Pemeriksa Keuangan (BPK). Effective supervision is characterized by timeliness, objectivity, adaptability, coordination, and acceptance within the organization.

2.1.5 Effectiveness

Effectiveness refers to the degree to which organizational objectives are achieved. It is not limited to target attainment but includes alignment between outcomes and institutional vision. Financial management is considered effective when

allocated funds support planned activities and contribute to institutional goals. Effectiveness therefore reflects the relationship between expected outputs and realized results, where a stronger contribution of outputs to strategic objectives indicates higher effectiveness. In operational terms, effectiveness can be assessed through the fulfillment of program targets and the achievement of revenue objectives [8].

2.1.6 Efficiency

Efficiency concerns the relationship between inputs and outputs. Performance is regarded as efficient when maximum outputs are produced from given inputs or when required outputs are achieved with minimal inputs. Measurement typically involves comparing output–input ratios against established standards [1]. In the public sector, efficiency emphasizes prudent resource utilization without compromising service quality. Indicators include expenditure ratios, as well as comparisons across periods and institutions [11].

2.1.7 Financial performance

FP reflects the extent to which organizational goals, missions, and strategies are realized within a given period. It includes both qualitative and quantitative outcomes relevant to strategic objectives, stakeholder satisfaction, and economic contribution [12]. In the financial context, performance demonstrates how effectively resources are managed and converted into measurable institutional results.

2.1.8 Financial sustainability

FS originates from the broader sustainability discourse that gained international attention following the 1972 Stockholm Conference. It encompasses indicators such as employment, income, supply–demand balance, costs, and price stability. Core objectives include responsiveness to evolving development contexts, economic resilience, socio-political acceptance, and environmental considerations. Strategies to achieve FS involve long-term planning, ecological preservation, allocation of resources for environmental recovery, and prudent use of non-renewable resources.

2.1.9 Higher education financial systems

Reforms in state financial management have shifted from traditional administrative models toward performance-based budgeting, providing public institutions with greater flexibility through the Badan Layanan Umum (BLU) framework (Law No. 17/2003; Law No. 1/2004; Law No. 15/2005; Government Regulation No. 23/2005). Within the BLU system, institutional income is categorized as non-tax revenue and allocated according to performance plans. Public universities operating under BLU apply accrual accounting standards and performance measurement systems to improve resource allocation and strengthen accountability [13]. Private universities operate under foundation law (Law No. 16/2001 jo Law No. 28/2004) and are required to prepare audited annual reports once financial thresholds are met, with particular emphasis on TP and internal control systems.

2.1.10 Regional financial management and general principles

Public financial management must adhere to principles of orderliness, regulatory compliance, efficiency, economy, effectiveness, transparency, and accountability, while also considering fairness and public benefit (Law No. 17/2003; PP No. 58/2005; Permendagri No. 13/2006). Functionally, financial management includes planning, budgeting, implementation, accounting, reporting, accountability, and supervision. Principles such as accountability, honesty, transparency, control, and value for money ensure that financial policies are justified both vertically and horizontally [14]. Empirical evidence indicates that transparency is positively associated with regional government performance by promoting comprehensive and open financial disclosure [15]. In higher education, consistent application of effectiveness, efficiency, and accountability principles forms the foundation of FP that ultimately supports FS.

2.2 Previous studies

Prior research on accountability, transparency, supervision, and regional financial management has demonstrated the complexity of governance-related variables in shaping public-sector performance. Putra et al. [16] reported that supervision exerts a positive influence on financial management in Indragiri Hulu, while transparency contributes significantly to improvements in management quality. Similarly, Badruzzaman and Ruslina [17], in their study conducted in Bandung Barat, found that supervision, accountability, and transparency jointly explained 61 percent of regional FP, indicating the substantial role of governance quality in determining outcomes. Umar et al. [18] further showed that accountability and transparency, both individually and collectively, significantly affect auditor performance at the Aceh Inspectorate.

Arifani [19] identified positive effects of transparency and supervision on value-for-money budgeting performance in Jayapura, although accountability did not show a significant effect in that context. In contrast, Nasution [20] found that regional financial management and accountability improved performance in North Sumatra, whereas transparency had a significant but negative effect. This finding suggests that the impact of transparency may vary across institutional environments and administrative conditions.

Sriwijayanti [21] incorporated the role of regional financial information systems (SIAKD) in Padang and demonstrated that transparency, accountability, and the utilization of SIAKD influence budget management practices. Satria and Narisa [22], examining Aceh Utara, emphasized moderating effects, showing that transparency weakened the relationship between council knowledge and supervision, while accountability strengthened it. Other studies have considered organizational and human resource factors. Sudewi [23] found that accountability, transparency, organizational commitment, and supervision improved value-for-money budgeting performance in Buleleng. Hanafiah et al. [24] reported similar findings in Aceh Utara. Guasmin and Febrianti [25] highlighted the importance of financial reporting accessibility in Palu, Central Sulawesi, while Hendratmi et al. [26] linked transparency and organizational commitment to stronger accountability practices. Kurrohman [27] demonstrated that performance-based budgeting contributed to improvements in efficiency and economy in East Java.

Taken together, these studies confirm the central role of accountability, transparency, supervision, and financial management systems in enhancing public FP. At the same time, the presence of inconsistent findings—particularly concerning transparency—indicates that the effectiveness of governance mechanisms may depend on institutional context. Most existing research has focused on regional government

settings, leaving higher education institutions comparatively underexamined. This gap provides the basis for extending the analysis to the university sector.

2.3 Conceptual framework

Based on the literature reviewed, accountability, transparency, supervision, effectiveness, and efficiency are consistently identified as determinants of FP in public-sector organizations. Stewardship theory offers an additional conceptual perspective by positioning public managers as stewards who act in the interests of principals, namely society [28]. From this standpoint, financial governance is not limited to compliance but involves the responsible management of resources to achieve institutional objectives. Transparent procedures, accountable reporting, and efficient resource allocation therefore become integral to effective financial management.

The conceptual framework of this study includes six exogenous variables—PL, TP, AB, SV, EF, and EY—and two endogenous variables, FP and FS (see Figure 1).

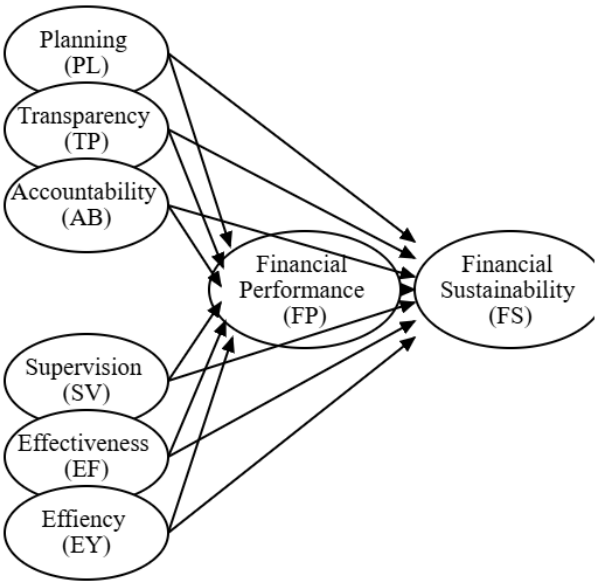

Figure 1. Conceptual framework

The proposed relationships suggest that improved planning and supervision, supported by transparency and accountability, enhance effectiveness and efficiency, which subsequently influence FS. Strong FP is expected to reinforce FS and contribute to overall institutional performance. Within higher education, financial management encompasses planning, execution, accounting, reporting, accountability, and supervision. Hudayah [29] emphasizes the importance of accountability in performance-based budgeting, while Halim [30] links supervision to the achievement of organizational objectives. Transparency is regarded as a prerequisite for sustainable governance, as Nopriyanto [31] underscores the public's right to access financial information.

Accordingly, this study tests the influence of planning, transparency, accountability, supervision, efficiency, and effectiveness on FP and FS in Muhammadiyah Universities in Indonesia. Compared with local government settings, this institutional context has received less empirical attention. Examining governance mechanisms within a higher education environment therefore contributes to a more comprehensive understanding of how financial governance supports institutional sustainability.

3. METHODS

This study adopted an explanatory research design to examine the relationships among the research variables and to test the proposed causal hypotheses. Rather than limiting the analysis to descriptive patterns, the approach was intended to assess how PL, TP, AB, SV, EF, and EY affect FP and, subsequently, FS in Muhammadiyah Universities in Indonesia.

The study focused exclusively on Muhammadiyah Universities as the institutional unit of analysis. A survey method was employed to obtain respondents' assessments of the governance factors influencing FP and FS. Within the proposed model, FP was specified as a mediating variable linking the independent variables to FS. The unit of observation consisted of individuals directly involved in financial governance, including university leaders and administrative personnel responsible for financial management. This design was selected to ensure that the analysis was grounded in informed institutional perspectives and supported by empirical data.

3.1 Research time and location

Data collection was conducted over a three-month period, from February to May 2025, across the Muhammadiyah university network in Indonesia. The selected timeframe allowed for structured distribution and follow-up of questionnaires while considering institutional schedules and data accessibility.

3.2 Types and sources of data

The study utilized both primary and secondary data. Primary data were collected through structured questionnaires designed to measure perceptions of the research variables. Secondary data were obtained from institutional financial reports, policy documents, relevant regulations, and academic literature. The integration of these sources supported a comprehensive understanding of financial governance practices within higher education institutions.

3.3 Data collection techniques

The primary data collection instrument was a questionnaire survey. To support and validate the survey findings, the study also incorporated limited observation of financial management practices, in-depth interviews with selected key informants, and review of institutional documentation, including internal reports and archival records. The combination of survey data, observation, interviews, and documentation provided methodological triangulation, strengthening the reliability and consistency of the empirical results.

3.4 Population and sample

The population consisted of all Muhammadiyah Universities in Indonesia, totaling 162 institutions in 2025. Referring to Hair et al. [32], the recommended minimum

sample size for multivariate analysis is at least five times the number of indicators. With 40 measurement indicators included in the model, the minimum required sample size was 200 respondents. Questionnaires were distributed to the entire population of institutions. A total of 153 completed responses were returned and deemed suitable for analysis. Although nine institutions did not submit responses, the final sample size was considered adequate for SEM, given the model structure and data characteristics.

3.5 Data analysis techniques

Data were analyzed using SEM, which allows simultaneous assessment of measurement quality and inter-variable relationships within a comprehensive model. Preliminary tests, including descriptive statistics and assumption checks, were conducted using SPSS 20.0, while SEM estimations were run with AMOS 4.01.

The first structural model tested the influence of PL, TP, AB, SV, EF, and EY on FP, expressed as:

$$\begin{aligned} FP = {} & \alpha 1PL + \alpha 2TP + \alpha 3AB + \alpha 4SV + \alpha 5EF \\ & + \alpha 6EY + \varepsilon 1FP \\ & = \alpha_1 PL + \alpha_2 TP + \alpha_3 AB \\ & + \alpha_4 SV + \alpha_5 EF + \alpha_6 EY \\ & + \varepsilon_1 FP \\ & = \alpha 1PL + \alpha 2TP + \alpha 3AB + \alpha 4SV \\ & + \alpha 5EF + \alpha 6EY + \varepsilon 1 \end{aligned}$$

The second model assessed the impact of the six exogenous variables and FP on FS:

$$\begin{aligned} FS = {} & \beta 1PL + \beta 2TP + \beta 3AB + \beta 4SV + \beta 5EF \\ & + \beta 6EY + \beta 7FP + \varepsilon 2FS \\ & = \beta_1 EFa_{1PL} + \beta_{2TP} + \beta_{3AB} \\ & + \beta_{4SV} + \beta_{5EF} + \beta_{6EY} + \beta_{7FP} \\ & + \varepsilon_{2FS} \\ & = \beta 1PL + \beta 2TP + \beta 3AB + \beta 4SV \\ & + \beta 5EF + \beta 6EY + \beta 7FP + \varepsilon 2 \end{aligned}$$

These models allowed calculation of direct, indirect, and total effects, where indirect effects occurred when independent variables influenced FS through FP. Model fit was evaluated using Chi-Square, RMSEA, GFI, AGFI, TLI, and CFI. Construct reliability was assessed through Composite Reliability and Average Variance Extracted (AVE), with AVE ≥ 0.50 as the threshold. Path significance was tested using the critical ratio, where values greater than 1.96 indicated significance at the 5% level.

3.6 Operational definitions and measurement

Seven principal variables were operationalized in this study. PL was defined as the systematic process of designing, organizing, and managing financial resources to achieve institutional strategic objectives. It was measured using five indicators: alignment of the budget with strategic plans (PL1), participatory budget preparation (PL2), program prioritization (PL3), long-term projections of income and expenditure (PL4), and infrastructure funding planning (PL5).

TP referred to openness in financial planning, implementation, reporting, and supervision. It was measured through financial report disclosure (TP1), financial audits (TP2), stakeholder participation in budgeting (TP3), availability of budget plans and realization reports (TP4), and disclosure of student fund utilization (TP5).

AB represented institutional responsibility in managing financial resources in accordance with applicable regulations. The indicators included transparent financial reporting (AB1), compliance with accounting standards (AB2), effectiveness of internal control systems (AB3), periodic financial reporting (AB4), and stakeholder involvement in budgeting processes (AB5).

EF described the extent to which financial planning, allocation, utilization, and control achieved intended institutional objectives. It was measured through effective budget utilization (EF1), timely availability of funds (EF2), accuracy and discipline in financial reporting (EF3), budget absorption and optimization (EF4), and maintenance of institutional financial balance (EF5).

EY referred to the capacity to manage financial and organizational resources productively and economically. It was measured using budget efficiency (EY1), operational cost control (EY2), staff productivity relative to salary expenditure (EY3), the ratio of direct expenditures (EY4), and the administrative burden ratio (EY5).

FP denoted the university's ability to manage and account for financial resources effectively within a defined period. The indicators consisted of liquidity (FP1), profitability (FP2), expenditure efficiency (FP3), internally generated income (FP4), and return on investment (FP5).

FS reflected long-term financial stability and institutional continuity. It was measured by income diversification (FS1), adequacy of annual operational funds (FS2), availability of reserves or endowment funds (FS3), stability of cash flows (FS4), and degree of financial independence (FS5).

4. CASE STUDIES

4.1 Descriptive statistics

Analysis of PL shows an overall mean of 3.92, categorized as high (Table 1). The highest score was found in participatory budget preparation (PL2), indicating that budgeting at Muhammadiyah universities is perceived as relatively participatory. The lowest score related to infrastructure funding (PL5), suggesting that long-term financial planning, especially for infrastructure, still requires greater attention.

Table 1. Respondents' responses to variable indicator

Variable	Highest Indicator (Mean)	Lowest Indicator (Mean)	Variable Average
PL	PL2 – 3.99	PL5 – 3.84	4
TP	TP3 – 3.92	TP4/TP5 – 3.84	4
AB	AB5 – 3.91	AB3 – 3.82	4
SV	SV1/SV4 – 3.93	SV3 – 3.69	4
EF	EF2 – 4.01	EF5 – 3.75	3.88
EY	EY2 – 3.43	EY4 – 2.66	2.9
FP	FP5 – 3.86	FP1 – 3.64	3.76
FS	FS2 – 4.01	FS4 – 3.85	3.91

TP recorded an average of 3.87, with budget plans and realizations (TP3) as the strongest indicator. Lower scores were noted in audit practices and student fund disclosure (TP4, TP5). Although transparency is generally rated positively, weaknesses remain in stakeholder engagement and openness

of specific financial information.

AB also averaged 3.87, with stakeholder participation in budgeting (AB5) rated highest, while compliance with accounting standards (AB3) scored lowest. This points to the need for strengthening internal mechanisms to ensure financial reports both follow standards and embody public accountability.

SV received an average of 3.85. Indicators related to the existence of monitoring procedures (SV1, SV4) scored high, but effectiveness of implementation (SV3) was weaker. This suggests that while oversight structures exist, their consistency and quality vary across institutions.

EF averaged 3.88, with timely fund availability (EF2) rated very well, but optimal budget absorption (EF5) less so. This indicates that while funding mechanisms are relatively effective, targeted budget utilization remains an area for improvement.

EY stood out with the lowest mean, 2.90. Operational costs (EY2) received the best ratings, but expenditure ratios (EY4) performed poorly. Many respondents expressed neutrality or disagreement, highlighting efficiency as a significant weakness in financial management.

FP recorded a mean of 3.76, with return on investment (FP5) scoring highest, while liquidity (FP1) was weakest. Overall performance is seen as adequate, but short-term cash management remains problematic.

4.2 Instrument validity testing

The quality of the instrument was examined through validity and reliability testing to ensure both accuracy and consistency of measurement. Since data collection relied on questionnaires, the precision with which respondents completed the items became a critical determinant of the validity of findings. An instrument is considered adequate when it meets the criteria of validity, reliability, and practicality; shortcomings in any of these aspects may distort the depiction of the phenomenon being studied.

Validity refers to the extent to which indicators accurately measure the intended construct. The test was conducted using product–moment correlation between each item score and the total score at the 5 percent significance level, with a minimum acceptance coefficient of 0.30. All indicators across the eight variables—PL, TP, AB, SV, EF, EY, FP, and FS—recorded significance values of 0.000 and correlation coefficients above the required threshold. Specifically, item correlations ranged from 0.847–0.926 for PL, 0.843–0.932 for TP, 0.863–0.894 for AB, 0.918–0.946 for SV, 0.816–0.934 for EF, 0.835–0.927 for EY, 0.842–0.938 for FP, and 0.830–0.941 for FS. The statistical significance of all items ($p < 0.05$) confirms that each indicator validly represents its respective construct.

Reliability emphasizes the internal consistency of indicators in reflecting their latent constructs. This was assessed using Cronbach's Alpha, with the acceptance threshold set at ≥ 0.60. Results show that all constructs achieved highly satisfactory reliability: PL = 0.869, TP = 0.918, AB = 0.893, SV = 0.916, EF = 0.937, EY = 0.891, FP = 0.928, and FS = 0.908. These values indicate strong inter-item consistency, demonstrating that the questionnaire is dependable for repeated measurement. The test was conducted on the basis of 153 valid questionnaires returned from 162 universities in the sample, yielding a response rate of 94.44 percent, which reflects excellent respondent participation (Table 2).

Table 2. Results of instrument validity and reliability testing

Variable	Item Statement	Correlation Coefficient (r)	Sig.	Description	Cronbach's Alpha	Description
	PL1	1				
	PL2	1				
PL	PL3	1			0.869	
	PL4	1				
	PL5	1				
	TP1	1				
	TP2	1				
TP	TP3	1			0.918	
	TP4	1				
	TP5	1				
	AB1	1				
	AB2	1				
AB	AB3	1			0.893	
	AB4	1				
	AB5	1				
	SV1	1	0	Valid		Reliable
	SV2	1				
SV	SV3	1			0.916	
	SV4	1				
	SV5	1				
	EF1	1				
	EF2	1				
EF	EF3	1			0.937	
	EF4	1				
	EF5	1				
	EY1	0.917				
	EY2	0.906				
EY	EY3	1			0.891	
	EY4	1				
	EY5	1				
FP	FP1	1			0.928	

	FP2	0.914	
	FP3	0.938	
	FP4	0.842	
	FP5	0.929	
	FS1	1	
	FS2	0.941	
FS	FS3	1	0.908
	FS4	0.916	
	FS5	0.83	

4.3 Data testing and model assumptions

The feasibility of applying SEM was assessed through outlier detection, normality, and linearity tests. Outliers were examined using Mahalanobis distance in AMOS, which identified several statistically unusual observations. However, descriptive checks comparing mean and standard deviation values for each indicator showed that all means exceeded their respective standard deviations. This indicates no substantive outliers threatening data quality, allowing all indicators to be retained for further analysis.

Normality was tested at both univariate and multivariate levels. At the multivariate level, the Critical Ratio (C.R.) for kurtosis was 1.189, well within the tolerance range of ±1.96 at the 5 percent level, confirming multivariate normality. At the univariate level, all C.R. skewness and kurtosis values also fell within ±1.96. For instance, EY1 recorded skewness −1.791 and kurtosis −1.583; EF4 skewness −1.330 and kurtosis −1.940; SV4 kurtosis 1.870; AB2 skewness −1.659 and kurtosis −1.700; TP1 skewness 1.874 and kurtosis −1.122; and FP1 skewness 1.753 and kurtosis 1.620. These results collectively confirm that the normality assumption was satisfied, thereby justifying the use of Maximum Likelihood Estimation (MLE) without additional corrections. Linearity testing further supported the assumption of linear relationships among latent variables, fulfilling another key prerequisite for SEM.

Model fit was then evaluated in stages. In the initial estimation (see Figure 2), several indices suggested inadequate model fit. The Chi-Square statistic of 2,271.713 with p = 0.000 indicated a significant difference between the sample covariance matrix and the hypothesized model. Other fit indices were at marginal levels: RMSEA = 0.075, GFI = 0.801, AGFI = 0.771, TLI = 0.718, CFI = 0.743, and CMIN/DF = 3.191. These results pointed to the need for model refinement. Following recommendations from the modification indices, adjustments were made carefully to error covariances and inter-item relationships, consistent with theoretical rationale, while maintaining the causal direction of latent constructs to preserve the structural hypotheses.

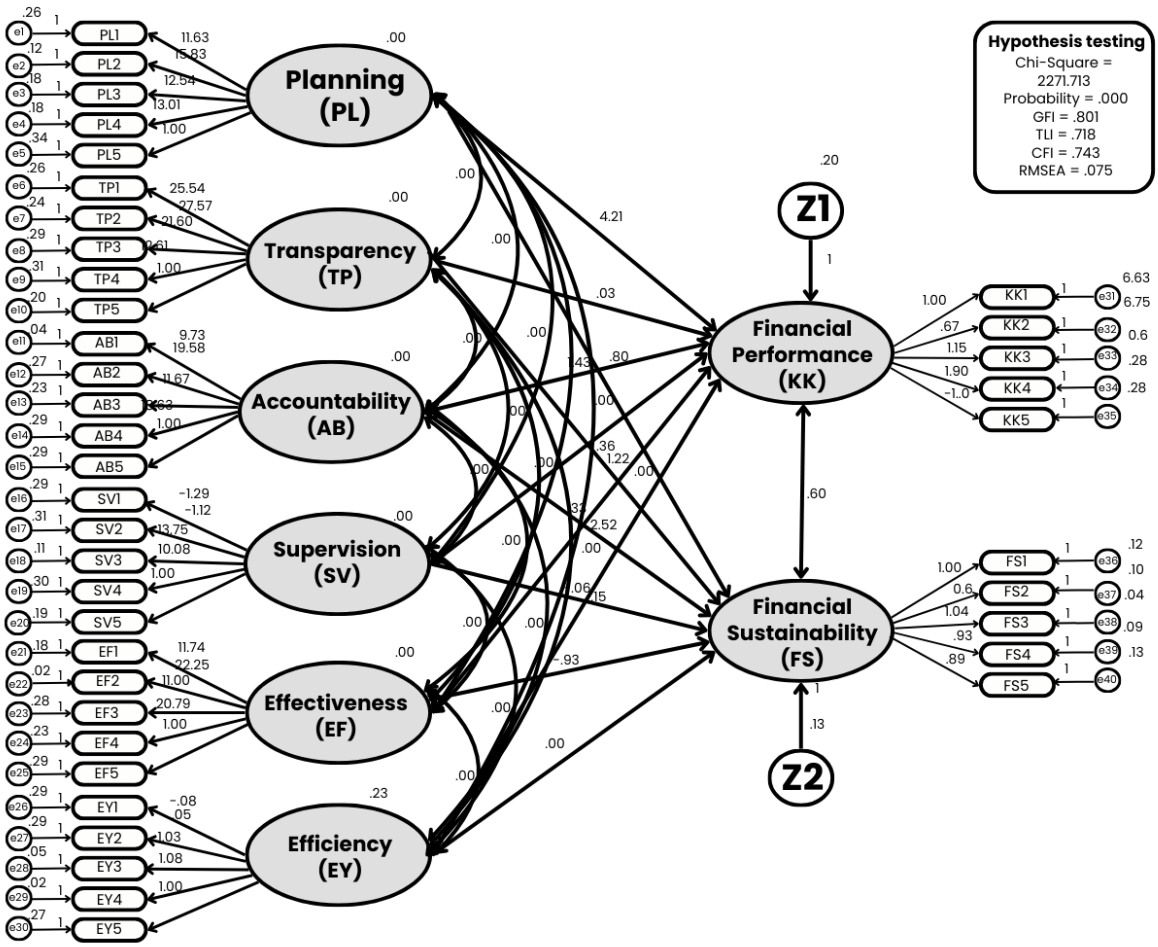

Figure 2. Goodness of fit of the model - initial stage

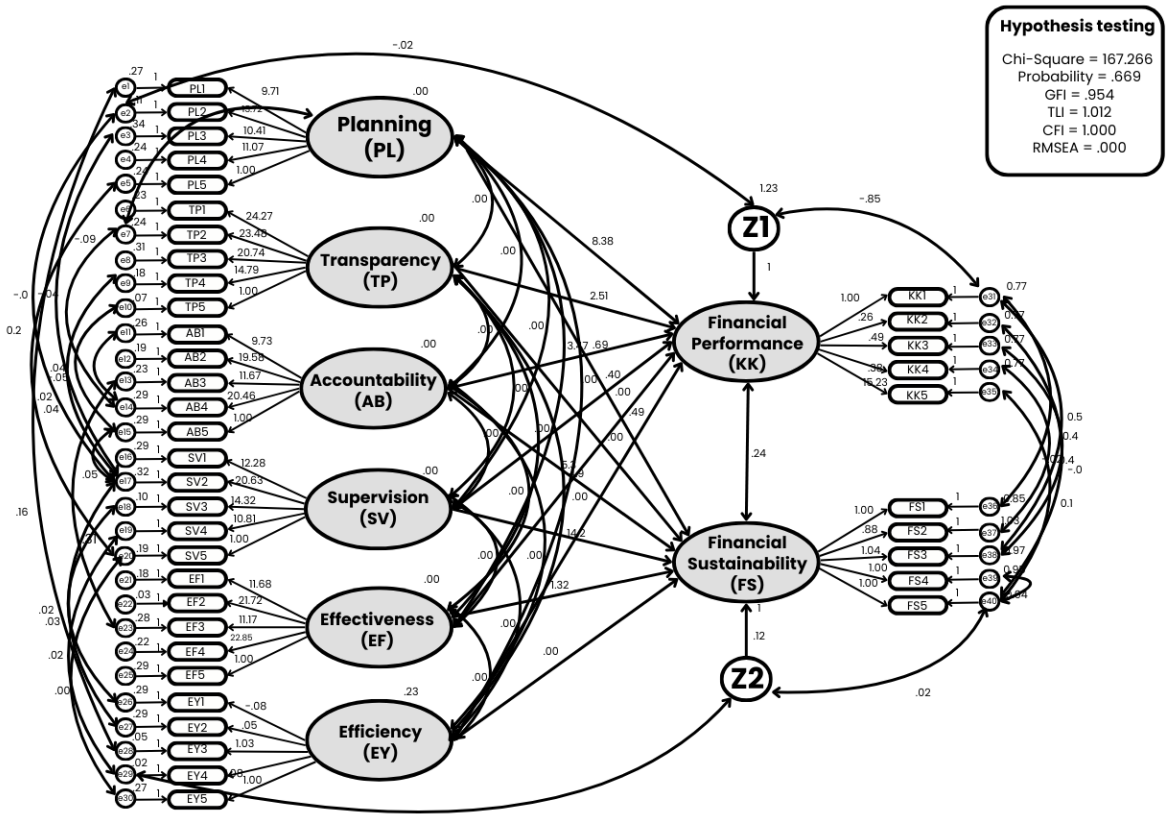

Figure 3. Goodness of fit of the model - final stage

The modified model demonstrated substantial improvement in fit. The Chi-Square value dropped sharply to 167.256 with p = 0.669, supporting the null hypothesis of no significant difference between sample and model covariance matrices. Other fit indices reinforced this conclusion, with RMSEA = 0.000, GFI = 0.954, AGFI = 0.933, TLI = 1.012, and CFI = 1.000. The final model reported a CMIN/DF of 4.998 (see Figure 3).

Collectively, these results confirm that the modified model achieved acceptable fit, making it suitable for hypothesis testing and interpretation of causal relationships among latent variables. The marked improvement from the initial to the final phase highlights how theoretically justified error correlations can resolve misfit without compromising the underlying causal structure.

4.4 Confirmatory factor analysis

This study operationalized eight latent variables—PL, TP, AB, SV, EF, EY, FP, and FS—each measured by five indicators. Factor scores were derived through Confirmatory Factor Analysis (CFA) using AMOS, with the full results provided in Appendix 5. Overall, all indicators demonstrated significant factor loadings (p = 0.000), while one indicator per construct was fixed to establish the measurement scale, in line with standard CFA procedures (Table 3).

Table 3. Loading factor of research variables

Variable	Indicator	Loading Factor	Critical Ratio	Probability (p)	Remark
PL	PL1	10	1	0	Significant
PL	PL2	14	1	0	Significant
PL	PL3	10	1	0	Significant
PL	PL4	11	1	0	Significant
PL	PL5	1	–	–	Fixed
TP	TP1	24	0.821	0	Significant
TP	TP2	23	0.822	0	Significant
TP	TP3	21	0.821	0	Significant
TP	TP4	15	0.82	0	Significant
TP	TP5	1	–	–	Fixed
AB	AB1	12	0.796	0	Significant
AB	AB2	21	0.798	0	Significant
AB	AB3	14	0.796	0	Significant
AB	AB4	22	0.797	0	Significant
AB	AB5	1	–	–	Fixed
SV	SV1	1	0.868	0	Significant
SV	SV2	1	0.885	0	Significant

SV	SV3	15	1	0	Significant
SV	SV4	18	1	0	Significant
SV	SV5	1	–	–	Fixed
EF	EF1	12	0.865	0	Significant
EF	EF2	22	0.866	0	Significant
EF	EF3	11	0.865	0	Significant
EF	EF4	21	0.867	0	Significant
EF	EF5	1	–	–	Fixed
EY	EY1	0.078	1	0.006	Significant
EY	EY2	0.05	0.865	0.007	Significant
EY	EY3	1	1	0	Significant
EY	EY4	1	2	0	Significant
EY	EY5	1	–	–	Fixed
FP	FP1	1	–	–	Fixed
FP	FP2	0.263	2	0.019	Significant
FP	FP3	0.486	2	0.008	Significant
FP	FP4	0.376	2	0.014	Significant
FP	FP5	0.042	1	0.038	Significant
FS	FS1	1	–	–	Fixed
FS	FS2	0.985	1	0	Significant
FS	FS3	1	2	0	Significant
FS	FS4	0.956	1	0	Significant
FS	FS5	0.742	2	0	Significant

For PL, the indicators Budget Alignment with Strategic Plan (PL1), Participatory Budgeting Process (PL2), Program Prioritization (PL3), and Long-Term Projection (PL4) loaded strongly (9.707; 13.722; 10.412; 11.075; all $p = 0.000$), with Infrastructure Development Planning (PL5) set as the fixed item. In TP, Report Disclosure (TP1), Financial Report Audit (TP2), Stakeholder Involvement (TP3), and Availability of Budget Plans and Realization (TP4) exhibited high loadings (24.267; 23.483; 20.739; 14.791; $p = 0.000$), while Information on Student Fund Usage (TP5) served as the fixed indicator. For AB, indicators including Transparency in Report Preparation (AB1), Compliance with Accounting Standards (AB2), Internal Oversight (AB3), and Periodic Reporting (AB4) were all significant (12.279; 20.626; 14.352; 22.334; $p = 0.000$), with Stakeholder Participation (AB5) fixed.

For SV, indicators such as Availability of Monitoring Systems (SV1), Frequency/Consistency of Internal Audits (SV2), Follow-Up of Findings (SV3), and Stakeholder Involvement (SV4) were significant (1.352; 1.416; 14.634; 17.692; $p = 0.000$), while Transparency of Monitoring Processes (SV5) was fixed. In EF, indicators including Budget Utilization Effectiveness (EF1), Timely Availability of Funds (EF2), Accuracy and Orderliness of Reporting (EF3), and Budget Absorption and Optimization (EF4) were significant (11.681; 21.723; 11.166; 20.632; $p = 0.000$), with Institutional Financial Balance (EF5) fixed. For EY, Budget Efficiency (EY1), Operational Costs (EY2), Productivity-to-Salary Ratio (EY3), and Direct Expenditure Proportion (EY4) were significant ($p \leq 0.007$; EY3 and EY4 $p = 0.000$), while Administrative Burden Ratio (EY5) was fixed.

The FP construct was confirmed by Profitability (FP2), Expenditure Efficiency (FP3), Independent Revenue (FP4), and Return on Investment (FP5), which were all significant ($p \leq 0.038$), with Liquidity (FP1) set as the fixed indicator. Finally, FS was validated by Adequacy of Operational Funds (FS2), Reserve or Endowment Funds (FS3), Cash Flow Stability (FS4), and Financial Independence (FS5), all of which were significant ($p = 0.000$), with Revenue Diversification (FS1) fixed. Collectively, these patterns confirm dimensional consistency across all constructs, providing a robust basis for subsequent structural modeling.

5. RESULTS

Hypothesis testing was performed using SEM with AMOS 21. The structural model evaluated the effects of PL, TP, AB, SV, EF, and EY on FP and FS, including mediation through FP. The model comprised 13 direct structural paths and 6 indirect paths. Of the 13 direct paths, 12 were positive and statistically significant, while one was negative and not significant. Among the indirect effects, five were positive and significant, and one was negative and not significant.

5.1 Direct effects

With respect to FP, most governance variables demonstrated positive and statistically significant relationships. PL showed a coefficient of 0.270 ($p = 0.000$), TP 0.053 ($p = 0.000$), AB 0.068 ($p = 0.000$), SV 0.028 ($p = 0.004$), and EF 0.012 ($p = 0.008$). In contrast, EY exhibited a negative and statistically insignificant effect on FP (−0.057; $p = 0.318$).

Regarding FS, all governance variables displayed positive coefficients. PL had a direct effect of 0.055 ($p = 0.006$), TP 0.021 ($p = 0.012$), AB 0.169 ($p = 0.000$), SV 0.019 ($p = 0.018$), and EF 0.069 ($p = 0.000$). Although EY did not significantly influence FP, it demonstrated a small but statistically significant direct effect on FS (0.004; $p = 0.046$).

FP itself showed a strong positive effect on FS, with a coefficient of 0.602 ($p = 0.021$). This indicates that FP functions as an important structural predictor of FS within the model.

5.2 Indirect effects and total effects

The mediating role of FP was examined through the estimation of indirect and total effects. PL recorded a total effect on FS of 0.217 ($p = 0.036$), consisting of a direct effect of 0.055 and an indirect effect of 0.163 through FP. TP produced a total effect of 0.053 ($p = 0.039$), combining a direct effect of 0.021 and an indirect effect of 0.032. AB yielded a total effect of 0.210 ($p = 0.037$), comprising a direct effect of 0.169 and an indirect effect of 0.041. SV generated a total effect of 0.036 ($p = 0.044$), with 0.019 direct and 0.017

indirect. EF showed a total effect of 0.076 ($p = 0.040$), including a direct effect of 0.069 and an indirect effect of 0.007.

The only indirect pathway that was not supported was EY → FP → FS (−0.034; $p = 0.182$), consistent with the non-significant direct effect of EY on FP.

Mediation effects were further assessed using Sobel tests. The indirect pathways PL → FP → FS ($p = 0.0356$), TP → FP → FS ($p = 0.0391$), AB → FP → FS ($p = 0.0368$), SV → FP → FS ($p = 0.0436$), and EF → FP → FS ($p = 0.0403$) were all statistically significant. The pathway EY → FP → FS was not significant ($p = 0.1823$).

These results indicate that FP operates as a mediating variable for most governance factors in relation to FS, whereas EY does not exhibit a mediated effect through FP.

6. DISCUSSION

Integrated planning that connects institutional strategy with budget allocation strengthens FP. When planning processes are structured, participatory, and aligned with long-term objectives, financial outcomes tend to be more stable. Conversely, weak or fragmented planning is associated with weaker performance. The five planning indicators—alignment between budget and strategy, participatory budgeting, priority-based allocation, long-term revenue–expenditure projections, and infrastructure funding plans—operate jointly in shaping financial outcomes. Strategic–budget alignment clarifies financial priorities and supports disciplined decision-making, consistent with findings that effective budget planning improves university FP [33] and that scenario modelling enhances long-term resilience [34]. Participation improves the legitimacy of decisions and the quality of resource allocation, while smart finance technologies contribute to transparency and operational efficiency [35]. Moreover, human-capital competence and risk management capacity condition the effectiveness of planning mechanisms [36]. Priority-based budgeting reduces resource dispersion and strengthens accountability. Long-term projections reflect the balanced-scorecard perspective of sustainable value creation [37] and support public-sector financial control [38]. Infrastructure investment enhances service quality and institutional reputation, which in turn expands revenue opportunities [39]. Similar findings from Ghana indicate that robust planning improves cost control and strategic goal attainment. Within Muhammadiyah universities, planning functions to harmonize central and campus-level policies, standardize evidence-based budgeting, and reduce implementation risk, supported by institutional norms that emphasize prudence and long-term responsibility.

Transparency—manifested in open reporting, financial audits, stakeholder participation, disclosure of budget plans and realizations, and reporting on student-fund utilization—contributes to governance quality. Open disclosure enables public oversight, audits strengthen reliability, and participatory processes improve accountability. Publishing plan–actual comparisons facilitates variance analysis and more disciplined budgeting, while transparency in student-fund allocation builds institutional trust. These practices align with New Public Management principles and stakeholder theory, and are supported by empirical findings from Malaysia, Ghana, and Indonesia. Accountability complements transparency by reducing information asymmetry through structured reporting and effective internal control systems. Transparent preparation of reports, compliance with standards, periodic disclosure, and stakeholder involvement reinforce stewardship responsibilities. Empirical studies demonstrate that accountability and transparency improve budget performance and reporting quality [40, 41]. In Muhammadiyah universities, the Financial Management Information System enhances reporting timeliness and audit outcomes, although some institutions still rely on input-oriented practices. Transitioning toward performance-based budgeting remains necessary.

Supervision, characterized by documented internal-control systems, regular internal audits, systematic follow-up of findings, stakeholder involvement, and transparent oversight processes, supports governance effectiveness. From the perspective of agency theory, internal monitoring reduces information asymmetry and mitigates conflicts of interest [42]. Empirical evidence further indicates that structured internal control systems improve organizational efficiency and governance quality [43, 44].

Effectiveness contributes through appropriate allocation and utilization of funds, timely availability of resources, accuracy in reporting, optimal budget absorption, and maintenance of financial balance. Organizational effectiveness has long been linked to performance outcomes [45, 46], and previous studies confirm the relevance of funding timeliness, reporting discipline, and absorption capacity.

Efficiency requires a more cautious interpretation. Governance structures influence efficiency levels [47], yet efficiency gains do not automatically translate into stronger financial outcomes [12]. Evidence from the United Kingdom indicates that efficiency measures alone have not prevented financial deficits in higher education [48]. Efficiency therefore needs to be integrated into a broader financial strategy that links cost management to service quality, innovation, and revenue development.

FP, reflected in liquidity, profitability, expenditure efficiency, internally generated income, and return on investment, plays a central role in sustaining institutional operations. The mediation analysis confirms that FP functions as the primary mechanism linking governance variables to FS. Integrated planning aligns financial resources with institutional priorities, reduces fiscal risk, and strengthens liquidity and non-tuition revenue generation. Transparency enhances stakeholder confidence and supports participation, thereby reinforcing financial stability. Accountability strengthens fiscal discipline and institutional credibility, while supervision improves compliance and reporting accuracy. Gains in FP subsequently provide the structural basis for sustaining institutional continuity and long-term development.

7. CONCLUSIONS

The findings indicate that PL, TP, AB, SV, and EF are positively associated with FP and FS, with FP functioning as the principal mediating variable. These results address the objective of examining how financial governance practices contribute to institutional sustainability through improvements in FP. In contrast, EY does not demonstrate a significant contribution to FP or FS, suggesting that cost reduction measures, when not accompanied by productivity and value creation, are insufficient to sustain institutional stability.

The study highlights that sustainability reporting and

financial governance should be understood as interconnected managerial processes rather than isolated compliance mechanisms. Strengthening planning discipline, transparent reporting, accountable resource management, systematic supervision, and effective program execution enhances FP, which in turn supports long-term FS. Embedding these governance components within institutional routines can improve financial resilience and reduce exposure to fiscal risk.

From a theoretical perspective, the study clarifies the structural role of FP in linking governance variables to sustainability outcomes. Empirically, it extends the discussion of public-sector financial governance into the context of private higher education. Practically, the findings underline the importance of adaptive financial planning, transparent reporting systems, and consistent internal supervision in safeguarding institutional resources. Effectiveness requires continuous monitoring and evaluation, while efficiency should be applied carefully to avoid undermining academic quality and service standards.

Overall, integrated financial governance provides a foundation for institutional continuity. By reinforcing structured planning, transparency, accountability, and supervision, Muhammadiyah universities can strengthen financial stability while maintaining their role within the national higher education system.

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