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Organizational Values as a Moderator of External Funding and Financial Sustainability: Evidence from Muhammadiyah and 'Aisyiyah Higher Education Institutions in Indonesia

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Abstract

Private higher education institutions in emerging economies rely heavily on tuition, and institutions owned by Islamic organizations must also align financial decisions with religious values. This study examined how financial autonomy, internal control and audit, and external funding are associated with perceived financial sustainability, and whether organizational values moderate these associations, in the Muhammadiyah and 'Aisyiyah higher education network in Indonesia. A cross-sectional survey of 120 of the 166 institutions in the network (72.3 percent response), each represented by one key informant, was analyzed with partial least squares structural equation modeling, a two-stage interaction approach, bootstrapping, and out-of-sample prediction tests. Financial autonomy ($\beta = 0.231$), internal control and audit ($\beta = 0.256$), external funding ($\beta = 0.275$), and organizational values ($\beta = 0.293$) were positively associated with perceived sustainability ($R^2 = 0.639$). The interaction between organizational values and external funding was negative ($\beta = -0.322$, 95% percentile bootstrap CI [-0.452, -0.135]) and added 6.8 percentage points of explained variance. The external funding association was strong where values were weakly internalized and small and uncertain where they were strongly internalized. Interactions with financial autonomy and with internal control and audit were not statistically supported. Because the data are cross-sectional and come from one informant per institution, the results describe associations. They are consistent with, but do not test, the explanation that value screening narrows usable funding options. Institutions may assess and pilot funding instruments designed to meet religious requirements from the outset, such as productive waqf, before adopting them widely.

KEYWORDS

financial sustainability; organizational values; external funding; moderation analysis; higher education management; waqf.

Introduction

Private higher education institutions carry most of the cost of their own survival. In Indonesia, private providers make up the large majority of higher education institutions and receive limited public subsidy, which leaves most of them dependent on tuition fees (Handayani et al., 2023). Institutions founded by religious mass organizations hold a distinct position in this sector. A parent organization governs them, legally owns their assets, and expects them to pursue a social mission alongside financial viability. The Muhammadiyah and 'Aisyiyah higher education institutions, locally abbreviated as PTMA, form the largest network of this kind. The 2024 institutional register of the Council for Higher Education, Research, and Development of the Central Board of Muhammadiyah (Majelis Diktilitbang), supplied to the authors, lists 167 institutions: 166 in Indonesia and one in Malaysia.

The financial condition of the network is uneven. In the same register, 107 of the 162 institutions with complete 2023 budget data (66.0 percent) planned annual budgets below IDR 20 billion, and 62 (38.3 percent) planned budgets below IDR 2 billion. The council's institutional health classification places 48.5 percent of institutions in its two lowest categories. That classification is a composite of governance and performance criteria, so it is not a direct measure of financial health. The finance literature offers three levers for such institutions: greater autonomy over financial decisions, stronger internal control and audit, and revenue diversification beyond tuition (De Andrés-Alonso et al., 2016; Fonseca et al., 2020; Jaafar et al., 2023; Tuckman & Chang, 1991). Resource dependence theory treats the third lever as central, because an organization gains discretion as its dependence on any single resource provider declines (Pfeffer & Salancik, 1978).

Recent empirical work supports these levers but leaves the role of values open. Studies of universities in Malaysia and Indonesia examined how revenue diversification relates to financial sustainability, using panel data on public universities and survey data on private universities (Handayani et al., 2023; Jaafar et al., 2023; Nik Ahmad et al., 2019). Internal audit has been linked to accountability in higher education institutions (Fonseca et al., 2020). Nonprofit research shows that revenue structure and financial management practices shape vulnerability and the risk of dissolution (De Andrés-Alonso et al., 2016; Lu et al., 2020), but also that a concentrated revenue portfolio can be efficient when diversification carries search and administrative costs (von Schnurbein & Fritz, 2017). Studies of religiously constrained finance point to a second strand. Shariah-compliant firms in Malaysia and Pakistan carry less debt and adjust their capital structure more slowly than other firms, which the authors attribute to restrictions on the type and amount of borrowing (Bugshan & Bakry, 2025). Muslim chief executives in Malaysia allocate a larger share of debt to Islamic instruments (Brahmana & You, 2022), and studies of university waqf show that its contribution depends on fundraising and management rather than on holding waqf assets (Usman & Ab Rahman, 2023). The mission drift literature treats the tension between mission and resource acquisition as a strategic risk in its own right (Grimes et al., 2019).

These studies estimate main effects of diversification or of religious compliance, usually with firm-level or archival data. They do not estimate whether the association between external funding and financial sustainability changes with the strength of organizational values inside one value-based network, where all institutions share the same formal norms but differ in how strongly managers internalize them. This conditional relationship is the gap addressed here. Two distinctions guide the analysis. First, the study measures value internalization as reported by informants; it does not observe the screening of individual funding offers. Second, financial sustainability is measured as perceived by informants, with a limited documentary check against audited statements.

Three main associations are expected. Financial autonomy should relate positively to sustainability because it allows timely reallocation of resources and the pursuit of new revenue (Nik Ahmad et al., 2019) (H1). Internal control and audit should relate positively to sustainability because it reduces leakage and improves the quality of financial information (Fonseca et al., 2020) (H2). External funding should relate positively to sustainability because it widens the resource base (Jaafar et al., 2023; Usman & Ab Rahman, 2023) (H3).

Organizational values may moderate each association through a different mechanism. For financial autonomy (H4), stewardship theory suggests that managers who share the

organization's values use discretion for mission-consistent reallocation, which would strengthen the autonomy association (Davis et al., 1997); values may also narrow the set of acceptable reallocations, which would weaken it. For internal control and audit (H5), shared values can act as an informal control that partly substitutes for formal monitoring, which would weaken the control association (Davis et al., 1997); values that stress accountability may instead reinforce follow-up on audit findings, which would strengthen it. For external funding (H6), values may restrict which funds an institution accepts, such as interest-bearing loans or sources considered socially harmful, and so shrink the usable pool of external resources (Bugshan & Bakry, 2025; Pfeffer & Salancik, 1978); values may also raise donor trust and legitimacy, which would strengthen the funding association. Because theory supports both directions for each interaction, H4 to H6 were planned as non-directional, two-tailed tests. The main effect of organizational values is estimated as part of the moderation model and is not a separate hypothesis.

Contribution. The study estimates conditional associations between three financial levers and perceived sustainability across a national network of value-based institutions, reports the uncertainty of the conditional slopes, and checks the perceived outcome against the audited statements that are publicly available. The aim is to estimate the associations of financial autonomy, internal control and audit, and external funding with perceived financial sustainability, and to test whether organizational values moderate these associations.

Methods

The study used a quantitative, cross-sectional survey design. The model was estimated with partial least squares structural equation modeling (PLS-SEM) in SmartPLS 4. Three reasons guided this choice. First, the estimand is a composite-based path model intended for both explanation and out-of-sample prediction of perceived sustainability, and the prediction procedures used here (PLSPredict and the cross-validated predictive ability test) are defined for PLS path models (Liengaard et al., 2021; Shmueli et al., 2019). Second, the two-stage approach builds interaction terms from construct scores, which PLS provides directly (Becker et al., 2018). Third, the sample is moderate, and covariance-based estimators of latent interactions generally need larger samples (Hair et al., 2019). Constructs were estimated as composites (Mode A) that approximate reflectively measured concepts (Hair et al., 2019). Because composite estimates can differ from common-factor estimates, the coefficients are interpreted as associations between composite scores. No causal claims are made.

The sampling frame comprised the 166 institutions in Indonesia listed in the 2024 Majelis Diktilitbang register. The one institution in Malaysia was excluded because it operates under Malaysian higher education law. The frame includes universities, institutes, colleges (*sekolah tinggi*), polytechnics, and academies, so the study refers to higher education institutions rather than universities. All 166 institutions were invited. A total of 125 questionnaires were received; five duplicate responses from the same institutions were removed by keeping the first submitted complete response from each institution, which left 120 usable institutional responses (72.3 percent).

The unit of analysis is the institution. The invitation was addressed to the rector or vice-rector for finance and asked that the questionnaire be completed by the official with the most direct knowledge of institution-wide budgeting, funding, and financial reporting (Kumar et al., 1993). Informants were rectors or vice-rectors for finance (13.3 percent), heads of finance bureaus (31.7 percent), members of the internal audit unit (20.8 percent), and finance or accounting staff (34.2

percent). The questionnaire contained no eligibility or knowledge check. It recorded each informant's length of service (*masa kerja*) in four bands, without specifying whether service referred to the current position or to the institution: less than one year (5.0 percent), one to three years (35.8 percent), three to five years (30.0 percent), and more than five years (29.2 percent). Informant competence therefore rests on how the invitation was targeted, on the role each informant reported, and on these service bands. Because 34.2 percent of informants were staff members, the model was re-estimated without staff responses and with informant role and length of service as controls (see Results).

The sample covered seven regions, with 56.7 percent of institutions in Java compared with 47.6 percent of the frame. A chi-square goodness-of-fit test found no significant difference between sample and frame by region ($\chi^2 = 6.224$, $df = 6$, $p = 0.399$). Because two regions had expected counts below five, the test was repeated after merging Kalimantan, Nusa Tenggara, Papua, and Maluku, with the same conclusion ($\chi^2 = 4.183$, $df = 3$, $p = 0.242$). The test by budget category, against the 162 institutions with complete budget data, gave $\chi^2 = 6.371$, $df = 3$, $p = 0.095$. Early and late respondents (first and last 30) did not differ significantly on any construct (Armstrong & Overton, 1977).

The structural model has seven predictors of sustainability: three levers, the organizational values main effect, and three interaction terms. A power analysis for multiple regression (G*Power logic; $\alpha = 0.05$, power = 0.80, $f^2 = 0.15$, seven predictors) requires 103 cases, which the sample exceeds. Power for a single interaction term is lower. With 120 cases and seven predictors, the smallest incremental effect detectable with 0.80 power is $f^2 = 0.067$, and power to detect a small interaction of $f^2 = 0.02$ is about 0.34. Non-significant interactions should therefore be read with this limit in mind. Under the inverse square root method, the sample allows detection of path coefficients of 0.227 or larger (Kock & Hadaya, 2018).

The study covered institutions in all seven regions of Indonesia in which the network operates, from Sumatra to Papua. The institutions share one governance framework and one formal value system but differ in size, regional economy, and access to donors.

A self-administered questionnaire in Indonesian measured five constructs with 40 items on a five-point scale (1 = strongly disagree, 5 = strongly agree). Items asked about the institution's current condition; two sustainability items referred to the last three and the next five years. The items were written by the first author from the literature and from the parent organization's normative documents, then reviewed by two academic experts in higher education financial management and pilot-tested with 30 finance staff members from institutions outside the main sample. Appendix A gives the English wording, dimension, and source of every item.

Financial autonomy (FA, 7 items) covers budget authority, revenue diversification, and strategic financial planning (Jaafar et al., 2023; Nik Ahmad et al., 2019). Internal control and audit (ICA, 10 items) follows the five components of the internal control framework used in auditing practice: control environment, risk assessment, control activities, information and communication, and monitoring. Eight of these items describe the internal control system that internal audit reviews; two (ICA.9 and ICA.10) describe internal audit activity directly, namely periodic audits and follow-up of findings. The construct is therefore labelled internal control and audit, and it should not be read as a measure of internal audit function quality alone. External funding (EF, 7 items) covers grants and donations, *waqf*, and external financing policy (Usman & Ab Rahman, 2023). Organizational values (OV, 8 items) covers the four value dimensions used by the parent organization:

tauhid (accountability to God), *amar ma'ruf nahi munkar* (promoting good and preventing harm), *tajdid* (renewal), and *wasathiyah* (moderation). Four OV items (OV.2, OV.3, OV.7, OV.8) describe stated dispositions toward accepting or rejecting funding sources; they measure willingness to screen, not recorded screening decisions. Financial sustainability (FS, 8 items) covers funding independence, cost efficiency, short-term liquidity, and perceived resilience, adapted from the nonprofit financial vulnerability literature (De Andrés-Alonso et al., 2016; Lu et al., 2020; Tuckman & Chang, 1991).

All constructs were specified as reflective. For financial autonomy, the items describe how far one condition, the discretion that the parent organization's rules leave to the institution, shows up in budgeting, revenue generation, and planning; the causal direction runs from that condition to its expressions, since an institution that holds discretion is expected to exercise it in all three areas. For external funding, the items describe one condition, the institution's openness to and capacity for drawing resources from outside tuition, expressed through grants and donations, *waqf*, and a financing policy. The data support a shared condition: the dimension scores correlated between 0.69 and 0.74 within financial autonomy and between 0.63 and 0.68 within external funding, against 0.11 to 0.19 across the two constructs. The specification is nevertheless open to debate, because these dimensions can also vary independently, as distinct components of a formative construct, and omitting one would then change the construct's meaning. Two checks were therefore run on the structural results: the model was re-estimated with financial autonomy and external funding as formative composites (Mode B), and with each of their dimensions removed in turn (see Results and Table B6).

Data were collected online over 118 days between December 2025 and March 2026. Invitations and reminders were sent to institutional finance contacts, together with the research recommendation letter issued by Majelis Diktilitbang (No. 0612/REK/I.3/D/2025). All items were required fields, so the dataset contained no missing values. Procedural steps to limit common method variance were taken: respondents were told there were no right or wrong answers and that responses were confidential; each construct appeared in a separate block with its own instructions; and the outcome block came last (Podsakoff et al., 2024).

A documentary check compared the perceived outcome with audited statements. The websites of all 120 responding institutions were searched between 15 January and 20 February 2026 for audited financial statements. Three institutions published audit reports. Only one, Institution A, published financial figures, in the form of audited summary financial statements for fiscal years 2022/23 to 2024/25 (years ending 31 August). For that institution, three ratios were computed: operating margin (net surplus divided by total revenue), debt ratio (total liabilities divided by total assets), and the percentage change in net cash from operating activities over the period. Operating cash flow was compared with the liquidity items (FS.5 and FS.6), and operating margin with the sustainability construct as a whole. The documents, fiscal years, audit opinions, and ratios are listed in Appendix B (Table B4). This check is case-level illustration, not validation of the survey outcome across 120 institutions.

Screening preceded estimation: longstring analysis found no straight-lining. Mahalanobis distance identified no multivariate outlier at $p < 0.001$, and all indicators fell within ± 1 for skewness and kurtosis. Indicator loadings of 0.708 or higher were preferred; indicators loading between 0.40 and 0.70 were retained when their deletion would not raise composite reliability or average variance extracted (AVE) above a threshold that was otherwise unmet (Hair et al., 2019). Internal consistency was assessed with Cronbach's α , ρ_{A_A} , and composite reliability (ρ_{c}). Discriminant validity was

assessed with the Fornell-Larcker criterion, cross-loadings, and the heterotrait-monotrait ratio (HTMT), including its bootstrap confidence interval (Franke & Sarstedt, 2019). Common method variance was examined with Harman's single-factor test and full collinearity variance inflation factors (Kock, 2015; Podsakoff et al., 2024); both are coarse diagnostics, and neither can rule out method bias.

The structural model was $FS = \beta_1 FA + \beta_2 ICA + \beta_3 EF + \beta_4 OV + \beta_5 (OV \times FA) + \beta_6 (OV \times ICA) + \beta_7 (OV \times EF) + \zeta$. Moderation was estimated with the two-stage approach (Becker et al., 2018). Stage one estimated the main-effects model and saved standardized construct scores. Stage two multiplied the standardized scores to form the interaction terms. Because the scores are standardized, β_1 to β_3 are the associations of each lever with sustainability when organizational values are at their mean, and all coefficients are standardized. Standard errors and confidence intervals for the paths came from bootstrapping in SmartPLS 4 with 5,000 subsamples (percentile method, two-tailed test, fixed seed). The intervals are 95% percentile bootstrap intervals, given by the 2.5th and 97.5th percentiles of the bootstrap estimates, so they need not be symmetric around β ; $t = |\beta| / \text{bootstrap standard error}$, and p values are two-tailed. Each f^2 was computed by comparing R^2 with and without the term, and ΔR^2 is reported for each interaction and for the three interactions jointly. The conditional association of external funding at organizational values one standard deviation below the mean, at the mean, and one standard deviation above the mean equals $\beta_3 + \beta_7 \times OV$. SmartPLS does not report intervals for this quantity, so its standard error and 95% percentile interval were computed from 5,000 bootstrap resamples of the full two-stage model run with a Python script; the script reproduced every SmartPLS path coefficient and R^2 to three decimals, and its bootstrap standard errors differed from the SmartPLS values by at most 0.002. A Johnson-Neyman analysis on the same resamples identified the range of OV over which the association differs from zero. HTMT intervals were obtained with the same script from 5,000 resamples of the indicator data.

Out-of-sample prediction was assessed with PLSpredict (Shmueli et al., 2019) using 10 folds and 10 repetitions, with random seed 20261005. Because the model contains interaction terms built from construct scores, every estimation step was confined to the training folds, using the script described above: in each fold, indicator means and standard deviations, stage-one outer weights, the standardization of construct scores, the interaction terms, the stage-two coefficients, and the outcome loadings were estimated on the training institutions only. These quantities were then applied to the held-out institutions: their indicators were standardized with training moments, their construct scores were formed with training weights and standardized with training score moments, the interaction terms were the products of these scores, and the predicted sustainability score was converted into indicator predictions with training loadings, means, and standard deviations. The interaction model thus entered PLSpredict and CVPAT as the full seven-predictor two-stage model, and no held-out information was used in any step. The benchmarks were a linear regression of each sustainability indicator on all 31 exogenous indicators and the training-fold indicator average, both estimated on the training folds, and root mean squared error (RMSE) was the loss function. The cross-validated predictive ability test (CVPAT) compared case-level average losses with a two-tailed paired t test (Lienggaard et al., 2021); a negative average loss difference means the PLS model has lower prediction error than the benchmark. The SmartPLS 4 PLSpredict run reported in the previous version of this article gave nearly identical values (Q^2_{predict} 0.271 to 0.472; CVPAT loss differences -0.234 and -0.271).

Access to the institutions was authorized by Research Recommendation No. 0612/REK/I.3/D/2025, issued on 25 April 2025 by Majelis Diktilitbang. This letter is a research permit; it requires the research, reporting, and publication process to meet ethical clearance standards, but it is not a decision by an ethics committee. The study was not submitted to a separate ethics committee because it collected organizational information from officials acting in their professional roles, involved no intervention, and recorded no sensitive personal data; this decision is a limitation. Participation was voluntary, and informed consent was given on the opening screen before any item appeared. Institutional identities were used only for deduplication, and results are reported in aggregate.

Result and Discussion

Table 1 reports construct-level descriptive statistics. All five constructs averaged between 3.5 and 3.8 on the five-point scale. Organizational values had the widest dispersion ($SD = 0.712$); only 19.2 percent of OV responses were "strongly agree" and three informants gave the top score on all eight OV items, so the moderator does not show a ceiling effect.

Three item-level patterns are used later in the Discussion. In external funding, the lowest-scoring item in the whole instrument was EF.4 on the contribution of waqf proceeds to operating revenue (mean 3.475; 11.7 percent of informants disagreed and 9.2 percent strongly agreed), slightly below EF.3 on holding productively managed waqf assets (3.542). EF.5 on the governance of the waqf trustee (nazhir) function had a higher mean (3.583) but correlated between -0.074 and 0.065 with the other six external funding items, and 0.006 with their average. In internal control and audit, the highest item was ICA.2 on clear financial authority (3.775), and the lowest were ICA.3 on risk identification (3.583) and ICA.10 on follow-up of audit findings (3.592); 9.2 percent of informants disagreed that findings are followed up. These differences are small on a five-point scale and are descriptive only.

EF.5 loaded -0.060 on external funding, and the construct's AVE was 0.488 with it and 0.571 without it. The item was positively worded and scored in the same direction as the other items, so reverse coding does not explain the result. The near-zero correlations reported above show that informants' judgments about trustee governance were unrelated to their judgments about grants, waqf income, and financing policy. The item was removed, so the retained external funding construct covers grants and donations (2 items), waqf assets and waqf income (2 items), and external financing policy (2 items), and no longer covers trustee governance. The weak loading does not show that trustee governance is irrelevant to funding; it may reflect a distinct administrative function (see Discussion). To check whether the deletion drives the structural results, the full model was re-estimated with EF.5 retained (40 indicators) in SmartPLS 4 using the same two-stage procedure and bootstrap settings (Appendix B, Table B5). The interaction between organizational values and external funding was virtually unchanged ($\beta = -0.320$, 95% CI $[-0.451, -0.132]$, $\Delta R^2 = 0.068$, against -0.322 $[-0.452, -0.135]$ and 0.068 in the final model). No path changed its sign or its significance decision, and the conditional association of external funding one standard deviation above the mean of organizational values stayed close to zero (-0.040 , $[-0.218, 0.206]$). The moderation result therefore does not depend on the deletion of EF.5, although the retained construct is narrower in content.

Five retained indicators loaded below 0.708: ICA.7 on timely financial reporting (0.608, information and communication), FA.7 on cash flow projection (0.686, strategic

Table 1. Construct Descriptive Statistics (n = 120)

Construct	Items	Mean	SD
Financial autonomy (FA)	7	3.583	0.658
Internal control and audit (ICA)	10	3.683	0.634
External funding (EF), retained items	6	3.508	0.655
Organizational values (OV)	8	3.620	0.712
Financial sustainability (FS)	8	3.777	0.644

Source: Primary data, 2026. Item-level means and standard deviations are reported in Appendix A.

Table 2. Measurement Model Results, Final Specification (n = 120)

Construct	Items	Loading range	α	rho_A	rho_c	AVE
Financial autonomy	7	0.686–0.785	0.878	0.884	0.905	0.577
Internal control and audit	10	0.608–0.825	0.912	0.917	0.927	0.561
External funding	6	0.707–0.793	0.851	0.858	0.889	0.571
Organizational values	8	0.688–0.804	0.892	0.895	0.913	0.570
Financial sustainability	8	0.701–0.790	0.893	0.896	0.915	0.573

Source: Primary data processed with SmartPLS 4. Item loadings are listed in Appendix A.

Table 3. Heterotrait-Monotrait Ratios

Construct	FA	ICA	EF	OV
Internal control and audit (ICA)	0.421			
External funding (EF)	0.224	0.346		
Organizational values (OV)	0.279	0.255	0.228	
Financial sustainability (FS)	0.450	0.590	0.547	0.498

Source: Primary data processed with SmartPLS 4. FA = financial autonomy.

Table 4. Structural Model Results

Path	β	95% CI	t	p	f ²	ΔR^2	Decision
FA → FS (H1)	0.231	[0.094, 0.372]	3.281	0.001	0.114	0.041	Supported
ICA → FS (H2)	0.256	[0.137, 0.372]	4.245	< 0.001	0.138	0.050	Supported
EF → FS (H3)	0.275	[0.145, 0.400]	4.231	< 0.001	0.175	0.063	Supported
OV → FS	0.293	[0.173, 0.418]	4.647	< 0.001	0.212	0.077	Main effect, no hypothesis
OV × FA → FS (H4)	0.028	[−0.099, 0.151]	0.442	0.658	0.002	0.001	Not supported
OV × ICA → FS (H5)	−0.083	[−0.220, 0.032]	1.305	0.192	0.013	0.005	Not supported
OV × EF → FS (H6)	−0.322	[−0.452, −0.135]	3.999	< 0.001	0.188	0.068	Supported, negative

Source: Primary data processed with SmartPLS 4. Standardized coefficients; bootstrapping with 5,000 subsamples (two-tailed test, fixed seed); two-tailed p values. Main effects are associations at the mean of OV. 95% CIs are percentile bootstrap intervals (2.5th and 97.5th percentiles). $\Delta R^2 = f^2 \times (1 - R^2)$, the drop in R^2 when the term is omitted.

Table 5 and Figure 1 show the conditional association of external funding with perceived sustainability.

Table 5. Conditional Association of External Funding with Perceived Financial Sustainability

Level of organizational values	Estimate	Bootstrap SE	95% CI
One SD below the mean	0.597	0.098	[0.390, 0.773]
At the mean	0.275	0.064	[0.147, 0.401]
One SD above the mean	−0.047	0.109	[−0.230, 0.199]

Source: Estimates are $\beta_3 + \beta_7 \times OV$ from the standardized path coefficients in Table 4; bootstrap standard errors and 95% percentile intervals from 5,000 resamples of the full two-stage model computed with the script described in the Method.

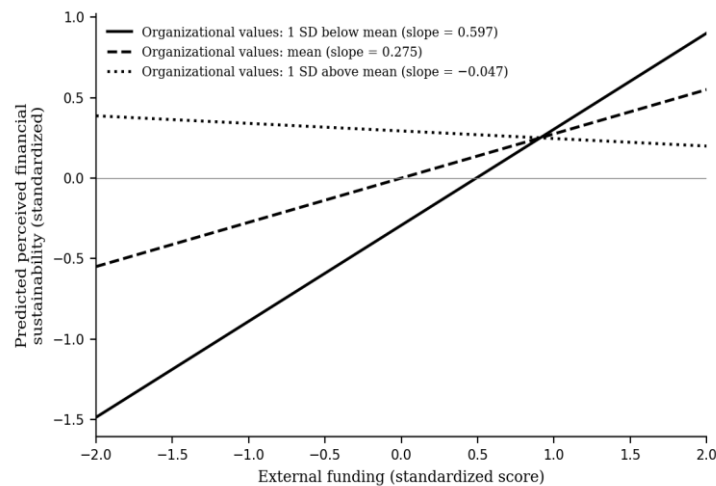


Figure 1. Simple slopes of external funding on perceived financial sustainability at three levels of organizational values

Source: Computed from the standardized estimates in Table 4. Predicted values hold financial autonomy and internal control and audit at their means.

Table 6. Indicator-Level Prediction Errors (PLSpredict)

Indicator	Q ² predict	RMSE (PLS)	RMSE (LM)	PLS – LM
FS.1	0.289	0.688	0.892	-0.204
FS.2	0.288	0.751	0.909	-0.158
FS.3	0.477	0.638	0.837	-0.199
FS.4	0.315	0.720	0.910	-0.191
FS.5	0.326	0.652	0.824	-0.172
FS.6	0.291	0.755	0.895	-0.140
FS.7	0.273	0.692	0.832	-0.139
FS.8	0.309	0.730	0.896	-0.167

Source: Primary data; fold-confined PLSpredict (10 folds, 10 repetitions, seed 20261005). LM = linear regression benchmark. Q²predict ranged from 0.273 to 0.477 across indicators.

Table 7. Aggregate Out-of-Sample Predictive Tests

Criterion	Value	t	p
Q ² predict (latent variable)	0.573	—	—
Q ² predict range (indicators)	0.273–0.477	—	—
CVPAT, PLS versus indicator average (average loss difference)	-0.236	4.519	< 0.001
CVPAT, PLS versus linear model (average loss difference)	-0.270	7.006	< 0.001

Source: Primary data; fold-confined PLSpredict and CVPAT as described in the Method. Negative loss differences indicate lower prediction error for the PLS model; p values are two-tailed.

planning), OV.7 on weighing benefits against value risks (0.688, wasathiyah), FS.1 on financing operations from own revenue (0.701, funding independence), and EF.6 on using external financing only after internal sources (0.707, financing policy). They were retained because all constructs met the reliability and AVE thresholds with these items included, so deleting them would not have been needed to reach a threshold (Hair et al., 2019), and because each is one of only two items for its dimension. The values in Table 2 refer to this final specification of 39 indicators.

The square roots of AVE ranged from 0.749 to 0.760 and exceeded every inter-construct correlation, the highest of which was 0.539 between internal control and audit and financial sustainability. Each indicator loaded highest on its own construct. The full correlation matrix and the cross-loadings are given in Appendix B (Tables B1 and B2). All HTMT ratios were below 0.85, the highest being 0.590 (Table 3). The

upper bounds of their bootstrap 95% percentile intervals ranged from 0.418 to 0.714, all below 0.85 (Appendix B, Table B3) (Franke & Sarstedt, 2019). The standardized root mean square residual was 0.067.

The two common method variance diagnostics gave no indication of a dominant method factor. The first unrotated factor accounted for 28.19 percent of variance, and full collinearity variance inflation factors ranged from 1.266 to 1.994, below 3.3. These tests are insensitive to many forms of method bias (Podsakoff et al., 2024). With one informant per institution, shared method variance may still inflate the main associations; it is less likely to produce an interaction, but it cannot be excluded.

Inner variance inflation factors ranged from 1.120 to 1.647. The full model explained 63.9 percent of the variance in perceived sustainability (adjusted R² = 0.616), compared with 0.511 for the model without the three interaction terms. The

three interactions jointly added 12.8 percentage points; this exceeds the sum of their separate contributions (7.3 points) because the interaction terms are correlated ($r = 0.218$ to 0.545). Table 4 reports the estimates.

The three levers were positively associated with perceived sustainability, and so was organizational values. Of the three interactions, only the one with external funding was statistically significant; its coefficient was negative and its interval excluded zero. Its f^2 of 0.188 is a medium effect by conventional benchmarks, and the term added 6.8 percentage points to R^2 . The interactions with financial autonomy and with internal control and audit were not statistically supported. Their point estimates were small and their intervals included zero; given the power limits noted in the Method, small interactions of this kind cannot be ruled out.

Where value internalization was low, external funding was strongly associated with perceived sustainability (0.597, 95% CI [0.390, 0.773]). At average internalization the association was moderate (0.275, [0.147, 0.401]). At one standard deviation above the mean the point estimate was close to zero and its interval included zero (-0.047 , [-0.230 , 0.199]). A near-zero estimate does not show that the association is absent; it shows that at high levels of values the data cannot distinguish it from zero. The Johnson-Neyman analysis indicated that the association was significantly positive when organizational values were below 0.42 standard deviations above the mean, which covers 70.8 percent of the institutions. Above that point it was not significant within the observed range; it would become significantly negative only beyond 2.36 standard deviations, above the highest observed value (1.94). The pattern is attenuation of a positive association, not reversal.

Table B6 in Appendix B compares the main model with seven alternative specifications of financial autonomy and external funding. The interaction between organizational values and external funding was negative and its interval excluded zero in all eight specifications (β from -0.346 to -0.269). With financial autonomy and external funding as formative composites, it was -0.297 [-0.406 , -0.075]; indicator variance inflation factors in these blocks ranged from 1.58 to 2.15. The conditional association of external funding stayed between 0.488 and 0.632 at one standard deviation below the mean of organizational values and between -0.060 and 0.004 at one standard deviation above it, with intervals including zero at the higher level in every specification. Removing the waqf dimension produced the largest change: the external funding main effect fell from 0.275 to 0.220 and the low-values slope from 0.597 to 0.488, so waqf items carry part of the funding association, and the construct is narrower without them. The interaction with financial autonomy was not significant in any specification. The interaction with internal control and audit, however, became significant under the formative specification (-0.127 [-0.275 , -0.008]), so the non-significant result for H5 depends on how the other constructs are specified and should be read with caution. The central finding does not depend on the reflective specification or on any single dimension.

Two further checks address informant competence and institutional confounding (Table B7 in Appendix B). Staff and other informants did not differ significantly on any construct mean (Welch t tests, $p = 0.09$ to 0.99). Excluding the 41 staff informants left 79 institutions. The interaction between organizational values and external funding remained negative and its interval excluded zero (-0.372 [-0.531 , -0.116]); the conditional association of external funding was 0.596 [0.307, 0.816] at one standard deviation below the mean of organizational values and -0.147 [-0.373 , 0.193] at one standard deviation above it. In this smaller subsample the

internal control and audit main effect fell to 0.137 and its interval included zero ($[-0.010, 0.293]$), so the support for H2 rests partly on staff responses. A second model added parsimonious controls recorded for every institution: an indicator for staff informants, an indicator for institutions in Java, and the institution's budget category (four ordered bands of the annual budget plan, as reported by the informant); a third model also added length of service. With the three controls, the interaction was -0.337 [-0.477 , -0.153], and the conditional associations were 0.618 [0.417, 0.798] and -0.055 [-0.253 , 0.195]; adding length of service changed these estimates by less than 0.005. Budget category was positively associated with perceived sustainability (0.171 [0.064, 0.289]), whereas informant role, region, and length of service were not. The central moderation finding therefore does not depend on staff informants or on these institutional characteristics. Other potential confounders, such as student enrolment, institutional age, and accreditation status, were not collected.

Table 6 reports indicator-level prediction errors and Table 7 the aggregate tests, both from the fold-confined procedure. All eight sustainability indicators had positive Q^2 predict values, and the PLS model's RMSE was lower than the linear benchmark's RMSE for all eight indicators, by 0.14 to 0.20. CVPAT loss differences were negative and significant against both benchmarks, meaning the PLS model predicted the held-out cases with lower error. These results describe predictive performance within cross-validation on this sample; they do not show performance in an independent sample of institutions.

Audited statements were publicly available for three of the 120 institutions (Institutions A, B, and C), and only Institution A published figures, as audited summary statements. Over fiscal years 2022/23 to 2024/25, Institution A's operating margin rose from 0.58 to 2.06 percent and its debt ratio fell from 0.37 to 0.33, while net cash from operating activities fell by 64.1 percent and total assets fell by 11.4 percent. Its informant reported a high perceived sustainability score. Institution B received a qualified opinion in two consecutive years (2022/23 and 2023/24) on the same receivable balance. Institution C's published reports covered fiscal years 2018/19 and 2019/20 and could not be matched to the survey period. Institution B's qualified opinion concerns the fair presentation of a specific balance and is not in itself evidence of weak sustainability. In one case, then, a favourable perception of liquidity coexisted with a sharp fall in operating cash flow. This case-level discrepancy cannot show that perceptions across the sample are optimistic, but it shows why perceived sustainability needs validation against financial records. Table B4 in Appendix B gives the year-by-year details.

The positive associations of financial autonomy, internal control and audit, and external funding with perceived sustainability are in line with studies of universities in Malaysia and Indonesia that relate diversified income to financial sustainability (Handayani et al., 2023; Jaafar et al., 2023; Nik Ahmad et al., 2019), with evidence that internal auditing supports accountability in higher education (Fonseca et al., 2020), and with nonprofit studies linking revenue structure and financial management to vulnerability (De Andrés-Alonso et al., 2016; Lu et al., 2020). Those studies mostly used archival ratios or examined one lever at a time. The present study adds estimates for three levers in one model, measured as perceptions within a single value-based network, so the magnitudes are not directly comparable.

The main finding is that organizational values attenuated the association between external funding and perceived sustainability. The design does not show why. Three explanations are consistent with the pattern, and they are not mutually exclusive. The first is selection cost: institutions with strongly internalized values may screen out interest-bearing or ethically doubtful funds, which shrinks and delays the usable pool. This fits the evidence that religious compliance restricts

the type and amount of borrowing in firms (Bugshan & Bakry, 2025), and four OV items describe exactly such dispositions. Testing it would require counts of funding offers received, screened, and declined. The second is substitution: value-driven institutions may rely more on the parent organization's network and treat external funding as a supplementary channel. Testing it would require the share of revenue from the parent organization and its affiliates. The third is limited capability: institutions may hold values that restrict conventional financing without yet having the instruments to raise compliant funds. Testing it would require waqf income shares and measures of endowment governance. None of these measures was collected, so the explanations remain competing propositions.

The evidence on Islamic finance points to the third explanation as a condition for the first. Leaders with stronger religious commitment shift debt toward Islamic instruments rather than avoiding external finance altogether (Brahmana & You, 2022), which suggests that value constraints bite hardest where compliant instruments are scarce. The item-level evidence is consistent with this reading but does not test it. The waqf income item scored lowest in the instrument and slightly below the waqf asset item, which matches findings that fundraising and management, rather than ownership of waqf assets, decide whether waqf supports universities (Usman & Ab Rahman, 2023). The trustee governance item was unrelated to the other funding items. Several explanations are possible: trustee governance may be a legal and administrative function separate from funding decisions; finance staff may know little about the *nazhir* function; or the item wording may have been read differently. This interpretation is exploratory. The attenuation may also not be harmful in itself, since concentrated revenue can be efficient for some organizations (von Schnurbein & Fritz, 2017).

The positive main effect of organizational values is consistent with stewardship theory, which holds that alignment between principals and managers improves outcomes without costly control (Davis et al., 1997). The negative interaction is not anticipated by that theory. Resource dependence theory offers a plausible reading: if values restrict which dependencies an institution is willing to enter, they reduce the room for manoeuvre that the theory sees as the source of autonomy (Pfeffer & Salancik, 1978). In that reading, values act as a constraint on the set of funding strategies rather than as a multiplier of their effectiveness. The mission drift literature describes the reverse risk, in which resource acquisition pulls an organization away from its mission (Grimes et al., 2019); the present pattern is consistent with institutions protecting the mission at some cost in funding. These are theory-informed interpretations of an association, not tested mechanisms. The absence of significant interactions for autonomy and for internal control and audit should not be read as evidence that values play no role there; the sample could detect only medium interactions.

The internal control and audit items also connect to institutional theory. The item on clear financial authority scored highest, and the items on risk identification and follow-up of audit findings scored lowest. This ordering is consistent with the loose coupling of formal structure and practice described by Meyer and Rowan (1977), but the differences are small and no direct measure of implementation was collected. Institution B's repeated qualification on the same receivable balance suggests that, in that one institution, a finding was recorded but not resolved. The proposition that formal audit structures in this network are loosely coupled from practice is therefore offered for testing, not as a finding.

Eight limitations qualify these findings. First, the data are cross-sectional, so the paths cannot be read as causal; funding and sustainability may affect each other. Second, all constructs came from one informant per institution on one

occasion; the diagnostics reported do not rule out common method bias, and one third of informants were staff members whose access to institution-wide information may be limited; excluding them left the moderation result unchanged, but no eligibility or knowledge check was administered. Third, sustainability is perceived, and the documentary check covered one institution with usable figures. Fourth, financial autonomy and external funding were specified as reflective; formative and dimension-omission checks left the external funding interaction negative and significant, but under the formative specification the internal control and audit interaction became significant, so the result for H5 depends on the specification. Fifth, deleting the trustee governance item narrowed the external funding construct; re-estimating the model with the item retained did not change the results, and controls for informant role, region, budget category, and length of service also left it unchanged, but student enrolment, institutional age, and accreditation status were not available as controls. Sixth, power to detect small interactions was low. Seventh, the sample over-represents Java (56.7 percent against 47.6 percent of the frame) and includes few institutions from eastern Indonesia, so the findings apply most directly to this network and to medium and large institutions in western Indonesia. Eighth, the study was not reviewed by a separate ethics committee.

Four directions follow. A longitudinal design linking annual audited statements to governance measures would show whether value screening delays or permanently forgoes external resources. A multi-informant design, pairing a finance executive with an internal auditor in each institution, would reduce single-source variance and allow measurement of disagreement within institutions. Recording the number of funding offers received, screened, and declined, the share of revenue from the parent organization, and waqf income would allow the three explanations above to be separated. Finally, the external funding and financial autonomy constructs should be measured with indicators designed for formative or higher-order specifications.

Conclusion

This study examined how financial autonomy, internal control and audit, and external funding relate to perceived financial sustainability in the Muhammadiyah and 'Aisyiyah higher education network, and whether organizational values moderate those relationships. All three levers and organizational values were positively associated with perceived sustainability and together explained 63.9 percent of its variance, with good out-of-sample predictive performance within this sample. Organizational values attenuated the association between external funding and perceived sustainability: the association was strong where values were weakly internalized and small and statistically uncertain where they were strongly internalized. Interactions with financial autonomy and with internal control and audit were not statistically supported, which does not show that they are absent. Because the outcome is perceived sustainability, the results do not show how much financial benefit institutions actually obtain from external funding.

Academic contribution. The study provides evidence that organizational values can condition the association between a funding lever and perceived sustainability in a value-based network, rather than acting only as a direct driver of performance. This evidence is consistent with a resource dependence reading in which values restrict the set of acceptable dependencies, but it does not test the mechanism. The study also reports conditional slopes with their uncertainty, predictive tests, and a documentary check, which together allow readers to judge how far the findings extend. Empirically,

it adds evidence from a national network of value-based private institutions that is rarely represented in international nonprofit finance research.

Practical implications. If value constraints limit the usable pool of external funds, urging these institutions to seek more external funding may achieve little. A more promising option is to assess, and then pilot, funding instruments designed to meet religious requirements from the outset, such as productive waqf linked to an endowment. Before wider adoption, each institution would need to check four things: which funding offers it has declined on religious grounds and why; whether its trustee (nazhir) governance can manage revenue-generating waqf; whether projected cash flows cover operating needs; and what the instrument costs to set up and run. Pilots in a few institutions, with net income and operating cash flow as outcome measures, would show whether this option works.

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Declarations

Author Contributions: Sulaeman conceptualized the study, designed the instrument, collected and analyzed the data, and prepared the original draft. Tajul Arifin, Yadi Janwari, and Sofian Al Hakim supervised the research, validated the analysis, reviewed and edited the manuscript, and approved the final version.

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Conflict of Interest: The first author is a lecturer at

Institution A, one of the three institutions in the documentary check. Its financial statements were obtained from publicly accessible documents only. The authors declare no other conflict of interest.

Generative Artificial Intelligence Use Statement: Generative AI tools were used for language editing, restructuring text in response to reviewer comments, reference formatting, and writing a Python script that replicated the SmartPLS estimates and computed bootstrap intervals for the conditional slopes, the Johnson-Neyman range, and the HTMT ratios, the alternative measurement specifications, the fold-confined PLSpredict and CVPAT assessment, and the informant and control sensitivity models. The authors collected the data, estimated the model and all path intervals in SmartPLS 4, verified that the script reproduced the SmartPLS coefficients and standard errors, checked every change, and take full responsibility for the content.

Ethics Approval and Informed Consent: Access to institutions was authorized by Research Recommendation No. 0612/REK/I.3/D/2025 of Majelis Dikilitbang PP Muhammadiyah, dated 25 April 2025; this is a research permit, not ethics committee approval (see Method, Ethical Approval). All respondents gave informed consent before participating, and institutional and individual identities were kept confidential.

Data Availability Statement: The diagnostics needed to verify the reported results (item statistics, loadings, construct correlations, cross-loadings, HTMT intervals, the documentary check, and the sensitivity analysis for EF.5) are given in Appendices A and B. The de-identified survey dataset, codebook, SmartPLS output, Python bootstrap script, and ratio-calculation file are available from the corresponding author upon reasonable request. Institution codes in the survey dataset are not linked to the public reports, and institution names in the documentary check are withheld to protect the confidentiality of survey responses.

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