



RECEIVED 30 April 2026
ACCEPTED 12 August 2026
PUBLISHED 31 October 2026

CITATION
Setyanto E, Eranza DRD, Sadli AM, (2026). Transformational Leadership, Digital Human Capital, and Academic Entrepreneurship: Testing the Mediating Role of Organizational Commitment. *Ijomata International Journal of Management*. 7 (4), 1470-1482.
doi: 10.61194/ijim.v7i4.2427

TYPE Original Research
PUBLISHED 31 October 2026
DOI 10.61194/ijim.v7i4.2427
VOL 7 Issue 4 October 2026

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Transformational Leadership, Digital Human Capital, and Academic Entrepreneurship: Testing the Mediating Role of Organizational Commitment

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Abstract

Introduction: Private higher education institutions face pressure to transform leadership quality and digital capability into academic entrepreneurship, but the motivational pathway remains unclear. This study examines whether Organizational Commitment mediates the associations of Transformational Leadership and Digital Human Capital with Academic Entrepreneurship among permanent lecturers in two Schools of Economics in Bekasi, Indonesia. **Novelty:** Previous Indonesian studies have not examined these resources, Organizational Commitment, and Academic Entrepreneurship within a single mediation model. This study compares the measurement specification with an item-dropped sensitivity model to evaluate measurement quality effects on conclusions. **Methods:** A quantitative cross-sectional census involved 79 permanent lecturers from two institutions (37 from STIE A and 42 from STIE B). Data from a Likert questionnaire were analyzed using SEM-PLS in SmartPLS 4, including measurement assessment, R^2 , f^2 , inner VIF, and 5,000-resample BCa bootstrapping for direct and indirect effects. **Results:** In the model, Transformational Leadership and Digital Human Capital were positively associated with Academic Entrepreneurship and Organizational Commitment, while Organizational Commitment and indirect effects were not significant. After removing four indicators, reliability and collinearity improved. Transformational Leadership paths and Digital Human Capital–Organizational Commitment remained significant, whereas Digital Human Capital–Academic Entrepreneurship effects became non-significant. **Conclusion:** Organizational Commitment was not supported as a mediator. Institutions should connect leadership and digital capability development with innovation opportunities, infrastructure, incentives, and collaboration while interpreting findings cautiously due to cross-sectional design, self-reported data, and construct overlap.

KEYWORDS

transformational leadership; digital human capital; organizational commitment; academic entrepreneurship.

Introduction

Indonesian private higher education institutions, particularly those operating under the supervisory authority of LLDIKTI Region IV, are navigating an increasingly complex combination of digital disruption and structural transformation. Accelerated (technological adoption, changing student-enrollment patterns, and growing competition from domestic and international universities have placed these institutions at a critical strategic juncture. Bekasi City, a national manufacturing and economic hub with a population exceeding 3.1 million and an annual gross regional domestic product growth rate of 5.8%, represents a competitive environment in which Schools of Economics (STIEs) occupy both strategic and vulnerable positions (Suharto, 2025). Although

academic entrepreneurship is widely recognized as an institutional strategy for navigating disruptive change, the organizational and psychological processes through which it may be cultivated in financially constrained private universities in emerging-economy settings remain insufficiently theorized and empirically underexplored. Prior research has examined transformational leadership as a driver of innovative organizational behavior (Northouse, 2022; Yasir et al., 2016) and digital human capital as a determinant of knowledge productivity (Hassan et al., 2022). However, these two streams have generally advanced separately, with limited attention to the motivational mechanisms through which leadership quality and digital resources are converted into entrepreneurial academic outcomes. This gap is especially relevant in private Southeast Asian higher education institutions, where the organizational mechanisms that enable academic entrepreneurship under resource constraints remain undertheorized (Hermanto et al., 2024a; Sakapurnama et al., 2019).

Organizational Commitment

Organizational commitment denotes the psychological bond linking an employee to their employing institution, and is theoretically conceived as comprising three analytically distinct dimensions: affective commitment, which captures the depth of an employee's emotional attachment to and identification with organizational objectives; continuance commitment, grounded in the individual's rational calculus of the costs associated with organizational exit; and normative commitment, which reflects an internalized moral imperative to sustain membership and contribution to the institution (Meyer & Allen, 1991). Within academic institutional settings, affective commitment has consistently emerged as the most powerful predictor of discretionary and extra-role behaviors, encompassing voluntary engagement in entrepreneurial endeavors that extend substantively beyond formally prescribed role expectations (Hermanto et al., 2024; PAAIS & PATTIRUHU, 2020). Research in Indonesian organizational contexts further demonstrates that the affective component is particularly responsive to perceived leadership quality and institutional support, underscoring its cultural embeddedness in Southeast Asian workplaces (Rahiem, 2025; Suharto, 2025; Wiradhika et al., 2025).

Academic Entrepreneurship

Academic entrepreneurship is understood as the intentional reorientation of universities and their associated scholarly communities toward the systematic generation of social and economic value through mechanisms of knowledge transfer, intellectual property commercialization, and co-innovative partnerships with external stakeholders (Etzkowitz, 2003). Its manifestations include research-based spin-off ventures, industry-responsive study programs, technology licensing, and the cultivation of strategic university-industry alliances. In Indonesia, this orientation receives institutional sanction through the Tri Dharma Perguruan Tinggi mandate, which directs universities to integrate teaching, research, and community service into a coherent mission with measurable social and economic impact. (Barney & Clark, 2007) identify five structural prerequisites for entrepreneurial university transformation: a decisive administrative steering core, an expanded developmental periphery, a diversified resource base, a stimulated intellectual heartland, and a pervasive entrepreneurial culture. More recent scholarship affirms that the realization of these conditions is substantially shaped by the interplay between visionary academic leadership and digitally proficient faculty, with organizational commitment serving as the proposed enabling psychological mechanism (Chaidir et al., 2025; Rachman et al., 2024; Sakapurnama et al., 2019).

Conceptual Framework and Hypotheses

Drawing on the theoretical streams reviewed above, this study constructs a mediation model in which Transformational Leadership (X1) and Digital Human Capital (X2) constitute the independent variables, Academic Entrepreneurship (Y) the outcome variable, and Organizational Commitment (Z) the proposed mediating mechanism. Two primary pathways are specified. The direct pathway posits that X1 and X2 are each positively related to Y. The mediated pathway posits that X1 and X2 first strengthen Organizational Commitment, which subsequently relates to Academic Entrepreneurship engagement (Ehrnrooth et al., 2021; Harsono et al., 2025; Singh, 2025). The framework is grounded in Dynamic Capabilities Theory, which highlights an organization's capacity to sense and seize opportunities through the orchestration of internal resources, and the Resource-Based View, which frames organizational competencies as the basis of competitive differentiation (Barney & Clark, 2007; Teece, 2018).

Seven research hypotheses are derived from this integrated framework. H1: Transformational Leadership has a significant positive effect on Academic Entrepreneurship. H2: Digital Human Capital has a significant positive effect on Academic Entrepreneurship. H3: Transformational Leadership has a significant positive effect on Organizational Commitment. H4: Digital Human Capital has a significant positive effect on Organizational Commitment. H5: Organizational Commitment has a significant positive effect on Academic Entrepreneurship. H6: Organizational Commitment mediates the relationship

This study addresses an empirical gap in the closest Indonesian organizational studies. (Rachman et al., 2024a) examined organizational culture, leadership style, and employee performance, but did not test digital human capital, academic entrepreneurship, or an indirect mechanism through organizational commitment. (Suharto, 2025) emphasized organizational culture, work ethics, organizational commitment, and employee retention, but likewise did not examine how leadership and digital resources jointly relate to entrepreneurial academic behavior. Consequently, Indonesian private higher education institutions remain underrepresented in empirical models that integrate a leadership resource, a digital human-capital resource, a motivational mechanism, and academic entrepreneurship within one structural framework.

The second gap is theoretical and contextual. The Resource-Based View explains why valuable and difficult-to-substitute resources can support competitive differentiation, but it provides limited specification of the motivational process through which leadership and digital capabilities are mobilized into lecturer behavior (Barney & Clark, 2007b). (Donkor et al., 2021) demonstrated a mediating role of organizational commitment between leadership styles and employee performance in Ghanaian state-owned enterprises; however, that model did not include digital human capital, academic entrepreneurship, or Indonesian private STIEs. Dynamic Capabilities Theory emphasizes sensing, seizing, and reconfiguring opportunities, yet organizational commitment should be positioned cautiously as a proposed motivational microfoundation that may sustain attention, discretionary effort, and persistence rather than as a dynamic capability itself (Teece, 2018a). The present study therefore examines the contextual relevance of these two perspectives by testing whether organizational commitment transmits the associations of transformational leadership and digital human capital with academic entrepreneurship under the distinctive regulatory, cultural, and fiscal conditions of Indonesian private STIEs.

Novelty statement. Unlike prior Indonesian studies that examined organizational culture, leadership style, and employee performance (Rachman et al., 2024b) or organizational commitment and employee retention (Suharto, 2025), and unlike leadership-commitment-performance

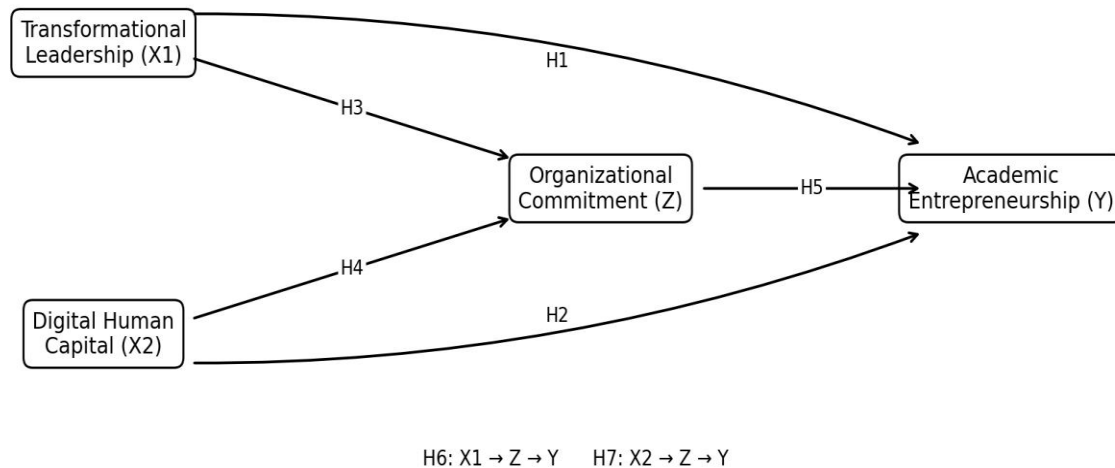


Figure 1. Conceptual Framework of the Research Model

models developed in other national settings (Donkor et al., 2021), this study jointly tests transformational leadership and digital human capital together with organizational commitment as a proposed motivational mechanism within a single structural model of academic entrepreneurship in Indonesian private Schools of Economics. Its novelty lies not only in integrating these constructs, but also in showing that organizational commitment does not necessarily operate as the mediating pathway predicted by commitment-centered interpretations of leadership and resource mobilization. This finding provides preliminary, context-specific evidence relevant to the Resource-Based View and Dynamic Capabilities Theory in resource-constrained private higher education.

Accordingly, the research question is: Do Transformational Leadership and Digital Human Capital have direct associations with Academic Entrepreneurship and indirect associations through Organizational Commitment among permanent lecturers in resource-constrained private STIEs in Bekasi?

Transformational Leadership

Transformational leadership can be characterized as a leadership orientation wherein leaders elevate both the motivation and performance of their followers by appealing to shared higher-order values and a collective sense of purpose beyond immediate self-interest (Bass, 1985; Northouse, 2022c). This leadership approach is operationalized through four synergistic behavioral pillars: idealized influence, where leaders embody ethical standards; inspirational motivation, characterized by the articulation of a compelling institutional vision; intellectual stimulation, which encourages innovative and autonomous problem solving; and individualized consideration, providing personalized mentorship and support to faculty members (Guo et al., 2025; Iyola et al., 2023; Taques et al., 2021). In organizational settings, transformational leadership has been consistently linked to higher levels of employee creativity, organizational citizenship behavior, and adaptive performance (Bakari et al., 2019a; Yasir et al., 2016a). A substantial body of scholarship has further identified organizational commitment as a critical psychological conduit through which transformational leadership generates its performance-amplifying effects; leaders who cultivate trust and communicate a compelling shared mission concurrently strengthen their followers' sense of institutional belonging and identification (Almaududi Ausat et al., 2022; Hermanto et al., 2024a; Hidayah, 2025; Krishnan, 2012; Noviyanti Wiradhika et al., 2025)

Digital Human Capital

Digital human capital may be defined as the integrated constellation of competencies, technical skills, and domain knowledge that equip individuals to perform effectively within work environments increasingly structured around digital platforms and technologies (Forum, 2023; Russo et al., 2025). Within academic institutions, this construct includes digital literacy and platform proficiency, data analytics and knowledge dissemination capabilities, and the ability to integrate digital pedagogical tools into instructional practice. Notwithstanding the widespread recognition that investment in digital human capital is fundamental to institutional innovation capacity, extant research consistently warns that technical proficiency alone is an unreliable predictor of entrepreneurial output in the absence of facilitative organizational conditions, including psychological safety, institutional trust, and transformationally oriented leadership (Chinoracky et al., 2025; Li et al., 2025; Xuecheng et al., 2022). This conditional relationship is particularly relevant in resource-constrained environments, where lecturers may possess digital capabilities yet lack the motivational infrastructure to deploy them entrepreneurially (Amalia & von Korflesch, 2021; Donkor et al., 2021). between Transformational Leadership and Academic Entrepreneurship. H7: Organizational Commitment mediates the relationship between Digital Human Capital and Academic Entrepreneurship (Hermanto et al., 2024; Zhao et al., 2010) (see Figure 1).

Using a cross-sectional census of 79 permanent lecturers and SEM-PLS, the study found no statistically significant specific indirect effect in either tested specification, while the stability of the direct associations differed between Transformational Leadership and Digital Human Capital.

Methods

Research Type

This study used a quantitative associative approach with a cross-sectional survey design to examine direct and mediated associations among Transformational Leadership, Digital Human Capital, Organizational Commitment, and Academic Entrepreneurship (Huyler & McGill, 2019; Sujarweni, 2018). Because the data were collected at one point in time, the findings are interpreted as associational rather than causal. Variance-based SEM-PLS was selected following (J. F. Hair et al., 2022) because the model contains multiple reflective constructs and indirect paths.

Table 1. Research Sample Profile by Institution

Institution	Accreditation	Eligible permanent lecturers	Complete responses	Response rate	Lecturer:student ratio	Avg. study period
STIE A	B	37	37	100%	1:27.4	3.7
STIE B	B	42	42	100%	1:23.4	3.2
Total	-	79	79	100%	-	-

Source: Primary Data. STIE A and STIE B are anonymized institutional labels; they do not indicate institutional rank or performance.

Table 2. Measurement Items and Indicator Codes

Construct	Code	Administered item statement
Transformational Leadership	X1.1	My institutional leader demonstrates high ethical standards and role-models the institution's vision.
Transformational Leadership	X1.2	My leader articulates a compelling vision for the institution's future.
Transformational Leadership	X1.3	My leader encourages faculty to challenge assumptions and pursue innovative solutions.
Transformational Leadership	X1.4	My leader provides individualized guidance and mentorship to faculty members.
Digital Human Capital	X2.1	I am proficient in using digital platforms for academic purposes, including LMS and collaboration tools.
Digital Human Capital	X2.2	I have strong capabilities in data analytics and digital academic-content development.
Digital Human Capital	X2.3	I effectively integrate digital pedagogical tools into my instructional practice.
Organizational Commitment	Z1	I have a strong emotional attachment to this institution and identify with its goals.
Organizational Commitment	Z2	Leaving this institution now would entail significant personal costs for me.
Organizational Commitment	Z3	I feel a moral obligation to continue working at this institution.
Academic Entrepreneurship	Y1	I actively engage in research commercialization or knowledge-transfer activities.
Academic Entrepreneurship	Y2	I contribute to developing innovative study programs aligned with industry needs.
Academic Entrepreneurship	Y3	I maintain and develop partnerships with external industry stakeholders.
Academic Entrepreneurship	Y4	I engage in or support knowledge-based spin-off or community-service ventures.

Source: Adapted from the sources cited in the Instrumentation or Tools section.

Research Location

The study was conducted at two private Schools of Economics in Bekasi City, Indonesia, operating under the same regional regulatory environment. To protect confidentiality, the institutions are reported as STIE A and STIE B; these pseudonyms do not represent institutional rankings or performance judgments.

Population and Sample/Informants

The decision to restrict the sample to permanent rather than adjunct or contractual lecturers reflects the theoretical rationale that organizational commitment and entrepreneurial engagement are most robustly manifested among employees who maintain enduring and stable affiliations with their institution (Azmy, 2019; Effendi et al., 2025; Meyer & Allen, 1991). However, excluding adjunct faculty members who represent a dynamic proportion of staff is acknowledged as a localized limitation that may affect broader external generalizability (see Limitations section). A total census approach was implemented, including every member of the defined population as a respondent. All 79 distributed instruments were returned complete and usable, yielding a response rate of 100%, consisting of 37 lecturers from STIE A and 42 from STIE B (see Table 1). A reproducible power calculation for a linear multiple-regression approximation with three predictors, a medium effect size of $f^2 = .15$, $\alpha = .05$, and power = .80 (Cohen, 1992) indicated a minimum of 77 respondents; the achieved sample of 79 corresponded to estimated power of .813. The sample is

therefore adequate for detecting medium effects, although small effects may remain imprecisely estimated. Because the census covers only two localized private STIEs, generalization is limited to institutions with comparable organizational, regulatory, employment, and resource conditions (Dash & Paul, 2021; J. F. Hair et al., 2022).

Instrumentation or Tools

Primary data were gathered using a structured questionnaire with a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Transformational Leadership was represented by four reflective items: the institutional leader demonstrates high ethical standards and models the institution's vision; articulates a compelling vision for the institution's future; encourages faculty members to challenge assumptions and pursue innovative solutions; and provides individualized guidance and mentorship. These items represent idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, consistent with (Northouse, 2022) and (Hidayah, 2025). Digital Human Capital was represented by three items stating that the respondent is proficient in digital platforms for academic purposes, has strong capabilities in data analytics and digital academic-content development, and effectively integrates digital pedagogical tools into instructional practice, reflecting the competency domains described by (Forum, 2023).

Organizational Commitment followed the three-component formulation of (Meyer & Allen, 1991), using items on emotional attachment, the personal cost of leaving, and a moral

obligation to remain. Academic Entrepreneurship was measured through engagement in research commercialization or knowledge transfer, contribution to industry-aligned study-program innovation, development of external industry partnerships, and participation in knowledge-based spin-off or community-service ventures, adapted from (Barney & Clark, 2007c). Table 2 presents the complete item statements and indicator codes.

Data Collection Procedures

The questionnaire was administered to the entire defined population of permanent lecturers, and all 79 returned instruments were complete and usable. Before the main survey, the instrument underwent forward translation, independent back-translation by bilingual management experts, content review by two senior academics, and pilot testing with 15 lecturers from a non-participating private STIE. Respondent anonymity, the absence of right or wrong answers, and separation of predictor, mediator, and outcome item blocks were used as procedural controls for common method bias.

Data Analysis

Data analysis followed a two-stage SEM-PLS protocol using SmartPLS 4 (J. F. Hair et al., 2024). The measurement model was evaluated using indicator loadings, Average Variance Extracted (AVE), Cronbach's Alpha, Composite Reliability, the Fornell-Larcker criterion, the Heterotrait-Monotrait (HTMT) ratio with bootstrap confidence intervals, and complete cross-loadings. The structural model was assessed using R^2 , adjusted R^2 , Cohen's f^2 , inner-model collinearity (VIF), and 5,000-resample BCa bootstrapping for direct, specific indirect, and total effects. Harman's first unrotated factor and full-collinearity VIF values were used as diagnostic checks for common-method risk; they were not treated as proof that common method bias was absent. Statistical significance was evaluated using two-tailed $p < .05$ and 95% BCa confidence intervals that excluded zero. Mediation classification followed (Zhao et al., 2010) and (Sarstedt et al., 2021).

Sensitivity Analysis. Following the reviewer's request, a sensitivity analysis was conducted to examine the sensitivity of the measurement and structural model. An alternative model was estimated after removing four indicators with loadings below the .70 threshold ($X1.3 = .636$, $X2.2 = .646$, $Z2 = .572$, $Y2 = .472$), retaining ten indicators across the four constructs. The reduced model was re-estimated using the same PLS Algorithm and 5,000-resample BCa bootstrapping procedure as the original specification. Results were compared across indicator loadings, construct reliability, discriminant validity (HTMT and Fornell-Larcker), inner-model collinearity (VIF), direct effects, specific indirect effects, total effects, and hypothesis-testing outcomes.

Content-validity implications of item removal were considered explicitly. Removing $X1.3$ narrowed the representation of intellectual stimulation within Transformational Leadership; removing $X2.2$ reduced coverage of data analytics and digital academic-content development; removing $Z2$ eliminated the continuance-commitment component, leaving affective and normative commitment; and removing $Y2$ reduced coverage of industry-aligned study-program innovation. Accordingly, the item-dropped model is treated as a sensitivity specification rather than as a replacement for the theoretically complete original measurement model, because full discriminant validity was not achieved.

Ethical Approval

Ethical clearance was granted by STIE A. All respondents

provided written informed consent, and the institutions and respondents were reported using anonymized labels. No ethics approval number was reported in the available study documentation.

Result and Discussion

Measurement Model Evaluation

Before structural hypothesis testing, the reflective measurement model was assessed at both indicator and construct levels. Outer loadings ranged from .472 to .947. Eight indicators exceeded the preferred .70 threshold, whereas $X1.2$ (.680), $X1.3$ (.636), $X2.2$ (.646), $Z2$ (.572), $Y2$ (.472), and $Y3$ (.653) were below that benchmark and therefore require content-validity justification if retained (see Table 3). All 14 indicators were statistically different from zero in the 5,000-resample bootstrap analysis. However, statistical significance alone does not establish adequate indicator reliability. The indicators were retained to preserve the original construct specification and comparability with the theoretical framework, while the weaker loadings are disclosed explicitly and interpreted cautiously rather than presented as evidence of uniformly strong measurement quality (J. F. Hair et al., 2022).

At the construct level, Composite Reliability exceeded .80 and AVE exceeded .50 for all four constructs. Cronbach's Alpha was acceptable for Transformational Leadership (.762) and Digital Human Capital (.707), but was below the conventional .70 threshold for Academic Entrepreneurship (.658) and Organizational Commitment (.678). These values indicate that the measurement model demonstrates adequate composite reliability and convergent validity, but the internal consistency of two constructs should be interpreted cautiously. The Fornell-Larcker matrix shows that each square root of AVE is lower than at least one interconstruct correlation, and all six HTMT ratios exceed .90, ranging from 1.158 to 1.371. Discriminant validity is therefore not established in the original specification, indicating substantial empirical overlap among conceptually related constructs (Cornelisz, 2022; J. Hair & Alamer, 2022) (see Table 5).

Structural Model Evaluation

The coefficient of determination for Academic Entrepreneurship reached $R^2 = .900$ (adjusted $R^2 = .896$), indicating that Transformational Leadership, Digital Human Capital, and Organizational Commitment jointly accounted for approximately 90.0% of its observed variance. The coefficient for Organizational Commitment was $R^2 = .899$ (adjusted $R^2 = .897$). Effect-size analysis indicated a large association of Transformational Leadership with Academic Entrepreneurship ($f^2 = .575$) and Organizational Commitment ($f^2 = 1.812$), small associations of Digital Human Capital with Academic Entrepreneurship ($f^2 = .094$) and Organizational Commitment ($f^2 = .099$), and a negligible association of Organizational Commitment with Academic Entrepreneurship ($f^2 = .002$). Inner VIF values were 9.572 for $X1$ predicting Y , 3.741 for $X2$ predicting Y , 9.928 for Z predicting Y , and 3.404 for both predictors of Z . The two VIF values near 10 indicate serious structural collinearity; consequently, individual coefficients should not be ranked as independent causal contributions (Sarstedt et al., 2017). Figure 2 presents the original-model structural estimates, which are interpreted as in-sample associations rather than definitive predictive or causal effects (Sarstedt et al., 2017).

Hypothesis Testing Results

Hypothesis testing used 5,000 bootstrap resamples; hypotheses were supported when the two-tailed p -value was below .05 and the corresponding 95% BCa bootstrap

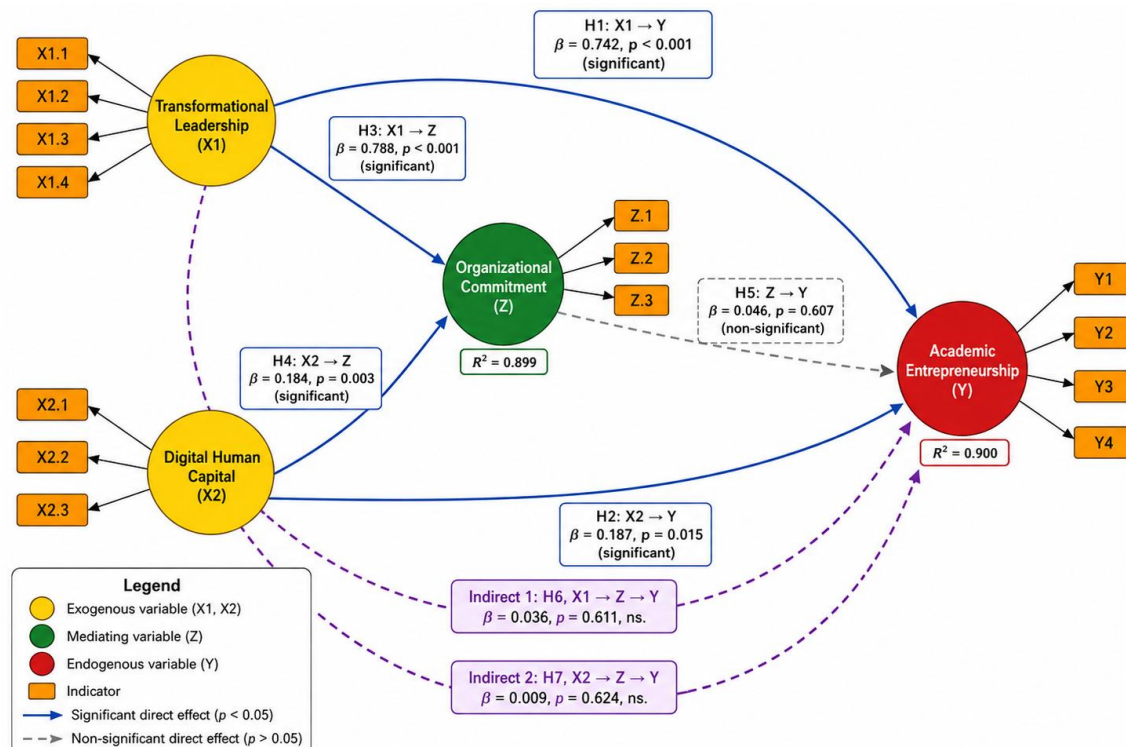


Figure 2. Original SEM-PLS Model Path Coefficients

Table 3. Indicator-Level Outer Loadings

Indicator	Construct	Loading	95% bootstrap CI	Decision
X1.1	X1	.935	[.908, .956]	Retained
X1.2	X1	.680	[.537, .788]	Retained; review
X1.3	X1	.636	[.489, .752]	Retained; review
X1.4	X1	.799	[.690, .872]	Retained
X2.1	X2	.947	[.931, .962]	Retained
X2.2	X2	.646	[.496, .751]	Retained; review
X2.3	X2	.784	[.692, .853]	Retained
Z1	Z	.895	[.874, .920]	Retained
Z2	Z	.572	[.366, .703]	Retained; review
Z3	Z	.869	[.816, .916]	Retained
Y1	Y	.917	[.871, .947]	Retained
Y2	Y	.472	[.302, .608]	Retained; review
Y3	Y	.653	[.473, .773]	Retained; review
Y4	Y	.758	[.633, .846]	Retained

Source: Primary Data. "Review" denotes a loading below .70 that requires content-validity justification.

Table 4. Construct-Level Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE	Sqrt (AVE)
Transformational Leadership (X1)	.762	.852	.595	.771
Digital Human Capital (X2)	.707	.841	.643	.802
Organizational Commitment (Z)	.678	.830	.628	.792
Academic Entrepreneurship (Y)	.658	.802	.516	.718

Source: Primary Data.

confidence interval excluded zero (J. F. Hair et al., 2022). Direct and specific indirect effects for the original model are reported in Table 7.

H1 and H3 were supported because Transformational Leadership was positively associated with Academic Entrepreneurship ($\beta = .742$, $t = 6.890$, $p < .001$) and Organizational Commitment ($\beta = .788$, $t = 13.794$, $p < .001$). H2 and H4 were also supported ($X2 \rightarrow Y$: $\beta = .187$, $p = .015$; $X2 \rightarrow Z$: $\beta = .184$, $p = .003$). H5 was not supported ($\beta = .046$, $p = .607$). The specific indirect effects for H6 and H7 were not significant. Thus, the results indicate direct-only non-

mediation for the relationships of Transformational Leadership and Digital Human Capital with Academic Entrepreneurship. The proposed commitment mechanism is therefore not supported in this sample, and the evidence should not be interpreted as showing that stronger commitment causes entrepreneurial behavior (Donkor et al., 2021; Hermanto et al., 2024).

Sensitivity Analysis Results

Removing the four weakest indicators produced a measurably stronger measurement model. Retained indicator loadings increased across all four constructs (e.g., X1.2 rose from .680

Table 5. Fornell-Larcker Matrix

Construct	X1	X2	Z	Y
X1	.771	.840	.943	.943
X2	.840	.802	.847	.850
Z	.943	.847	.792	.904
Y	.943	.850	.904	.718

Diagonal values are sqrt (AVE); off-diagonal values are interconstruct correlations. The criterion is not satisfied.

Table 6. Heterotrait-Monotrait Ratios

Construct pair	HTMT	Criterion
X1-X2	1.158	Not satisfied
X1-Z	1.318	Not satisfied
X1-Y	1.329	Not satisfied
X2-Z	1.220	Not satisfied
X2-Y	1.273	Not satisfied
Z-Y	1.371	Not satisfied

All pairwise HTMT ratios exceed .90; discriminant validity is not established (table 6).

to .763, Y3 from .653 to .703, Y4 from .758 to .766), and construct-level reliability improved accordingly:

Cronbach's Alpha for Organizational Commitment rose from .678 to .882, and for Academic Entrepreneurship from .658 to .733, bringing both above the conventional .70 benchmark. AVE increased for all four constructs, most notably for Organizational Commitment (.628 to .894) and Digital Human Capital (.643 to .843) (Table 8).

Discriminant validity improved but was not fully established. Of the six HTMT ratios, one pair (Digital Human Capital–Organizational Commitment) fell below the .90 threshold (.850), and four others moved closer to it (Transformational Leadership–Digital Human Capital = .944; Digital Human Capital–Academic Entrepreneurship = .908; Organizational Commitment–Academic Entrepreneurship = .928; Transformational Leadership–Organizational Commitment = .973), compared to a range of 1.158–1.371 in the original model. The Transformational Leadership–Academic Entrepreneurship pair remained the most problematic (HTMT = 1.206), consistent with the Fornell-Larcker matrix, where the correlation between these two constructs (.915) still exceeded both square roots of AVE (.833 and .814 respectively) (see Table 10). This indicates that empirical overlap between Transformational Leadership and Academic Entrepreneurship persists even after item removal and should be treated as a substantive rather than purely psychometric limitation (Table 9). A supplementary check confirmed this interpretation: removing the indicator with the narrowest own-versus-cross-loading margin (X1_1) increased, rather than reduced, HTMT ratios across all Transformational Leadership pairs (see Limitations).

Inner-model collinearity was substantially reduced. VIF values for the paths most affected in the original model dropped from 9.572 to 3.597 (X1→Y) and from 9.928 to 3.341 (Z→Y), placing all inner VIF point estimates below the conservative threshold of 5 (Table 11). This pattern is consistent with the possibility that the removed indicators contributed to the collinearity observed in the original model. However, residual conceptual overlap and common-method effects remain plausible and cannot be ruled out solely from the VIF reduction.

These measurement-model improvements were accompanied by a notable change in the structural results. H1, H3, and H4 remained supported (X1→Y: $\beta = .903$, $t = 16.225$, $p < .001$, 95% BCa CI [.789, 1.005]; X1→Z: $\beta = .621$, $t = 7.436$, $p < .001$, 95% BCa CI [.447, .781]; X2→Z: $\beta = .263$, $t = 2.942$, $p = .003$, 95% BCa CI [.081, .437]). H2, which was supported in the original model, was not supported in the

reduced model (X2→Y: $\beta = .032$, $t = .439$, $p = .661$, 95% BCa CI [-.111, .175]). H5, H6, and H7 remained unsupported (Z→Y: $\beta = -.014$, $p = .827$; X1→Z→Y: $\beta = -.009$, $p = .829$; X2→Z→Y: $\beta = -.004$, $p = .841$).

Taken together, neither tested specification produced a statistically significant specific indirect effect; this repeated pattern remains provisional because full discriminant validity was not achieved. The direct association between Transformational Leadership and Academic Entrepreneurship and the associations of both predictors with Organizational Commitment also remained statistically supported. However, the reversal of H2 and its non-significant total effect show that the Digital Human Capital-Academic Entrepreneurship relationship is measurement-sensitive and should not be treated as a stable finding. The persistent discriminant-validity concern between Transformational Leadership and Academic Entrepreneurship further requires all path magnitudes to be interpreted under measurement uncertainty. Figure 3 summarizes the item-dropped structural estimates; the exact 95% BCa confidence intervals are reported in Table 12.

Descriptive Institutional Profiles: STIE A and STIE B

Descriptive group profiles revealed numerical inter-institutional patterns that may enrich interpretation of the aggregate findings, although no formal test of measurement invariance or multigroup path differences was conducted (Henseler et al., 2009). Digital Human Capital showed a numerically higher coefficient in STIE A than in STIE B ($\beta_A = .241$ versus $\beta_B = .118$), whereas the Transformational Leadership-to-Organizational Commitment coefficient was numerically higher in STIE B than in STIE A ($\beta_B = .812$ versus $\beta_A = .718$). These differences are reported only as contextual descriptions and should not be interpreted as institutional rankings or evidence of causal differences. Future studies should examine these patterns using MICOM and adequately powered multigroup analysis.

The Effect of Transformational Leadership on Academic Entrepreneurship

The X1–Y association was statistically significant in both tested measurement specifications. Transformational Leadership was positively associated with Academic Entrepreneurship in the original model ($\beta = .742$, $t = 6.890$, $p < .001$) and in the item-dropped model ($\beta = .903$, $t = 16.225$, $p < .001$, 95% BCa CI [.789, 1.005]). The corresponding total effect in the reduced model was also significant ($\beta = .894$, $t = 18.775$, $p < .001$, 95% BCa CI [.788, .977]). Ethical role modelling, intellectual stimulation, a credible institutional vision, and individualized support may create conditions in which lecturers are more willing to engage in curriculum innovation, external partnerships, knowledge transfer, and community-based initiatives (Agazu et al., 2025; Bakari et al., 2019; Northouse, 2022; Rojak et al., 2024; Yasir et al., 2016). Nevertheless, the unresolved discriminant-validity overlap between Transformational Leadership and Academic Entrepreneurship means that the magnitude of this association should not be interpreted as a precise independent causal contribution.

The Role of Digital Human Capital in Academic Innovation

The original model indicated a positive association between Digital Human Capital and Academic Entrepreneurship ($\beta = .187$, $t = 2.445$, $p = .015$). However, this relationship became non-significant after the four weakest indicators were removed (direct effect: $\beta = .032$, $t = .439$, $p = .661$, 95% BCa CI [-.111, .175]; total effect: $\beta = .028$, $t = .434$, $p = .665$, 95% BCa CI [-.100, .153]). Accordingly, the X2–Y association was not stable across measurement specifications. Digital competencies may still facilitate collaboration, knowledge transfer, and academic innovation, but the present data do not establish a stable direct relationship with Academic Entrepreneurship

Table 7. Hypothesis Testing Results (Original Model, 5,000 Bootstrap Resamples)

Hypothesis	Path	β	t	p	95% CI	Decision
H1	X1 $\rightarrow$ Y	.742	6.890	<.001	[.542, .960]	Supported
H2	X2 $\rightarrow$ Y	.187	2.445	.015	[.029, .332]	Supported
H3	X1 $\rightarrow$ Z	.788	13.794	<.001	[.676, .898]	Supported
H4	X2 $\rightarrow$ Z	.184	2.939	.003	[.061, .305]	Supported
H5	Z $\rightarrow$ Y	.046	.514	.607	[-.133, .222]	Not supported
H6	X1 $\rightarrow$ Z $\rightarrow$ Y	.036	.509	.611	[-.107, .179]	Not supported
H7	X2 $\rightarrow$ Z $\rightarrow$ Y	.009	.490	.624	[-.027, .044]	Not supported

Source: Primary Data. The 95% confidence intervals are the exact 2.5% and 97.5% limits reported in the final SmartPLS bootstrapping output. "Decision" reflects statistical significance at $p < .05$ for the original specification only; given the unresolved discriminant-validity issues reported below, this should be read as "Significant/Not significant" for this specification rather than as confirmation of the hypothesis in an absolute sense.

Table 8. Sensitivity Analysis: Construct Reliability and Validity (Item-Dropped Model)

Construct	Cronbach's Alpha	CR (rho_a)	CR (rho_c)	AVE
Transformational Leadership (X1)	.777	.802	.871	.694
Digital Human Capital (X2)	.815	.836	.915	.843
Academic Entrepreneurship (Y)	.733	.766	.853	.662
Organizational Commitment (Z)	.882	.887	.944	.894

Retained indicators: X1.1, X1.2, X1.4; X2.1, X2.3; Y1, Y3, Y4; Z1, Z3. Original values in Table 4.

Table 9. Sensitivity Analysis: Discriminant Validity (Item-Dropped Model)

Fornell-Larcker Criterion				
Construct	X1	X2	Y	Z
X1	.833			
X2	.753	.918		
Y	.915	.702	.814	
Z	.819	.731	.749	.946

Diagonal values are $\sqrt{\text{AVE}}$. The X1-Y criterion is not satisfied (.915 > .833 and .814).

across defensible measurement specifications. Such capabilities may require complementary institutional supports, including autonomy, incentives, external networks, and access to innovation infrastructure (Barney & Clark, 2007; Donkor et al., 2021).

The association between Digital Human Capital and Organizational Commitment was more stable: H4 was supported in both the original model ($\beta = .184$, $p = .003$) and the reduced model ($\beta = .263$, $t = 2.942$, $p = .003$, 95% BCa CI [.081, .437]). However, the corresponding indirect path to Academic Entrepreneurship was non-significant in both specifications. Lecturers may feel more capable and more attached to their institution when digital skills are strengthened, but such attachment does not automatically produce entrepreneurial academic (Jarkawi & Hartanto, 2025; Li et al., 2025). Digital training should therefore be embedded in structured innovation programs, industry collaboration schemes, and institutional reward systems rather than treated as a sufficient standalone intervention.

Organizational Commitment as a Proposed Strategic Mediator

Contrary to the original theoretical expectation, Organizational Commitment was not significantly associated

with Academic Entrepreneurship in either specification. The original model produced $\beta = .046$, $p = .607$, with a negligible effect size ($f^2 = .002$), whereas the item-dropped model produced $\beta = -.014$, $t = .219$, $p = .827$, 95% BCa CI [-.132, .119]. This finding qualifies commitment-centered interpretations in Indonesian human-resource studies and suggests that affective, continuance, or normative attachment to an institution does not necessarily translate into commercialization, external partnership, program innovation, or venture activity. The three-component framework of (Meyer & Allen, 1991) remains useful for explaining why lecturers remain attached to an institution, but the present evidence does not support treating commitment as the behavioral mechanism that converts leadership or digital competence into Academic Entrepreneurship.

These mediation results should be interpreted as provisional rather than definitive because discriminant validity was not fully established. Nevertheless, the item-dropped model reproduced the same non-mediating pattern: H5, H6, and H7 were all non-significant, and both 95% BCa confidence intervals for the specific indirect effects included zero (Table 12). The total effects reported in Table 13 further show a significant overall association of Transformational Leadership with Academic Entrepreneurship but a non-significant overall association of Digital Human Capital with Academic Entrepreneurship. Thus, the absence of mediation is comparatively stable, whereas the magnitude of the direct paths remains subject to measurement uncertainty.

The non-significant X1 $\rightarrow$ Z $\rightarrow$ Y and X2 $\rightarrow$ Z $\rightarrow$ Y paths further indicate that Organizational Commitment did not function as the proposed mediator. One plausible explanation is that lecturers may feel institutional belonging while still lacking the time, funding, industry access, intellectual-property support, workload recognition, or formal incentives needed for entrepreneurial academic work (Hermanto et al., 2024; Noviyanti Wiradhika, Hari Susanta, 2025). High lecturer-to-student ratios may also constrain discretionary capacity, consistent with Conservation of Resources reasoning (Hobfoll, 1989; Rahiem, 2025). These explanations were not directly tested and should therefore be read as theoretically grounded interpretations that guide future model development rather than as causal conclusions.

Managerial and Policy Implications

The findings suggest three context-sensitive managerial and policy implications. The first two recommendations follow directly from the tested variables (Transformational Leadership and Digital Human Capital); the third draws on broader theoretical reasoning about entrepreneurial behavior rather than First, leadership development should be directly connected to program innovation, industry collaboration, knowledge transfer, and recognition of entrepreneurial

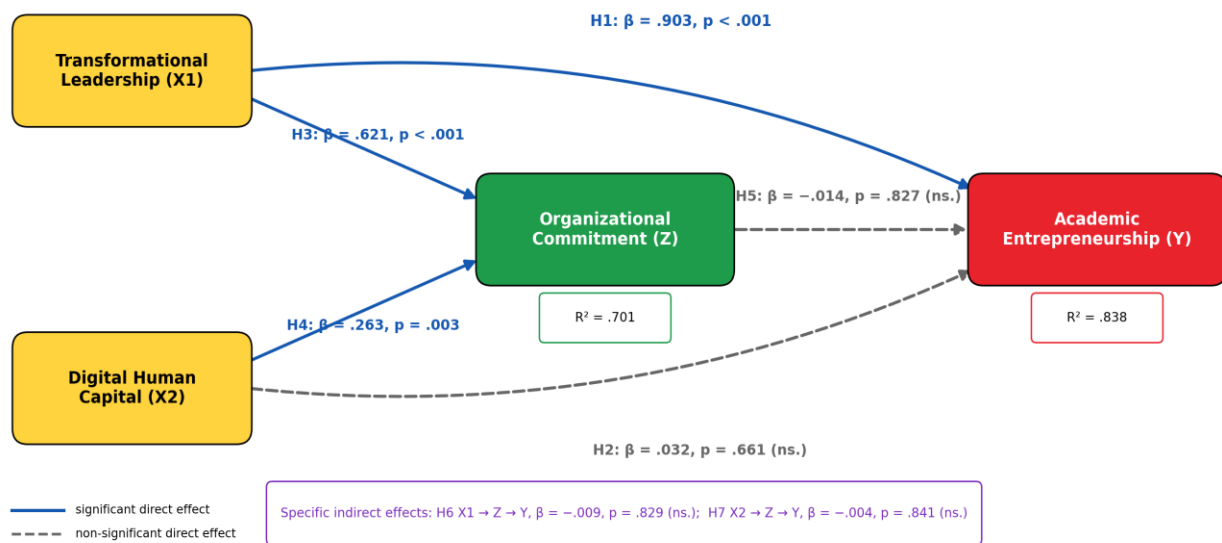


Figure 3. Item-Dropped Sensitivity Model Path Coefficients

Note: The figure reports point estimates and significance decisions for the item-dropped model; exact 95% BCa confidence intervals are provided in Table 12.

Table 10. Heterotrait-Monotrait Ratio (HTMT)

Construct pair	HTMT	95% CI	Criterion (<.90)
X1-X2	.944	[.863, 1.031]	Not satisfied
X1-Y	1.206	[1.112, 1.339]	Not satisfied
X1-Z	.973	[.900, 1.066]	Not satisfied
X2-Y	.908	[.797, 1.012]	Not satisfied (marginal)
X2-Z	.850	[.743, .946]	Satisfied
Z-Y	.928	[.860, 1.000]	Not satisfied (marginal)

Table 11. Sensitivity Analysis: Inner Model Collinearity (VIF)

Path	Original VIF	Item-Dropped VIF
X1 $\rightarrow$ Y	9.572	3.597
X1 $\rightarrow$ Z	3.404	2.311
X2 $\rightarrow$ Y	3.741	2.543
X2 $\rightarrow$ Z	3.404	2.311
Z $\rightarrow$ Y	9.928	3.341

academic work, rather than relying mainly on generalized commitment-building (Meyer & Allen, 1991; Northouse, 2022). Second, digital capability development should combine technical training with digital research infrastructure, coaching, psychological safety, and clearly structured opportunities for applying digital skills to concrete academic outputs (Jarkawi & Hartanto, 2025). Third, and importantly, workload rationalization, research sabbaticals, seed funding, and transparent incentive structures were not measured constructs in this study; they are proposed here as theoretically plausible interventions grounded in Conservation of Resources reasoning (Hobfoll, 1989) rather than as empirically validated recommendations. Future research should operationalize and test these mechanisms directly before they are adopted as evidence-based policy.

These recommendations are practical interpretations of associational findings and should be implemented with local monitoring rather than treated as guaranteed causal interventions.

Theoretical Contributions

Given the discriminant-validity and collinearity concerns

documented above - and only partially resolved in the sensitivity analysis - this research offers three contributions that should be read as context-specific preliminary evidence rather than a confirmed extension of established theory. The following contributions are qualified accordingly and require replication with a more clearly differentiated measurement model before broader theoretical claims can be supported.

First, the study applies the Resource-Based View to private higher education by jointly testing Transformational Leadership and Digital Human Capital as resources potentially associated with Academic Entrepreneurship. The direct and total X1-Y associations were statistically significant in both tested specifications, whereas the Digital Human Capital-Academic Entrepreneurship relationship was significant only in the original model and became non-significant in the reduced model. The proposed commitment pathway did not receive empirical support in either specification (Barney & Clark, 2007; Donkor et al., 2021; Teece, 2018). These results should therefore be read as preliminary, context-specific evidence rather than as confirmation that both resources independently generate entrepreneurial academic outcomes.

Second, the study clarifies the connection with Dynamic Capabilities Theory by positioning Organizational Commitment as a proposed motivational microfoundation that could support sensing, seizing, and reconfiguring, rather than as a dynamic capability itself. Because H5-H7 are not supported, the study does not establish commitment as that microfoundation; instead, it qualifies the assumption that institutional attachment automatically channels resources into entrepreneurial academic behavior than variables measured in this study, and is offered as a theory-informed suggestion for future empirical testing rather than as an empirical finding.

Third, the study contributes context-specific evidence to academic entrepreneurship research by showing that the transformational-leadership association was more stable than the digital-human-capital association, while the hypothesized commitment mechanism was unsupported in two Indonesian private STIEs. This setting differs institutionally from the university environments commonly discussed in entrepreneurial-university research (Etzkowitz, 2003). The contribution remains preliminary pending replication with an improved measurement specification that achieves full discriminant validity and uses multisource indicators of

Table 12. Sensitivity Analysis: Direct and Specific Indirect Effects (Item-Dropped Model, 5,000 BCa Bootstrap Resamples)

H	Path	β	t	p	95% CI	Decision
H1	X1 $\rightarrow$ Y	.903	16.225	<.001	[.789, 1.005]	Supported
H2	X2 $\rightarrow$ Y	.032	.439	.661	[-.111, .175]	Not supported
H3	X1 $\rightarrow$ Z	.621	7.436	<.001	[.447, .781]	Supported
H4	X2 $\rightarrow$ Z	.263	2.942	.003	[.081, .437]	Supported
H5	Z $\rightarrow$ Y	-.014	.219	.827	[-.132, .119]	Not supported
H6	X1 $\rightarrow$ Z $\rightarrow$ Y	-.009	.216	.829	[-.091, .068]	Not supported
H7	X2 $\rightarrow$ Z $\rightarrow$ Y	-.004	.201	.841	[-.044, .031]	Not supported

Note: "Decision" reflects statistical significance at $p < .05$ for the item-dropped specification only, not confirmation of the hypothesis in an absolute sense; discriminant validity between Transformational Leadership and Academic Entrepreneurship remained unresolved in this specification (Table 9).

Table 13. Sensitivity Analysis: Total Effects (Item-Dropped Model, 5,000 BCa Bootstrap Resamples)

Path	β	t	p	95% BCa CI	Decision
X1 $\rightarrow$ Y	.894	18.775	<.001	[.788, .977]	Significant
X1 $\rightarrow$ Z	.621	7.436	<.001	[.447, .781]	Significant
X2 $\rightarrow$ Y	.028	.434	.665	[-.100, .153]	Not significant
X2 $\rightarrow$ Z	.263	2.942	.003	[.081, .437]	Significant
Z $\rightarrow$ Y	-.014	.219	.827	[-.132, .119]	Not significant

Note: For paths ending in Academic Entrepreneurship, the total effect equals the direct effect plus the specific indirect effect through Organizational Commitment. Statistical significance is determined by $p < .05$ and a 95% BCa confidence interval that excludes zero.

Academic Entrepreneurship.

Limitations

Several limitations should guide interpretation and extension of these findings. Methodologically, although the census-based sample comprises all 79 permanent lecturers in the two participating institutions, the localized institutional scope limits generalization beyond private STIEs with comparable organizational, employment, regulatory, and resource characteristics. Measurement limitations are also important. The final assessment indicates substantial construct overlap: all HTMT ratios exceeded .90, the Fornell-Larcker criterion was not satisfied, and several indicators had loadings below .70.

A supplementary sensitivity analysis, in which the four weakest indicators (X1.3, X2.2, Z2, Y2) were removed and the model re-estimated, substantially improved construct reliability (all Cronbach's Alpha values above .70), inner-model collinearity (all VIF point estimates below 5), and reduced all six HTMT ratios in magnitude, bringing one pair (Digital Human Capital–Organizational Commitment) below the conventional .90 threshold. However, discriminant validity between Transformational Leadership and Academic Entrepreneurship remained unresolved in the reduced specification (HTMT = 1.206; Fornell-Larcker criterion not satisfied). The persistent overlap may reflect conceptual proximity between perceived leadership behavior and entrepreneurial academic behavior, but residual item redundancy and common-method effects cannot be ruled out. Future research should examine alternative item wording, higher-order or more parsimonious construct specifications, marker-variable procedures, qualitative triangulation, and multisource measurement rather than relying only on further item trimming. In addition, H2 and the total effect of Digital Human Capital on Academic Entrepreneurship were not stable across measurement specifications and should be treated with particular caution.

As an additional robustness check targeting the unresolved Transformational Leadership–Academic Entrepreneurship overlap, the item-dropped model's cross-loading matrix was inspected to identify the indicator with the narrowest margin between its own-construct loading and its cross-loading on Academic Entrepreneurship. Indicator X1_1 showed the smallest such margin (own-construct loading =

.912; cross-loading on Y = .877; Δ = .035), ahead of Y1 (Δ = .088) and X1_4 (Δ = .087). To test whether X1_1 was responsible for the residual overlap, it was removed and the model re-estimated with Transformational Leadership retaining only two indicators (X1_2, X1_4). Rather than resolving the problem, this further reduction increased HTMT ratios for every pair involving Transformational Leadership, including two pairs that had previously satisfied the .90 criterion (X1–X2: .944 to 1.103; X1–Z: .973 to 1.034), and left the target ratio unresolved (X1–Y: 1.206 to 1.320); the direct path from Organizational Commitment to Academic Entrepreneurship also became substantially larger (β = .260, from a near-zero estimate in the reported model), signaling a change in the mediation results that was judged too unstable to adopt. This pattern indicates that X1_1 functions as the most reliable and content-valid indicator of Transformational Leadership rather than as a source of measurement redundancy, and that the residual overlap reflects same-rater assessment of both leadership perceptions and self-reported entrepreneurial behavior – consistent with the elevated Harman's single-factor loading reported above – rather than a trimmable item-level artifact. On this basis, the ten-indicator item-dropped model reported in Tables 7–12 is retained as the principal sensitivity specification for comparative reporting; it is not treated as a fully validated final measurement model. The full indicator-level cross-loading matrix for this specification is reported in Appendix A, Table A1.

A higher-order combination of Transformational Leadership and Academic Entrepreneurship into a single construct was considered as a way of resolving the residual overlap but was not adopted in this study. The two constructs are theoretically specified as an antecedent and an outcome within the mediation model tested here; collapsing them into one higher-order construct would replace the substantive research question of whether leadership relates to entrepreneurial behavior with a purely descriptive account of a single composite construct, and would preclude testing H1 and the associated mediation hypotheses altogether. This option is therefore left for future studies that are explicitly designed around a more parsimonious construct structure, rather than adopted post hoc in the present model.

Future studies should employ larger multi-institutional samples across West Java and adjacent regions and refine the measurement model before retesting the structural

relationships. The cross-sectional design precludes temporal or causal inference, so longitudinal and multisource designs remain necessary (J. Hair & Alamer, 2022; Sugiyono, 2022). Reliance on a single self-report questionnaire also creates common-method risk. Although anonymity and separation of item blocks were used procedurally, Harman's first unrotated factor accounted for 53.894% of variance, above the conventional 50% reference, and full-collinearity VIF values ranged from 4.092 to 15.073. These statistics indicate that common method bias and/or conceptual overlap cannot be dismissed. Future research should triangulate survey responses with objective indicators such as grants, patents, licenses, industry contracts, program innovations, and spin-off or community-enterprise activity.

Conclusion

This study provides cross-sectional, associational evidence on the relationships among Transformational Leadership, Digital Human Capital, Organizational Commitment, and Academic Entrepreneurship within two private Schools of Economics in Bekasi City, Indonesia. In the original model, H1-H4 were supported, whereas H5-H7 were not supported. In the item-dropped sensitivity model, H1, H3, and H4 remained supported, H2 became non-significant, and H5-H7 remained unsupported.

The sensitivity analysis substantially improved construct reliability and reduced inner-model collinearity while reproducing the same non-mediating pattern. This strengthens confidence that the absence of mediation is not solely an artifact of the four weakest indicators. However, the direct and total effects of Digital Human Capital on Academic Entrepreneurship were non-significant in the reduced model, and discriminant validity between Transformational Leadership and Academic Entrepreneurship remained unresolved. Neither tested measurement specification detected a statistically significant indirect effect through Organizational Commitment; this conclusion remains provisional and specification-dependent. The most defensible structural conclusion is therefore a comparatively stable association of Transformational Leadership with Academic Entrepreneurship and an unstable association of Digital Human Capital with Academic Entrepreneurship.

Academic contribution. This study provides cautious, context-specific evidence relevant to the Resource-Based View and Dynamic Capabilities Theory. Transformational Leadership showed the most stable association with Academic Entrepreneurship, while the Digital Human Capital relationship was sensitive to measurement specification. Because Organizational Commitment did not mediate either focal relationship, it should be treated as a proposed motivational micro foundation requiring further validation rather than as an

established mediating capability. These findings qualify, rather than confirm or broadly extend, resource- and capability-based explanations in resource-constrained private higher education.

Taken together, the results suggest that comparable private STIEs should connect transformational leadership practices directly with concrete innovation opportunities, external collaboration, and recognition of entrepreneurial academic work. Digital-capability development should likewise be paired with opportunities and infrastructure for practical application, while recognizing that its direct association with Academic Entrepreneurship was not stable across model specifications. Broader proposals concerning seed funding, workload recognition, autonomy, and transparent incentives remain theory-informed suggestions rather than tested effects. These conclusions remain bounded by the cross-sectional design, single-source measurement, localized sample, residual discriminant-validity problems, and common-method risk. Future research should refine construct measurement, use longitudinal and multisource designs, test measurement invariance before institutional comparisons, and assess objective Academic Entrepreneurship outcomes before drawing causal or broadly generalizable conclusions.

Author contributions

Eddy Setyanto contributed to conceptualization, theoretical development, research design, instrument preparation, data collection, data curation, statistical analysis, visualization, and preparation of the original manuscript. Datu Razali Datu Eranza contributed to methodological validation, interpretation of the findings, supervision, critical review, and substantive manuscript revision. Andi Muhammad Sadli contributed to institutional coordination, validation of the research context, interpretation of the managerial implications, critical review, and final manuscript editing. All authors reviewed and approved the final version and accept responsibility for the integrity of the work.

Acknowledgements

The authors gratefully acknowledge the management and permanent lecturers of the two participating private Schools of Economics in Bekasi for facilitating access to the research setting and participating in the data collection process. Their institutional identities are not repeated in the body of the manuscript to protect organizational confidentiality. The authors also acknowledge the academic colleagues who provided technical and methodological feedback during instrument refinement and manuscript preparation but did not meet the criteria for authorship.

References

- Agazu, B. G., Kero, C. A., & Debela, K. L. (2025). Transformational leadership and firm performance: a systematic literature review. *Journal of Innovation and Entrepreneurship*, 14(1). <https://doi.org/10.1186/s13731-025-00476-x>
- Almaududi Ausat, A. M., Suherlan, S., Peirisa, T., & Hirawan, Z. (2022). The Effect of Transformational Leadership on Organizational Commitment and Work Performance. *Journal of Leadership in Organizations*, 4(1). <https://doi.org/10.22146/jlo.71846>
- Amalia, R. T., & von Korflesch, H. F. O. (2021). Entrepreneurship education in Indonesian higher education: Mapping literature from the country's perspective. *Entrepreneurship Education*, 4(3), 291–333. <https://doi.org/10.1007/s41959-021-00053-9>
- Azmy, A. (2019). Employee Engagement Factors in A Higher Education Institution. *Binus Business Review*, 10(3), 187–200. <https://doi.org/10.21512/bbr.v10i3.5857>
- Bakari, H., Hunjra, A. I., Jaros, S., & Khoso, I. (2019a). Moderating role of cynicism about organizational change between authentic leadership and commitment to change in Pakistani public sector hospitals. *Leadership in Health Services*, 32(3), 387–404. <https://doi.org/10.1108/LHS-01-2018-0006>
- Bakari, H., Hunjra, A. I., Jaros, S., & Khoso, I. (2019b). Moderating role of cynicism about organizational change between authentic leadership and commitment to change in Pakistani public sector hospitals. *Leadership in Health Services*, 32(3), 387–404. <https://doi.org/10.1108/LHS-01-2018-0006>
- Barney, J. B., & Clark, D. N. (2007a). Resource-Based Theory. *Resource-Based Theory*. <https://doi.org/10.1093/oso/9780199277681.001.0001>
- Barney, J. B., & Clark, D. N. (2007b). *Resource-based theory: Creating and sustaining competitive advantage*. Oxford University Press. <https://doi.org/10.1093/oso/9780199277681.001.0001>
- Barney, J. B., & Clark, D. N. (2007c). *Resource-Based Theory: Creating and Sustaining Competitive Advantage*. Oxford University Press/Oxford. <https://doi.org/10.1093/oso/9780199277681.001.0001>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press; Collier Macmillan.
- Chaidir, C., Majid, M. S. A., Ibrahim, M., Djalil, M. A., & Agustina, M. (2025). The

- Role of Digital Leadership in Technology-Driven Learning in Indonesian Senior High Schools. *International Journal of Distance Education Technologies*, 23(1), 1–27. <https://doi.org/10.4018/IJDET.391898>
- Chinorackay, R., Stalmasekova, N., Madlenak, R., & Madlenakova, L. (2025). Are Nations Ready for Digital Transformation? A Macroeconomic Perspective Through the Lens of Education Quality. *Economies*, 13(6). <https://doi.org/10.3390/economies13060152>
- Cornelisz, I. (2022). Big Data on Campus. Data Analytics and Decision Making in Higher Education. Karen L. Webber, Henry Y. Zheng, Johns Hopkins University Press, Baltimore, MD, 2020. 324 pp. \$xx.xx (hard cover) ISBN: 978-1-4214-3903-7. *Higher Education Quarterly*, 76(4), 893–897. <https://doi.org/10.1111/hequ.12373>
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092. <https://doi.org/10.1016/j.techfore.2021.121092>
- Donkor, F., Dongmei, Z., & Sekyere, I. (2021). The Mediating Effects of Organizational Commitment on Leadership Styles and Employee Performance in SOEs in Ghana: A Structural Equation Modeling Analysis. *Sage Open*, 11(2), 21582440211008896. <https://doi.org/10.1177/21582440211008896>
- Effendi, M. S., Komariah, A., Agustina, S. S., & Dikdik, A. (2025). Beyond Workload: Uncovering the Link Between Supervisor Support, Work-Life Balance, and Lecturer Productivity. *Education Sciences*, 15(9), 1122. <https://doi.org/10.3390/educsci15091122>
- Ehrnrooth, M., Barner-Rasmussen, W., Koveshnikov, A., & Törnroos, M. (2021). A new look at the relationships between transformational leadership and employee attitudes-Does a high-performance work system substitute and/or enhance these relationships? *Human Resource Management*, 60(3), 377–398. <https://doi.org/10.1002/hrm.22024>
- Etzkowitz, H. (2003a). Research groups as 'quasi-firms': the invention of the entrepreneurial university. *Research Policy*, 32(1), 109–121. [https://doi.org/10.1016/S0048-7333\(02\)00009-4](https://doi.org/10.1016/S0048-7333(02)00009-4)
- Etzkowitz, H. (2003b). Research groups as "quasi-firms": The invention of the entrepreneurial university. *Research Policy*, 32(1), 109–121. [https://doi.org/10.1016/S0048-7333\(02\)00009-4](https://doi.org/10.1016/S0048-7333(02)00009-4)
- Forum, W. E. (2023). *The future of jobs report 2023*. World Economic Forum.
- Guo, W., Cui, J., Arendt, L., & O'Brien, J. (2025). Limitations and Potential Dark Sides of Transformational Leadership: The Case of the Founder and Former CEO of Theranos. *Management Teaching Review*, 10(4), 477–490. <https://doi.org/10.1177/23792981241267758>
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022a). *A primer on partial least squares structural equation modeling (PLS-SEM)* (Third edition). SAGE.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022b). *A primer on partial least squares structural equation modeling (PLS-SEM)* (Third edition). SAGE.
- Hair, J. F., Sarstedt, M., Ringle, C. M., Sharma, P. N., & Liengaard, B. D. (2024). Going beyond the untold facts in PLS-SEM and moving forward. *European Journal of Marketing*, 58(13), 81–106. <https://doi.org/10.1108/EJM-08-2023-0645>
- Harsono, T. W., Hidayat, K., Iqbal, M., & Abdillah, Y. (2025). Exploring the effect of transformational leadership and knowledge management in enhancing innovative performance: a mediating role of innovation capability. *Journal of Manufacturing Technology Management*, 36(1), 227–250. <https://doi.org/10.1108/JMTM-03-2024-0125>
- Hassan, H., Kamaluddin, A., Saad, S., Haron, N. Q. 'Aini, Hamzah, N., & Kusumaningtiars, R. (2022). Intellectual Capital Performance in Higher Education Institutions: Evidence from Public Universities. *International Journal of Academic Research in Business and Social Sciences*, 12(11). <https://doi.org/10.6007/IJARBS/v12-i11/15305>
- Hermanto, Y. B., Srimulyani, V. A., & Pitoyo, D. J. (2024a). The mediating role of quality of work life and organizational commitment in the link between transformational leadership and organizational citizenship behavior. *Heliyon*, 10(6), e27664. <https://doi.org/10.1016/j.heliyon.2024.e27664>
- Hermanto, Y. B., Srimulyani, V. A., & Pitoyo, D. J. (2024b). The mediating role of quality of work life and organizational commitment in the link between transformational leadership and organizational citizenship behavior. *Heliyon*, 10(6), e27664. <https://doi.org/10.1016/j.heliyon.2024.e27664>
- Hidayah, T. (2025). The role of transformational leadership in improving organisational performance: A human resource management perspective. *International Journal of Economics (IJE)*, 4(1), 234–244. <https://doi.org/10.55299/ijec.v4i1.1271>
- Hobfoll, S. E. (1989). Conservation of Resources: A New Attempt at Conceptualizing Stress. *American Psychologist*, 44(3), 513–524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Huyler, D., & McGill, C. M. (2019). Book Review: Research Design: Qualitative, Quantitative, and Mixed Methods Approaches Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, by Creswell John and Creswell J. David. Thousand Oaks, CA: Sage Publication, Inc. 275 Pages, \$67.0. *New Horizons in Adult Education and Human Resource Development*, 31(3), 75–77. <https://doi.org/10.1002/nha3.20258>
- Iyola, K., Alzubi, A., & Dappa, K. (2023). The influence of learning orientation on entrepreneurial performance: The role of business model innovation and risk-taking propensity. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(3), 100133. <https://doi.org/10.1016/j.joitmc.2023.100133>
- Jarkawi, & Hartanto, C. F. B. (2025). The role of digital transformation in educational management: Innovation, challenges, and its impact on school quality. *Journal of Hunan University Natural Sciences*, 52(10). <https://doi.org/10.55463/issn.1674-2974.52.10.6>
- Krishnan, V. R. (2012). Transformational leadership and personal outcomes: empowerment as mediator. *Leadership & Organization Development Journal*, 33(6), 550–563. <https://doi.org/10.1108/01437731211253019>
- Li, P., Chen, Y., & Guo, X. (2025). Digital transformation and supply chain resilience. *International Review of Economics & Finance*, 99, 104033. <https://doi.org/10.1016/j.iref.2025.104033>
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1(1), 61–89. [https://doi.org/10.1016/1053-4822\(91\)90011-Z](https://doi.org/10.1016/1053-4822(91)90011-Z)
- Northouse, P. G. (2022a). *Leadership: theory and practice* (Ninth Edition). SAGE.
- Northouse, P. G. (2022b). *Leadership: theory and practice* (Ninth Edit). SAGE.
- Northouse, P. G. (2022c). *Leadership: Theory and practice* (9th ed.). SAGE.
- Noviyanti Wiradhika, Hari Susanta, N. N. (2025). Analisis Pengaruh Transformational Leadership dan Work Motivation Terhadap Employee Performance Melalui Job Satisfaction di PT Bank BRI Persero TBK Kantor Cabang Cibubur. *Jurnal Ekonomi Manajemen Sistem Informasi*, 6(5), 3327–3339. <https://doi.org/10.38035/jemsi.v6i5.5167>
- Noviyanti Wiradhika, Ngatno Ngatno, & Hari Susanta. (2025). Analisis Pengaruh Transformational Leadership dan Work Motivation Terhadap Employee Performance Melalui Job Satisfaction di PT Bank BRI Persero TBK Kantor Cabang Cibubur. *Jurnal Ekonomi Manajemen Sistem Informasi*, 6(5), 3327–3339. <https://doi.org/10.38035/jemsi.v6i5.5167>
- PAAIS, M., & PATTIRUHU, J. R. (2020). Effect of Motivation, Leadership, and Organizational Culture on Satisfaction and Employee Performance. *The Journal of Asian Finance, Economics and Business*, 7(8), 577–588. <https://doi.org/10.13106/JAFEB.2020.VOL7.N08.577>
- Rachman, A. A., Hafiz, M. J. Al, Vernanda, P., & Maulia, I. R. (2024a). The Influence Of Organizational Culture And Leadership Style On Employee Performance. *PPIMAN Pusat Publikasi Ilmu Manajemen*, 2(1), 200–210. <https://doi.org/10.59603/ppiman.v2i1.307>
- Rachman, A. A., Hafiz, M. J. Al, Vernanda, P., & Maulia, I. R. (2024b). The Influence Of Organizational Culture And Leadership Style On Employee Performance. *PPIMAN Pusat Publikasi Ilmu Manajemen*, 2(1), 200–210. <https://doi.org/10.59603/ppiman.v2i1.307>
- Rahiem, M. D. H. (2025a). Towards Resilient Societies: The Synergy of Religion, Education, Health, Science, and Technology. *Towards Resilient Societies: The Synergy of Religion, Education, Health, Science, and Technology*. <https://doi.org/10.1201/9781003645542>
- Rahiem, M. D. H. (2025b). *Towards Resilient Societies: The Synergy of Religion, Education, Health, Science, and Technology*. Towards Resilient Societies: The Synergy of Religion, Education, Health, Science, and Technology. <https://doi.org/10.1201/9781003645542/TOWARDSRESILIENT-SOCIETIES-SYNERGY-RELIGION-EDUCATION-HEALTH-SCIENCETECHNOLOGY-MAILA-RAHIEM>
- Rojak, J. A., Sanaji, S., Witjaksono, A. D., & Kistyanto, A. (2024). The Influence of Transformational Leadership and Organizational Culture on Employee Performance. *EDUKASIA: Jurnal Pendidikan Dan Pembelajaran*, 5(1), 977–990. <https://doi.org/10.62775/edukasia.v5i1.926>
- Russo, G., Nappo, F., Manzari, A., Cicchini, D., & Santis, S. (2025). Intellectual capital under institutional pressures: the role of digital transformation in shaping university processes. *Business Process Management Journal*, 1–34. <https://doi.org/10.1108/BPMJ-04-2025-0455>
- Sakapurnama, E., Huseini, M., & Soeling, P. D. (2019). THE CHALLENGES IN HIGHER EDUCATION INSTITUTIONS IN INDONESIA: ARE WE ENTREPRENEURIAL UNIVERSITY YET? *Hasanuddin Economics and Business Review*, 2(3), 153. <https://doi.org/10.26487/hebr.v2i3.1680>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Treating unobserved heterogeneity in PLS-SEM: A multi-method approach. In H. Latan & R. Noonan (Eds.), *Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications* (p. 197). Springer International Publishing. https://doi.org/10.1007/978-3-319-64069-3_9
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2019). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. E. Vomberg (Eds.), *Handbook of Market Research* (pp. 1–47). Springer International Publishing. https://doi.org/10.1007/978-3-319-05542-8_15-2
- Singh, P. T. (2025). *Human Capital Development and Organizational Performance: Management, Strategy, Learning, and Sustainability Perspectives* (NCM Publishing House, Ed.).
- Sugiyono. (2022). *Metode Penelitian Bisnis* (3rd ed.). Alfabeta.
- Suharto, A. (2025). The Impact of Organizational Culture, Work Ethics, and Organizational Commitment on Employee Retention in a Regional Revenue Agency: A Case Study. *Ilomata International Journal of Management*, 6(3), 1124–1141. <https://doi.org/10.61194/ijjm.v6i3.1617>
- Sujarweni, V. W. (2018). *Metodologi penelitian bisnis & manajemen* (3rd ed.). Alfabeta.
- Taques, F. H., López, M. G., Basso, L. F., & Areal, N. (2021). Indicators used to measure service innovation and manufacturing innovation. *Journal of Innovation & Knowledge*, 6(1), 11–26. <https://doi.org/10.1016/j.jik.2019.12.001>
- Teece, D. J. (2018a). Dynamic capabilities as (workable) management systems

- theory. *Journal of Management & Organization*, 24(3), 359–368. <https://doi.org/10.1017/jmo.2017.75>
- Teece, D. J. (2018b). Dynamic capabilities as (workable) management systems theory. *Journal of Management and Organization*, 24(3), 359–368. <https://doi.org/10.1017/jmo.2017.75>
- Wiradhika, N., Ngatno, N., & Susanta, H. (2025). Analisis pengaruh transformational leadership dan work motivation terhadap employee performance melalui job satisfaction di PT Bank BRI Persero Tbk Kantor Cabang Cibubur. *Jurnal Ekonomi Manajemen Sistem Informasi*, 6(5), 3327–3339. <https://doi.org/10.38035/jemsi.v6i5.5167>
- Xuecheng, W., Iqbal, Q., & Saina, B. (2022). Factors Affecting Employee's Retention: Integration of Situational Leadership With Social Exchange Theory. *Frontiers in Psychology*, 13, 872105. <https://doi.org/10.3389/fpsyg.2022.872105>
- Yasir, M., Imran, R., Irshad, M. K., Mohamad, N. A., & Khan, M. M. (2016a). Leadership Styles in Relation to Employees' Trust and Organizational Change Capacity: Evidence From Non-Profit Organizations. *SAGE Open*, 6(4). <https://doi.org/10.1177/2158244016675396>
- Yasir, M., Imran, R., Irshad, M. K., Mohamad, N. A., & Khan, M. M. (2016b). Leadership Styles in Relation to Employees' Trust and Organizational Change Capacity: Evidence From Non-Profit Organizations. *SAGE Open*, 6(4). <https://doi.org/10.1177/2158244016675396>
- Zhao, X., Lynch, J. G., & Chen, Q. (2010a). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, 37(2), 197–206. <https://doi.org/10.1086/651257>
- Zhao, X., Lynch, J. G., & Chen, Q. (2010b). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197–206. <https://doi.org/10.1086/651257>