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Indigenous Knowledge Systems and Curriculum Transformation: A Cross-Sectional Study of Faculty Readiness in Indonesian Higher Education

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ABSTRACT

Background. Higher education institutions worldwide are trying to integrate Indigenous Knowledge Systems (IKS) into curricula long shaped by Western epistemological paradigms, but evidence on what drives faculty readiness for this change remains limited, especially in Southeast Asia.

Objective. To examine faculty attitudes, institutional resistance, and curriculum transformation readiness related to IKS integration, and to identify the predictors of high integration readiness.

Methods. This cross-sectional study involved 412 faculty members at six higher education institutions in major Indonesian cities, plus 28 in-depth interviews. Participants completed validated instruments on IKS integration attitudes, curriculum transformation readiness, perceived institutional resistance, teaching self-efficacy for IKS, and student cultural competency.

Results. All outcomes differed significantly by discipline. Social Sciences faculty reported the highest integration attitudes (4.12 ± 0.71) and Engineering faculty the lowest (2.87 ± 0.89; $F(3, 408) = 42.67$; $p < 0.001$). Readiness was higher among faculty with prior IKS training (3.89 ± 0.72 vs. 2.96 ± 0.88; $p < 0.001$; Cohen's $d = 1.11$). In multivariable logistic regression, prior IKS training (OR = 3.87; 95% CI: 2.48–6.04), Social Sciences discipline (OR = 3.21; 95% CI: 1.78–5.79), and low institutional resistance (OR = 2.56; 95% CI: 1.72–3.81) were the strongest independent predictors of high integration readiness.

Conclusion. Faculty professional development and institutional support may be important for curriculum decolonization in Indonesian higher education. Longitudinal studies are needed to test whether training changes readiness.

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1. Introduction

Universities in the Global South still carry colonial legacies in their curricula, teaching practices, and epistemological foundations. Scholars and practitioners increasingly note that Western knowledge paradigms dominate these curricula out of proportion, and that Indigenous and local knowledge systems are pushed to the margins.[1,2] This is the coloniality of knowledge. Colonial power structures keep working through the privileging of Eurocentric epistemologies inside educational institutions, long after formal political decolonization has ended.[3] Decolonizing the curriculum has become a major challenge for higher education in the twenty-first century, intellectually and institutionally.[4]

Indigenous Knowledge Systems (IKS) are the wisdom, practices, and worldviews that Indigenous and local communities have built up over generations by living in sustained contact with their natural and social environments.[5] They cover ecological management, agricultural practice, medicinal traditions, ways of resolving conflict, and philosophical frameworks, and they offer epistemological alternatives to the dominant Western scientific paradigms.[6,7] In education, bringing IKS into university curricula is a political act of epistemological justice. It is also a teaching strategy. It can make higher education more relevant, inclusive, and culturally responsive.[8] Scholars argue that integration can build analytical thinking, encourage intercultural understanding, and prepare students for professional practice in culturally diverse societies.[9]

Recognition of the value of IKS in education is growing worldwide. Integration into university curricula has nonetheless been slow, uneven, and contested.[10] Studies from African, Australian, and Latin American higher education settings describe lasting institutional resistance to curriculum decolonization, in the form of bureaucratic inertia, disciplinary gatekeeping, scarce resources, resistance among faculty, and a perception that Indigenous knowledge cannot meet academic standards of rigor and validity.[11,12] The evidence base is mostly qualitative and concentrated in Anglophone settings. Quantitative work is scarce. Few studies ask which factors help or hinder IKS integration at the faculty level across disciplines and institutions.[13]

Indonesia is the largest archipelagic nation in the world. It has more than 1,300 ethnic groups and 700 living languages, and its Indigenous knowledge traditions are exceptionally rich, from adat (customary law) and local ecological knowledge to traditional medicine and culturally embedded pedagogical practices.[14,15] Colonial educational legacies shaped Indonesian higher education. Post-independence modernization programs then put Western scientific frameworks first, so Indigenous knowledge has been pushed to the margins of formal curricula.[16] National education policy has recently stressed local wisdom and cultural preservation. Empirical research on how far Indonesian university faculty have accepted or resisted IKS in their teaching is still scarce.[17]

This study rests on three perspectives that fit together. The first is Santos' epistemological pluralism, which calls for multiple knowledge traditions to be recognized and to coexist in academic settings. It supplies the normative reason why IKS integration matters for educational equity and quality.[18] The second is organizational change theory, in particular force field analysis. It gives a way to read how driving forces (faculty attitudes, institutional policies, external pressures) and restraining forces (institutional resistance, disciplinary norms, limited resources) act on each other and set the pace and direction of curriculum transformation.[19] The third is self-efficacy theory. Faculty confidence in the ability to integrate IKS into teaching can be read, through it, as a key determinant of actual integration behavior.[20]

Several research gaps shaped the design. Qualitative studies have explored faculty perceptions of curriculum decolonization within single institutions.[21] Large quantitative studies of what predicts faculty readiness for IKS integration, across many institutions and disciplines, are largely missing. Prior IKS training is a modifiable predictor of readiness. Nobody has examined it systematically.[22] Indonesia has remarkable Indigenous knowledge diversity, but it is little studied in the curriculum decolonization literature, which has been dominated by work from Sub-Saharan Africa, Australasia, and the Americas. Finally, how disciplinary culture intersects with faculty attitudes toward Indigenous knowledge integration has received little quantitative attention.[23,24]

The novelty of this study lies in four features. First, it provides multi-institution quantitative evidence on faculty-level readiness for IKS integration in Indonesia, a setting that has so far been described mainly through qualitative and policy work. Second, it examines prior IKS training as a modifiable correlate of readiness, alongside discipline and perceived institutional resistance, in one multivariable model, and it tests teaching self-efficacy as a possible pathway from training to readiness. Third, it brings epistemological pluralism, force field analysis, and self-efficacy theory together in a single empirical design. Fourth, it complements survey data from 412 faculty members with 28 in-depth interviews, so that statistical patterns can be read against faculty experience.

This study aimed to examine faculty attitudes, institutional resistance, and curriculum transformation readiness related to IKS integration in Indonesian higher education, and to identify the predictors of high integration readiness among faculty across institutions and academic disciplines. We hypothesized that faculty with prior Indigenous knowledge training, and those in the social sciences, would show significantly higher integration readiness. Perceived institutional resistance, we expected, would be the main barrier to curriculum transformation.

2. Methods

2.1 Study design and setting

A cross-sectional study was conducted between February and September 2024 among faculty members at six higher education institutions in major Indonesian cities, including Jakarta and Palembang. The participating institutions were purposefully selected to represent diversity in institutional engagement with Indigenous Knowledge Systems and different classifications within the Indonesian higher education system. The quantitative component employed a cross-sectional survey design, while the qualitative component utilized semi-structured in-depth interviews to explore the subjective dimensions of faculty experiences with curriculum decolonization. The survey is reported following the STROBE guidelines for cross-sectional studies, and the interviews follow the COREQ checklist.

2.2 Participants and sampling

The study population comprised all full-time academic staff holding positions at the rank of lecturer or above across four broad disciplinary groupings: Social Sciences and Humanities, Natural Sciences, Education, and Engineering and Applied Sciences. Visiting lecturers, part-time instructors, and teaching assistants were excluded. The minimum required sample size was calculated using the formula for estimating proportions in cross-sectional studies, with the following parameters: an estimated proportion of high curriculum transformation readiness of 35% based on preliminary data from a pilot survey, a confidence level of 95%, and a margin of error of 5%. This calculation yielded a minimum requirement of 350 participants. To allow for non-response, 490 faculty members (40% above the minimum) were invited through stratified random sampling from institutional faculty directories, with stratification by institution, discipline, and academic rank. A total of 412 participants completed the survey (response rate: 84.1%).

2.3 Instruments

The quantitative survey instrument comprised five validated sections administered through an online platform with paper-based alternatives for participants with limited digital access. The IKS Integration Attitude Scale was developed through a systematic process involving literature review, generation of an initial 18-item pool, expert review by five education scholars with expertise in curriculum studies and Indigenous education (Content Validity Index = 0.91), cognitive interviewing with 15 faculty members, and pilot testing with 40 faculty (not included in the final sample). Exploratory factor analysis of pilot data suggested a unidimensional structure with factor loadings ranging from 0.58 to 0.86, and the final 10-item scale demonstrated good internal consistency (Cronbach's α = 0.88). Items were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating more favorable attitudes toward IKS integration. The Curriculum Transformation Readiness Scale was adapted from existing curriculum adoption frameworks for assessing faculty preparedness for integrating Indigenous knowledge into course content, pedagogical approaches, and assessment methods (8 items; Cronbach's α = 0.85). The Perceived Institutional Resistance Scale was developed for this study to measure faculty perceptions of organizational barriers to curriculum change, including bureaucratic obstacles, lack of institutional support, disciplinary gatekeeping, and resource constraints (9 items; Cronbach's α = 0.83; CVI = 0.87). The Teaching Self-Efficacy for IKS Scale assessed faculty confidence in identifying, selecting, and effectively teaching Indigenous knowledge content within their disciplinary courses (7 items; Cronbach's α = 0.86). The Student Cultural Competency Scale (faculty-reported) measured faculty perceptions of their students' intercultural awareness and sensitivity (6 items; Cronbach's α = 0.80).

2.4 Validity and reliability

All instruments were developed and administered in Bahasa Indonesia. Content validity of the full set of instruments was assessed by an expert panel of seven members comprising education researchers, curriculum specialists, and Indigenous knowledge scholars. Face validity was evaluated through cognitive interviews with faculty representing all four disciplinary

groupings. Test–retest reliability was assessed with a subsample of 35 participants over a two-week interval, yielding intraclass correlation coefficients ranging from 0.78 to 0.89 across all scales.

2.5 Variables

The primary dependent variable was high IKS integration readiness, operationally defined as a Curriculum Transformation Readiness score of 4 or above on the 5-point scale. The principal independent variables included academic discipline (Social Sciences and Humanities, Natural Sciences, Education, Engineering and Applied Sciences), prior IKS training (yes or no), perceived institutional resistance score, teaching self-efficacy for IKS score, academic rank, sex, and teaching experience.

2.6 Statistical analysis

Missing data were minimal (< 1.5% across all variables) and were addressed using listwise deletion after confirming data were missing completely at random (Little's MCAR test, χ^2 = 12.84, df = 10, p = 0.233). The study design ensured an events-per-variable (EPV) ratio exceeding 10 for the logistic regression model, with 124 events (integration readiness score ≥ 4) against eight predictor variables. Confirmatory factor analysis (CFA) validated the IKS Integration Attitude Scale, yielding acceptable fit indices (CFI = 0.93; RMSEA = 0.048; SRMR = 0.039). All quantitative analyses were performed using IBM SPSS Statistics version 26.0. Descriptive statistics were presented as means with standard deviations for continuous variables and frequencies with percentages for categorical variables. Normality was assessed using the Kolmogorov–Smirnov test and visual inspection of Q-Q plots. Differences in outcome measures across disciplinary groups were examined using one-way analysis of variance with Tukey's post hoc test and partial η^2 effect sizes. Comparisons between faculty with and without prior IKS training were conducted using independent samples t-tests with Cohen's d effect sizes. Multivariate binary logistic regression using the enter method was performed to identify independent predictors of high IKS integration readiness, with adjusted odds ratios and 95% confidence intervals reported. Model fit was evaluated using the Hosmer–Lemeshow test, Nagelkerke R^2, and the area under the receiver operating characteristic curve. Multicollinearity was assessed through variance inflation factors. The significance level was set at α = 0.05.

2.8 Ethical considerations

The study involved a survey and in-depth interviews with faculty members, and interviews were audio-recorded with participants' consent. The study protocol was approved by Ethical Committee of Social Research, Enigma Institute, Palembang, Indonesia (Approval number 2024/099).

3. Results

3.1 Participant characteristics

The sociodemographic and professional characteristics of the 412 faculty members who participated in this study are detailed in Table 1. The majority of participants were male (237; 57.5%), aged between 36 and 45 years (164; 39.8%), and held the rank of senior lecturer (148; 35.9%). The largest disciplinary group was Social Sciences and Humanities (156; 37.9%), followed by Natural Sciences (112; 27.2%), Education (94; 22.8%), and Engineering and Applied Sciences (50; 12.1%). Regarding teaching experience, 138 participants (33.5%) had between 5 and 10 years of experience, while 134 (32.5%) had 11 to 20 years. Prior training in Indigenous Knowledge Systems had been received by 124 participants (30.1%), while 288 (69.9%) reported no prior IKS training.

Table 1. Sociodemographic and professional characteristics of participants (n = 412).

Characteristic	Category	*n*	%
Sex	Male	237	57.5
	Female	175	42.5
Age (years)	25–35	98	23.8
	36–45	164	39.8
	46–55	108	26.2
	>55	42	10.2
Academic rank	Lecturer	127	30.8
	Senior Lecturer	148	35.9
	Associate Professor	89	21.6
	Professor	48	11.7
Discipline	Social Sciences/Humanities	156	37.9
	Natural Sciences	112	27.2
	Education	94	22.8
	Engineering/Applied Sciences	50	12.1
Teaching experience	<5 years	74	18.0
	5–10 years	138	33.5
	11–20 years	134	32.5
	>20 years	66	16.0
Prior IKS training	Yes	124	30.1
	No	288	69.9

Note. Percentages are of the 412 participants. IKS = Indigenous Knowledge Systems.

3.2 Outcome measures by discipline

The overall mean scores for the five outcome measures across the entire sample were as follows: IKS Integration Attitude was 3.68 (SD = 0.82), Curriculum Transformation Readiness was 3.24 (SD = 0.91), Perceived Institutional Resistance was 3.51 (SD = 0.87), Teaching Self-Efficacy for IKS was 2.89 (SD = 0.94), and faculty-reported Student Cultural Competency was 3.42 (SD = 0.78).

One-way ANOVA revealed statistically significant differences across disciplinary groups for all five measures, as presented in Table 2. IKS Integration Attitude scores differed significantly across disciplines ($F(3, 408) = 42.67$; $p < 0.001$; partial $\eta^2 = 0.239$), with Social Sciences and Humanities faculty reporting the highest mean attitude score (4.12; SD = 0.71) and Engineering faculty reporting the lowest (2.87; SD = 0.89). Curriculum Transformation Readiness similarly varied by discipline ($F(3, 408) = 35.21$; $p < 0.001$; partial $\eta^2 = 0.206$), ranging from 3.72 (SD = 0.78) in Social Sciences to 2.54 (SD = 0.92) in Engineering. Perceived Institutional Resistance showed a significant inverse pattern ($F(3, 408) = 28.94$; $p < 0.001$; partial $\eta^2 = 0.175$), with Engineering faculty reporting the highest resistance (4.12; SD = 0.78) and Education faculty reporting the lowest (3.15; SD = 0.79). Teaching Self-Efficacy for IKS differed significantly across groups ($F(3, 408) = 38.56$; $p < 0.001$; partial $\eta^2 = 0.221$), with Education faculty demonstrating the highest self-efficacy (3.48; SD = 0.82) and Engineering faculty the lowest (2.21; SD = 0.88). Tukey's post hoc analyses confirmed that Social Sciences and Education faculty scored significantly higher than Natural Sciences and Engineering faculty on attitude, readiness, and self-efficacy measures (all $p < 0.001$), while Engineering faculty reported significantly higher institutional resistance than all other disciplinary groups (all $p < 0.01$). The disciplinary differences in faculty attitudes, readiness, and self-efficacy are illustrated in Figure 1.

Table 2. Faculty outcome measures by academic discipline.

Outcome measure	SS (n = 156)	NS (n = 112)	ED (n = 94)	EN (n = 50)	F	p	Partial η^2
IKS Integration Attitude	4.12 ± 0.71	3.41 ± 0.82	4.01 ± 0.74	2.87 ± 0.89	42.67	<0.001	0.239
Curriculum Transformation Readiness	3.72 ± 0.78	2.98 ± 0.89	3.58 ± 0.81	2.54 ± 0.92	35.21	<0.001	0.206
Perceived Institutional Resistance	3.21 ± 0.83	3.68 ± 0.84	3.15 ± 0.79	4.12 ± 0.78	28.94	<0.001	0.175
Teaching Self-Efficacy for IKS	3.34 ± 0.85	2.67 ± 0.91	3.48 ± 0.82	2.21 ± 0.88	38.56	<0.001	0.221
Student Cultural Competency	3.78 ± 0.72	3.21 ± 0.81	3.65 ± 0.74	2.89 ± 0.82	24.38	<0.001	0.152

Note. Values are mean ± SD on a 1–5 scale. F has 3 and 408 degrees of freedom; partial η^2 was computed from F and the degrees of freedom. SS = Social Sciences/Humanities; NS = Natural Sciences; ED = Education; EN = Engineering/Applied Sciences.

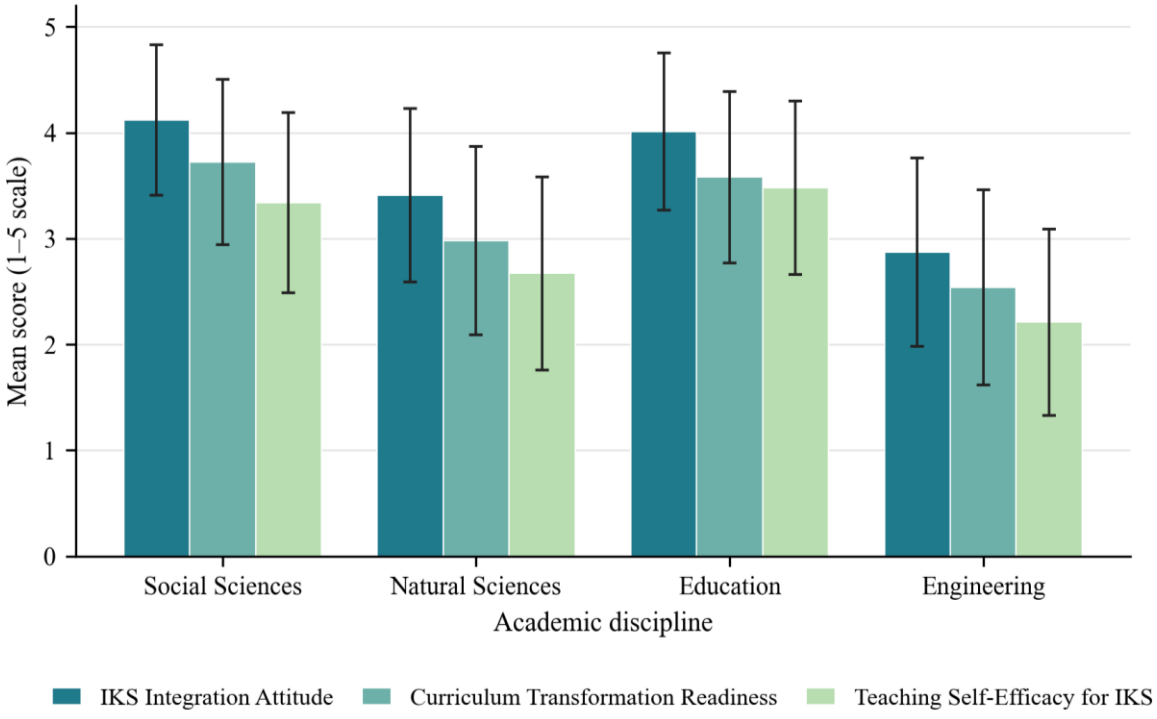

Figure 1. Faculty attitudes and readiness by academic discipline. Bars show means and error bars ±1 SD (values in Table 2). Post hoc comparisons are reported in the text.

3.3 Effect of prior IKS training

Faculty members with prior IKS training had significantly more favorable outcomes across all measures compared to those without training, as illustrated in Figure 2. Independent samples t-tests revealed that trained faculty had higher IKS Integration Attitude scores (trained: 4.21, SD = 0.68; untrained: 3.45, SD = 0.82; $t(410) = 9.06$; $p < 0.001$; Cohen's $d = 0.97$), higher Curriculum Transformation Readiness (trained: 3.89, SD = 0.72; untrained: 2.96, SD = 0.88; $t(410) = 10.37$; $p < 0.001$; Cohen's $d = 1.11$), lower Perceived Institutional Resistance (trained: 2.87, SD = 0.81; untrained: 3.78, SD = 0.79; $t(410) = -10.64$; $p < 0.001$; Cohen's $d = 1.14$), and higher Teaching Self-Efficacy (trained: 3.62, SD = 0.76; untrained: 2.58, SD = 0.89; $t(410) = 11.35$; $p < 0.001$; Cohen's $d = 1.22$). All effect sizes were large, exceeding the conventional threshold of 0.80 for Cohen's d.

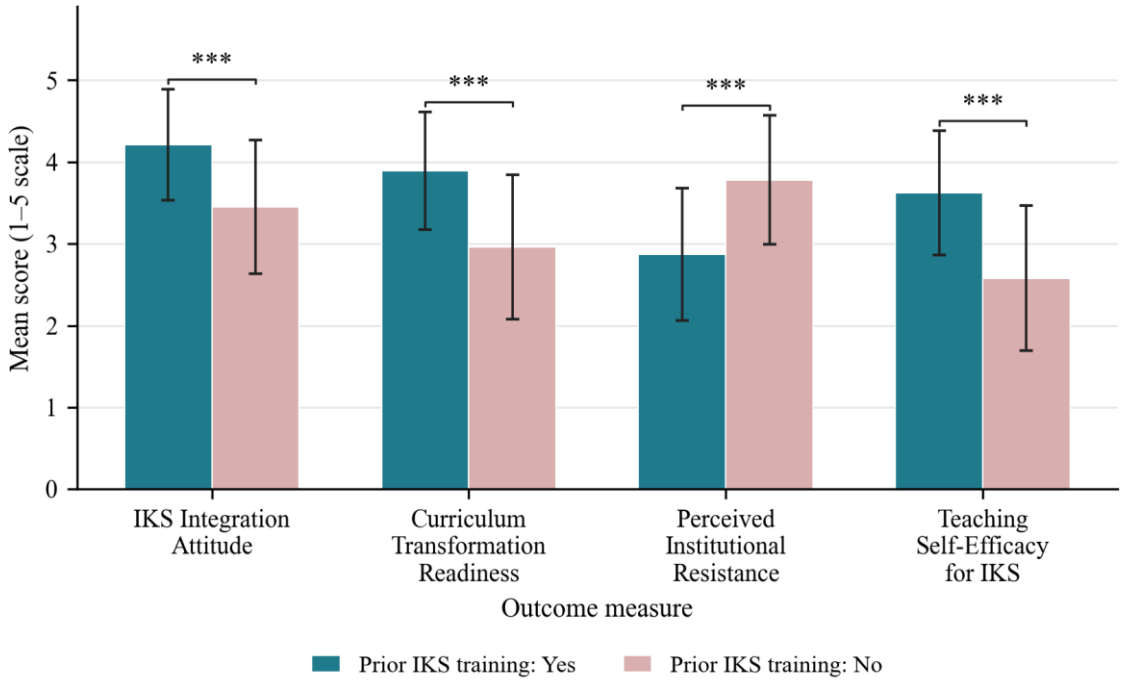

Figure 2. Mean outcome scores by prior IKS training. Error bars show ±1 SD. *** $p < 0.001$ (independent samples t-test).

3.4 Predictors of high integration readiness

The results of multivariate binary logistic regression analysis identifying independent predictors of high IKS integration readiness (Curriculum Transformation Readiness score of 4 or above) are summarized in Table 3. The model demonstrated adequate fit (Hosmer–Lemeshow test: $\chi^2 = 9.14$, $p = 0.331$; Nagelkerke $R^2 = 0.312$; area under ROC curve = 0.804, 95% CI: 0.762 to 0.846). Variance inflation factors for all independent variables ranged from 1.08 to 2.43, indicating no problematic multicollinearity. Prior IKS training emerged as the strongest predictor (OR = 3.87; 95% CI: 2.48 to 6.04; $p < 0.001$), so faculty who had received prior training had nearly four times the odds of reporting high integration readiness compared to those without training. Social Sciences and Humanities discipline was the second strongest predictor (OR = 3.21; 95% CI: 1.78 to 5.79; $p < 0.001$), followed by Education discipline (OR = 2.94; 95% CI: 1.58 to 5.47; $p = 0.001$), both referenced against Engineering. Low perceived institutional resistance was also significantly associated with high readiness (OR = 2.56; 95% CI: 1.72 to 3.81; $p < 0.001$). Teaching experience exceeding 10 years (OR = 1.89; 95% CI: 1.28 to 2.79; $p = 0.001$), female sex (OR = 1.64; 95% CI: 1.12 to 2.40; $p = 0.011$), and Associate Professor or Professor rank (OR = 1.52; 95% CI: 1.01 to 2.29; $p = 0.044$) were also significant predictors. Natural Sciences discipline was not statistically significant (OR = 1.38; 95% CI: 0.72 to 2.65; $p = 0.332$). The forest plot of adjusted odds ratios with 95% confidence intervals for all predictors is presented in Figure 3.

Table 3. Multivariable logistic regression: predictors of high IKS integration readiness (score ≥ 4).

Predictor	OR	95% CI	*p*
Prior IKS training	3.87	2.48–6.04	<0.001
Social Sciences discipline†	3.21	1.78–5.79	<0.001
Education discipline†	2.94	1.58–5.47	0.001
Low perceived institutional resistance	2.56	1.72–3.81	<0.001
Teaching experience >10 years	1.89	1.28–2.79	0.001
Female sex	1.64	1.12–2.40	0.011
Associate Professor/Professor rank	1.52	1.01–2.29	0.044
Natural Sciences discipline†	1.38	0.72–2.65	0.332

Note. OR = adjusted odds ratio; CI = confidence interval. † Reference category: Engineering and Applied Sciences. Model fit: Hosmer–Lemeshow $\chi^2 = 9.14$, $p = 0.331$; Nagelkerke $R^2 = 0.312$; area under the ROC curve = 0.804 (95% CI: 0.762–0.846). Analysis based on 412 participants.

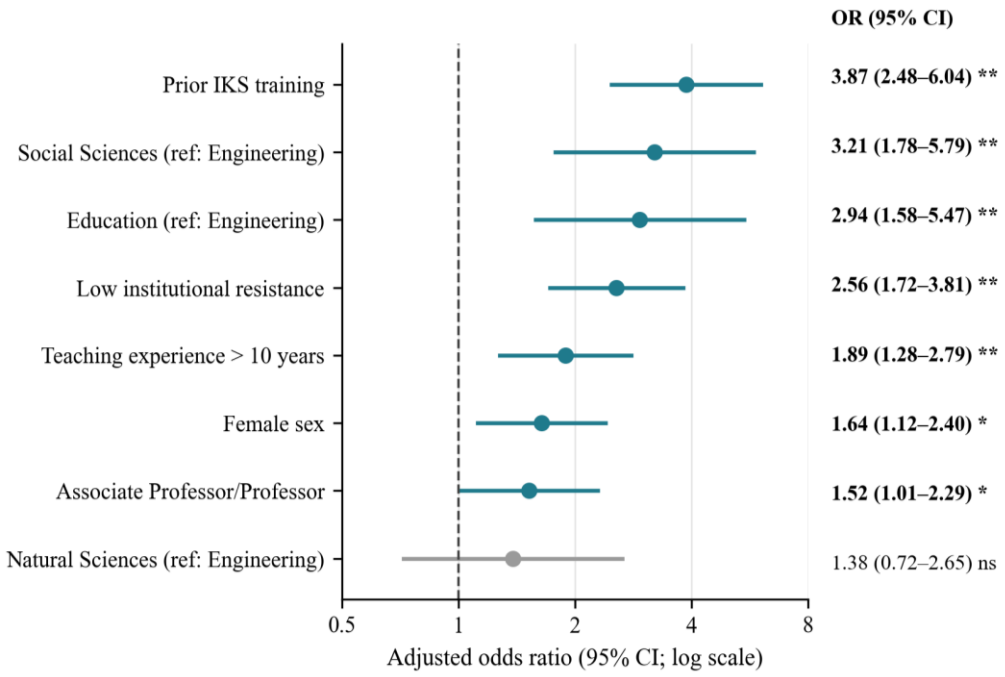

Figure 3. Predictors of high IKS integration readiness (score ≥ 4). Adjusted odds ratios with 95% confidence intervals (Table 3); the dashed line marks OR = 1. * $p < 0.05$; ** $p \leq 0.01$; ns, not significant. Reference category for discipline: Engineering and Applied Sciences.

3.5 Mediation analysis

Mediation analysis using bootstrapped confidence intervals (5,000 resamples) indicated that teaching self-efficacy for IKS partially mediated the relationship between prior training and integration readiness (indirect effect: β = 0.22; 95% CI: 0.14–0.31), accounting for approximately 38% of the total effect. Perceived institutional resistance mediated the association between discipline and integration readiness (indirect effect: β = −0.16; 95% CI: −0.24 to −0.09).

4. Discussion

4.1 Principal findings

This study examined faculty attitudes, institutional resistance, and curriculum transformation readiness related to IKS integration across six higher education institutions in Indonesia. Three main findings emerged. Attitudes and readiness varied strongly by discipline. Prior IKS training was positively associated with every measured outcome, and the association was strong. Prior training, disciplinary affiliation, and low institutional resistance were the strongest independent predictors of high integration readiness. These findings add novel quantitative evidence to a field that has been mostly qualitative and theoretical.[8,10]

Disciplinary differences in attitudes and readiness were among the most striking results. Social Sciences and Humanities faculty held the most favorable attitudes toward IKS integration (mean = 4.12) and Engineering faculty the least favorable (mean = 2.87). The gap of 1.25 points on the 5-point scale carried a large effect size (partial $\eta^2 = 0.239$), as Table 2 shows. A UK case study of science teaching staff found limited familiarity with decolonization and some misconceptions about it, which is compatible with lower engagement in STEM fields.[13] A study of tertiary curricula in the Philippines likewise found that IKS integration was evident mostly in the social sciences and community development subjects.[23] The present study carries these findings into the Indonesian context. To our knowledge, it offers the first multi-institution quantitative evidence of these disciplinary patterns in Indonesia.

4.2 Discipline, training, and institutional resistance

The disciplinary gradient reflects epistemological compatibility.[25,26] Social Sciences and Humanities disciplines are open to the pluralist, interpretive approaches at the heart of IKS.[18] Engineering and Natural Sciences, by contrast, may work more often within positivist paradigms. These prize empirical measurement, experimental replication, and universal generalizability, and that may create a perceived epistemological tension with Indigenous knowledge traditions.[26] The qualitative findings supported this reading. Engineering faculty often raised concerns about the scientific validity and academic rigor of Indigenous knowledge, while Social Sciences faculty stressed what diverse knowledge perspectives can add. Education faculty deserve a note too. Their readiness score (3.58) came close to that of Social Sciences (3.72), as Table 2 shows. This may reflect their professional orientation toward inclusive pedagogy and their familiarity with culturally responsive teaching frameworks.

Prior IKS training had the strongest practical effect in this study. Trained faculty scored 22.0% higher on IKS Integration Attitude, 31.4% higher on Curriculum Transformation Readiness, and 40.3% higher on Teaching Self-Efficacy than their untrained colleagues. Every comparison had a large effect size (Cohen's *d* from 0.97 to 1.22), as Figure 2 illustrates. Prior IKS training was also the strongest multivariate predictor (OR = 3.87; 95% CI 2.48–6.04; Table 3). Trained faculty had nearly four times the odds of high readiness after full adjustment. Evaluations of Indigenous cultural competency training for university staff in Australia fit this picture: participants reported large gains in self-reported knowledge and understanding of Indigenous cultures.[22] A staff survey at another Australian university likewise identified a need for targeted professional development.[27] Training is thus a modifiable factor that remained strongly associated with readiness after adjustment for the covariates entered in the model. The cross-sectional design, however, cannot show that training caused higher readiness.

Perceived institutional resistance was inversely related to IKS integration readiness (OR = 2.56 for low resistance; Table 3). Prior training was the stronger correlate (OR = 3.87). The hypothesis that resistance would be the main barrier was therefore only partly supported. Organizational factors therefore matter in enabling or constraining curriculum transformation. Engineering faculty reported the highest resistance (4.12 on a 5-point scale) and Education faculty the lowest (3.15), as Table 2 shows. Work in South African universities, including a case study at a university of technology, points the same way: opposition to change is entrenched in university structures, and lecturers and managers in some disciplines resist decolonization.[4,11,28] Stein and colleagues likewise stressed the

complexity of decolonization and warned that curricular reform that leaves existing structures untouched may bring only superficial change.[10,29] In the Indonesian context, the qualitative data showed resistance working through several mechanisms: no formal policy supporting IKS integration, promotion and tenure criteria that favored international journal publication over community-engaged scholarship, little funding for Indigenous knowledge research, and the absence of Indigenous knowledge holders from institutional governance. Faculty readiness alone, then, may not suffice for curriculum transformation. Systemic institutional change is needed to create the enabling conditions.

4.3 Experience, gender, and theoretical framework

Teaching experience beyond 10 years predicted high readiness (OR = 1.89; p = 0.001; Table 3). Accumulated professional experience may give faculty the pedagogical confidence and disciplinary authority to challenge established curricular norms. Experienced faculty may also have enough professional security and institutional capital to risk curriculum innovation. Less experienced colleagues may feel bound to departmental expectations and established syllabi. Related arguments hold that decolonizing the university takes both intellectual commitment and institutional support.[8]

The gender difference in integration readiness (OR = 1.64 for female faculty; p = 0.011) may reflect differences in pedagogical values, empathy for marginalized perspectives, or responsiveness to student diversity. The finding needs careful reading, however. The effect was modest, and disciplinary gender distributions may confound it, since sex distribution by discipline was not reported and the disciplines with higher readiness scores may have more female faculty.

Epistemological pluralism, organizational change theory, and self-efficacy theory together framed this study. The findings were largely consistent with all three. Differences in attitudes across disciplines matched Santos' prediction that epistemological openness would vary systematically with the foundations of different knowledge traditions.[18] Institutional resistance emerged as a significant predictor. That is consistent with the force field model, in which restraining forces at the organizational level hold back individual readiness for change.[2] The strong link between prior training and self-efficacy was consistent with the proposition that mastery experiences and vicarious learning in professional development strengthen people's beliefs in their capacity to perform specific tasks.[7]

The mediation analyses shed more light on these mechanisms. Teaching self-efficacy for IKS partly mediated the relationship between prior training and integration readiness, so self-efficacy may be a pathway from training to readiness. Perceived institutional resistance mediated the association between discipline and integration readiness. The lower readiness of Engineering faculty is thus partly due to higher perceived barriers in their departments. These mediation results are exploratory, because cross-sectional data cannot establish temporal order.

4.4 Mediation, implications, strengths, and limitations

The findings have substantial practical implications for education policy and institutional practice. Prior IKS training is the strongest modifiable predictor of integration readiness, so higher education institutions should invest systematically in faculty professional development on IKS pedagogy.[30] Such programs should be designed together with Indigenous knowledge holders and community elders. Authenticity and reciprocity depend on it, and programs built only within conventional academic frameworks cannot offer either.[5] Disciplinary variation in readiness points the same way: transformation may need differentiated approaches, with strategies that address the epistemological concerns and pedagogical cultures of each academic field.[26] Institutional resistance matters as well. Revised promotion criteria, dedicated funding streams, and formal commitments to epistemological diversity are essential complements to faculty-level interventions.[30,31]

The study has several methodological strengths. To our knowledge, it provides the first multi-institution quantitative evidence on faculty attitudes toward IKS integration in Indonesian higher education, which fills a gap in a literature that is mostly qualitative.[13] Its multi-site, multi-disciplinary design supports generalizability across institutional and disciplinary contexts, within the limits noted below.

Several limitations apply. The cross-sectional design rules out causal inference about the direction of associations. Faculty who were already inclined toward IKS integration may have been the ones to seek out training, so training need not have raised readiness. Self-reported measures are open to social desirability bias, all the more so given the growing political emphasis on local wisdom in Indonesian education policy. The sample came from institutions in selected Indonesian cities. It may not generalize to all types of institutions, or to regions where Indigenous knowledge traditions and their relationship to formal education differ considerably. Institutions were purposively selected, the Engineering group was small (n = 50), and several scales were developed for this study, so the findings should be replicated in independent samples.

5. Conclusion

To our knowledge, this study offers the first large-scale quantitative evidence on faculty attitudes, institutional resistance, and curriculum transformation readiness related to IKS integration in Indonesian higher education. Disciplines differed significantly. Social Sciences and Education faculty reported far higher attitudes, readiness, and self-efficacy for IKS integration than Natural Sciences and Engineering faculty did, and the gap was visible on every measure. Training mattered most. Prior training in IKS was the single strongest predictor of high integration readiness. Trained faculty had nearly four times the odds of reporting high readiness, after controlling for discipline, rank, experience, and perceived institutional resistance.

Systematic faculty professional development on IKS pedagogy may therefore be an important strategy for advancing curriculum transformation. Such programs should be developed with Indigenous communities and tailored to the epistemological concerns of different academic disciplines. Faculty-level interventions are not enough on their own. Institutional leaders and policymakers should pair them with structural change, namely revised promotion criteria, dedicated research funding, and formal commitments to epistemological diversity, which together create the enabling conditions for sustainable curriculum decolonization.

In policy terms, higher education institutions should set up dedicated IKS curriculum committees, write discipline-specific integration guidelines, and create incentives that reward faculty engagement with Indigenous knowledge. STEM fields need particular attention. Integration readiness is lowest there. Future longitudinal research should test whether training interventions produce lasting changes in teaching practice and student outcomes. Comparative studies across national contexts in Southeast Asia would show whether the findings generalize beyond Indonesia.

Declaration

Artificial Intelligence Use

The authors did not use generative artificial intelligence or AI-assisted tools to write, edit, translate, or analyze any part of this work, or to prepare its figures and references. All content was prepared and checked by the authors, who take full responsibility for its accuracy, originality, and integrity.

Author Contributions

Conceptualization, A.F.S. and F.F.; Methodology, A.F.S.; Software, A.F.S.; Validation, D.M.; Formal analysis, A.F.S.; Investigation, A.F.S. and D.M.; Data curation, A.F.S.; Resources, F.F.; Writing – original draft, A.F.S.; Writing – review & editing, D.M. and F.F.; Visualization, A.F.S.; Supervision, F.F.; Project administration, F.F. All authors have read and agreed to the final version of the manuscript.

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Conflict of Interest

The authors declare no competing financial or non-financial interests related to this work.

Ethics Approval and Consent

The study involved a survey and in-depth interviews with faculty members, and interviews were audio-recorded with participants' consent. The study protocol was approved by Ethical Committee of Social Research, Enigma Institute, Palembang, Indonesia (Approval number 2024/099).

Consent for Publication

Not applicable. No identifiable individual or personal data are reproduced in this manuscript.

Data Availability

The survey data and interview materials supporting the findings can be obtained from the corresponding author on reasonable request, subject to protection of participants' confidentiality.

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