Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Outcome Based Education Implementation from Faculty Student and Employer Perspectives at a Vietnamese University

Nguyen Thi Viet Ha
Vinh University
Luu Tien Hung
Vinh University
Hoang Phan Hai Yen
Vinh University
Nguyen Thi Trang Thanh
Vinh University
Nguyen Thi Hoai
Vinh University
Nguyen Thi Hương Tra
Vinh University
Tran Thi Kim Oanh
Vinh University
Nguyen Cong Nhat
nhatnc@vinhuni.edu.vn
Vinh University
Nguyen Huy Hoa
Phuong Dong University

Research Article

Keywords: outcome-based education, constructive alignment, stakeholder perspectives, perceived learning outcomes, university-industry collaboration, higher education

Posted Date: November 25th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11715116/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Outcome Based Education Implementation from Faculty Student and Employer Perspectives at a Vietnamese University

Nguyen Thi Viet Ha[1], Luu Tien Hung[2], Hoang Phan Hai Yen[3], Nguyen Thi Trang Thanh[4], Nguyen Thi Hoai[5], Nguyen Thi Huong Tra[6], Tran Thi Kim Oanh[7], Nguyen Cong Nhat[8*], Nguyen Huy Hoa[9]

[1,2,3,4,5,6,7,8]Vinh University, Nghe An province, Vietnam

[9]Phuong Dong University, Ha Noi city, Vietnam

*Corresponding author: Nhat Nguyen Cong

Email: nhatnc@vinhuni.edu.vn

Abstract. Implementing outcome-based education (OBE) requires universities to align intended learning outcomes with teaching, assessment, and opportunities to demonstrate competence, yet evidence from any single stakeholder group offers only a partial account of implementation. This study examines how perceived implementation conditions are associated with stakeholder-specific outcomes at Vinh University, Vietnam. Cross-sectional surveys conducted in March 2026 yielded 413 valid responses from faculty members and academic administrators (n = 107), students (n = 256), and employers (n = 50). Three independent partial least squares structural equation models were estimated, with Holm adjustment applied within each model. Among faculty and administrators, stakeholder engagement was positively associated with perceived learning outcomes (β = .274, p = .006; Holm $p \approx .048$), a result close to the adjusted threshold; the model explained 58.4% of the in-sample variance. Among students, overall OBE experience had the largest estimated coefficient (β = .453, $p < .001$) and remained significant after adjustment; learning support (β = .219) and practical experience (β = .144) were nominally but not Holm-adjusted significant. The model explained 70.3% of the in-sample variance. Among employers, participation capacity was associated with engagement (β = .667), engagement with feedback mechanisms (β = .647), and perceived graduate competencies with university–industry collaboration (β = .606), all significant after adjustment; the direct feedback–collaboration path was not (β = .138, p = .541). The study offers a stakeholder-sensitive account of OBE implementation that distinguishes organisational conditions, student experiences, and external evaluations. Because the data are cross-sectional, self-reported, and unlinked across groups, the findings support neither causal inference nor direct measurement of a design–implementation gap; they indicate priorities for institutional review that require corroboration with assessed student performance and documented curriculum changes.

Keywords: outcome-based education; constructive alignment; stakeholder perspectives; perceived learning outcomes; university-industry collaboration; higher education.

1 Introduction

OBE organises curriculum, teaching, and assessment around the learning that students are expected to demonstrate. Constructive alignment provides a pedagogical foundation for this approach by connecting intended learning outcomes with activities that support their achievement and assessment tasks that elicit evidence of learning (Biggs, 1996). The practical challenge is to establish whether these connections are sustained in educational provision. Clearly articulated outcomes and curriculum maps specify educational intentions, but

evaluating implementation also requires evidence about teaching practices, students' learning opportunities, and the assessment of achievement.

Research on constructive alignment highlights the organisational complexity of this task. Drawing on two Australian universities, Ruge et al. (2019) conceptualised implementation as a dynamic, multidirectional, and iterative process connecting institutional policy with disciplinary teaching and learning. Their analysis identified the faculty level as a potentially important point of discontinuity between institutional expectations and educational practice. Loughlin et al. (2021) further cautioned that using alignment primarily for accountability and audit can weaken its educational purpose. Together, these studies suggest that implementation should be examined through the conditions and practices that give effect to curriculum intentions, rather than inferred from formal documentation alone.

Stakeholder perspectives offer complementary evidence about these conditions and practices. Faculty members and academic administrators evaluate curriculum arrangements, teaching, assessment, institutional support, and opportunities for participation. Students encounter these arrangements through learning activities, feedback, resources, and practical experiences. Employers contribute evaluations of graduate competencies and accounts of their engagement with universities. Research on employability indicates that stakeholders can differ in their understanding of educational outcomes and of responsibility for their development (Cheng et al., 2022). Although employability does not encompass the full purposes of OBE, this literature reinforces the need to distinguish stakeholder roles and evaluative criteria when interpreting evidence about educational provision.

This distinction has methodological implications. Faculty assessments of learning outcomes, students' perceptions of their development, and employers' evaluations of graduates address related but different questions. Likewise, university–industry collaboration describes an institutional relationship rather than student attainment. Combining these judgements into a single measure of implementation effectiveness would obscure their distinct meanings. A stakeholder-sensitive assessment therefore requires both conceptual coordination and analytical separation: each perspective should inform the institutional inquiry while retaining its own explanatory conditions and outcome criteria.

Vietnam provides a relevant context for this inquiry. Pham and Nguyen (2024) examined external assessment reports for 17 study programmes and identified indications of movement towards OBE, alongside concerns that changes in constructive alignment remained concentrated in curriculum documentation. They also acknowledged that documentary analysis did not fully capture stakeholders' perspectives. Nguyen et al. (2024), using a multiple-case study of four universities in Vietnam and Laos, reported changes in lesson planning, classroom activities, and student engagement, together with implementation difficulties experienced by teachers and students. These studies provide a basis for examining OBE beyond formal adoption and for investigating how participants perceive its enactment. They leave open how perceived implementation conditions relate to the outcomes that each stakeholder group is positioned to evaluate, which is the question addressed here.

Building on this evidence, the present study examines associations between perceived implementation conditions and stakeholder-specific outcomes at Vinh University, Vietnam. Its empirical focus is on three complementary domains: faculty members' and academic

administrators' assessments of implementation conditions and learning outcomes; students' reported learning experiences and perceived outcomes; and employers' participation, competency evaluations, and collaboration with the university. Separate models preserve these differences rather than assume that the three groups assess an equivalent outcome. The study addresses the following research questions:

1. Which perceived implementation conditions are associated with faculty and academic administrators' assessments of learning outcomes?
2. Which reported learning conditions and experiences are associated with students' perceived learning outcomes?
3. How are employer participation capacity, engagement, feedback mechanisms, and perceived graduate competencies related to one another and to university–industry collaboration within the specified model?

The study draws on cross-sectional survey responses from 413 participants: 107 faculty members and academic administrators, 256 students, and 50 employers. Three independent partial least squares structural equation models are estimated, with Holm adjustment applied within each model to temper the risk of false positives across the paths examined. Because respondents are not linked across groups, this design supports the examination of within-group associations and their interpretation within a shared institutional setting. It does not establish causal relationships, support comparisons between stakeholder groups, or directly measure discrepancies between documented curricula and enacted practice.

The contribution is twofold. Analytically, the study distinguishes the conditions and outcome criteria through which different stakeholders evaluate OBE implementation, providing a basis for interpreting their evidence without treating their judgements as interchangeable. Empirically, it identifies associations relevant to institutional review across educational provision, student experience, and employer relationships. These findings can inform questions for programme improvement and subsequent investigation using assessed student performance, curriculum records, and longitudinal evidence.

2. Literature Review and Analytical Framework

2.1. OBE implementation and constructive alignment

Constructive alignment explains how intended learning outcomes can guide the selection of learning activities and assessment tasks. Its constructive dimension recognises students' active role in developing understanding, while alignment concerns the coherence of the educational arrangements supporting that learning (Biggs, 1996). Accordingly, OBE implementation involves more than specifying outcomes: it requires teaching and assessment practices that give students appropriate opportunities to develop and demonstrate the intended capabilities.

Maintaining this coherence also presents an organisational challenge. Programme requirements must be interpreted across courses, supported through institutional arrangements, and reviewed as educational needs change. Ruge et al. (2019) describe the implementation of constructive alignment as an iterative process connecting institutional policy and disciplinary practice. Loughlin et al. (2021) distinguish its educational purpose from its procedural use in

accountability systems. These contributions provide a basis for examining both pedagogical practices and the organisational conditions under which they are enacted.

The present framework distinguishes three forms of evidence. Intended learning outcomes express educational expectations; perceived learning outcomes represent respondents' judgements about attainment; demonstrated outcomes require evidence of performance assessed against relevant criteria. The faculty and student models examine perceived outcomes. The employer model examines employers' reported evaluations of graduate competencies and of their relationship with the university. These measures inform an assessment of implementation, but they do not independently establish whether students have achieved programme standards.

2.2. Faculty and academic administrator perspectives on implementation conditions

Faculty members and academic administrators participate in translating programme intentions into educational provision. Their assessments can therefore illuminate the relationships between curriculum arrangements, instructional practices, institutional conditions, and perceived learning outcomes. In this study, these organisationally oriented constructs are measured through individual respondents' reports; they are not treated as institution-level observations.

The faculty and academic administrator model distinguishes awareness, educational practices, supporting arrangements, stakeholder engagement, and implementation challenges. OBE awareness concerns respondents' understanding of the approach and its implications. Such understanding may support coherent educational decisions, although awareness alone does not establish that those decisions are enacted. Curriculum design concerns the planned organisation of outcomes and educational provision. Teaching and assessment concern the practices through which students encounter learning opportunities and demonstrate their achievement. Constructive alignment provides the rationale for examining these three educational components in relation to perceived outcomes (Biggs, 1996).

Quality assurance and implementation support represent conditions intended to sustain educational practice. Quality assurance can provide opportunities to review outcome evidence and identify inconsistencies, while institutional support can enable staff to undertake the required teaching, assessment, and development activities. Their educational value depends on how they inform practice. As Loughlin et al. (2021) caution, procedural conformity should not be equated with effective teaching and learning.

Stakeholder engagement adds a relational dimension. Interaction with colleagues, students, and external participants may help programme teams clarify expectations, identify concerns, and consider changes to provision. Research on academics' and employers' perceptions of responsibility for employability supports examining participation while recognising that different actors may hold different expectations (Sin & Amaral, 2017). In the present model, engagement is treated as a potentially relevant implementation condition rather than a substitute for curriculum quality or pedagogical practice.

Implementation challenges concern perceived obstacles to putting OBE into practice. Where higher scores indicate more severe barriers, a negative association with perceived learning

outcomes is theoretically plausible. The interpretation of this construct must remain consistent with its wording and scoring.

The faculty and academic administrator model therefore examines the conditional associations of OBE awareness, curriculum design, teaching practices, assessment, quality assurance, stakeholder engagement, implementation support, and implementation challenges with perceived learning outcomes. It does not specify engagement as a mediator or assume that any single condition is sufficient for effective implementation.

2.3. Student learning conditions, experiences, and perceived outcomes

Students experience OBE through the relationship between educational expectations and the activities, resources, and assessments encountered during their studies. Their perspective complements staff reports by addressing experienced provision and perceived development.

Learning outcome awareness may help students understand what they are expected to achieve. Teaching practices provide opportunities to engage with relevant knowledge and tasks, while learning strategies concern how students approach those opportunities. Assessment communicates performance expectations and elicits evidence of learning. These constructs capture different aspects of participation in an aligned educational environment; none is equivalent to learning achievement itself.

Feedback can help students identify discrepancies between their current work and expected performance. Its educational contribution, however, depends on students' capacity to interpret and use the information received. Carless and Boud (2018) conceptualise feedback literacy in terms of the understandings, capacities, and dispositions required for such use. This distinction informs the present framework without introducing an unmeasured mechanism: reported feedback is included as a predictor, whereas feedback literacy and subsequent uptake are not separately modelled.

Practical experience concerns opportunities to apply learning beyond the acquisition of subject knowledge. Jackson (2015) examines both practices supporting employability skill development and barriers encountered in work-integrated learning. This evidence supports investigating practical experience as a relevant correlate of perceived development, while recognising that access, participation, and the quality of an experience are distinct considerations. Learning support conditions are included because resources and assistance may enable students to participate in the opportunities available to them.

Overall OBE experience represents students' broad appraisal of their experience of implementation. In the specified model, it is entered alongside the more specific learning conditions rather than modelled as their higher-order aggregate. Its coefficient therefore represents its association with perceived outcomes after accounting for the other included constructs. This analytical role requires conceptual and empirical separation from both the specific experience measures and the perceived-outcome measure; a broad positive appraisal should not automatically be interpreted as an independent educational mechanism.

Learning difficulties are included to examine constraints encountered during study. A negative association is plausible when higher scores represent greater obstacles. Difficulties should not be interpreted as beneficial challenge without evidence that the items capture that meaning.

The student model thus examines learning outcome awareness, teaching practices, learning strategies, assessment, feedback, practical experience, learning support conditions, overall OBE experience, and learning difficulties in relation to perceived learning outcomes. These are simultaneous conditional associations, not a specified sequence through which educational experiences produce attainment.

2.4. Employer participation, competency evaluations, and collaboration

Employers contribute an external perspective on graduates' professional capabilities and on the university relationships through which educational input can be exchanged. Their evaluations address an important aspect of programme relevance, although employability does not encompass all educational purposes or outcomes. Cheng et al. (2022) indicate that stakeholders differ in their interpretations of employability and of responsibility for its development. Employer reports should therefore be interpreted in relation to their evaluative role.

The employer model distinguishes participation capacity from engagement. Capacity concerns the ability to contribute to university activities; engagement concerns involvement in those activities. Greater capacity may make participation more feasible, which provides the rationale for the specified capacity–engagement relationship. Engagement may, in turn, create opportunities for employers to communicate evaluations of graduates and educational provision.

Feedback mechanisms concern arrangements for providing such input. They are distinguished analytically from collaboration, which represents the broader university–industry relationship evaluated in the model. Providing feedback may be associated with collaboration by enabling exchange around educational needs. Nevertheless, collecting comments does not establish that they inform programme decisions. The feedback–collaboration path is therefore examined as a direct association, without assuming that feedback has been incorporated into curriculum improvement.

Perceived graduate competencies provide a separate basis for examining collaboration. Employers who evaluate graduates favourably may also regard the university as a valuable partner, which is the rationale for specifying competencies as a predictor of collaboration. The relationship may also operate in the opposite direction: existing partnerships can shape employers' familiarity with graduates and their evaluations. The model direction expresses an analytical proposition rather than an established temporal ordering.

Graduate competencies are represented by professional knowledge, professional skills, and professional attitudes. Under the reflective higher-order specification used in this study, these dimensions are treated as manifestations of a common employer-rated competency construct. This interpretation differs from treating the dimensions as complementary components that collectively define competence. The reflective specification therefore rests on an assumption about the relationship between the higher-order construct and its dimensions; reliability statistics alone cannot establish its conceptual suitability.

The employer model contains four structural relationships: participation capacity to engagement, engagement to feedback mechanisms, feedback mechanisms to collaboration, and perceived graduate competencies to collaboration. It contains no relationship from feedback to

competencies and does not represent a continuous process through which employer participation improves graduate performance.

2.5. Analytical framework and scope

The analytical framework comprises three independent stakeholder models. The faculty and academic administrator model relates perceived implementation conditions to perceived learning outcomes. The student model relates reported learning conditions and experiences to perceived learning outcomes. The employer model examines the participation and feedback relationships (capacity, engagement, and feedback mechanisms) alongside the association between competency evaluations and university–industry collaboration.

These models address the three research questions through theory-informed analytical expectations. Supportive practices, participation, and educational opportunities provide a rationale for expecting positive associations, whereas barriers provide a rationale for expecting negative associations when scored in that direction. Each path is estimated conditional on the other predictors of the same dependent construct.

Figure 1 presents the structural specifications without cross-stakeholder paths. The models share an institutional context, but their respondents are unlinked, and their outcome criteria differ. Their joint interpretation therefore identifies complementary issues for institutional review; it does not constitute a multigroup comparison, a multilevel model, or a tested causal sequence across educational stages.

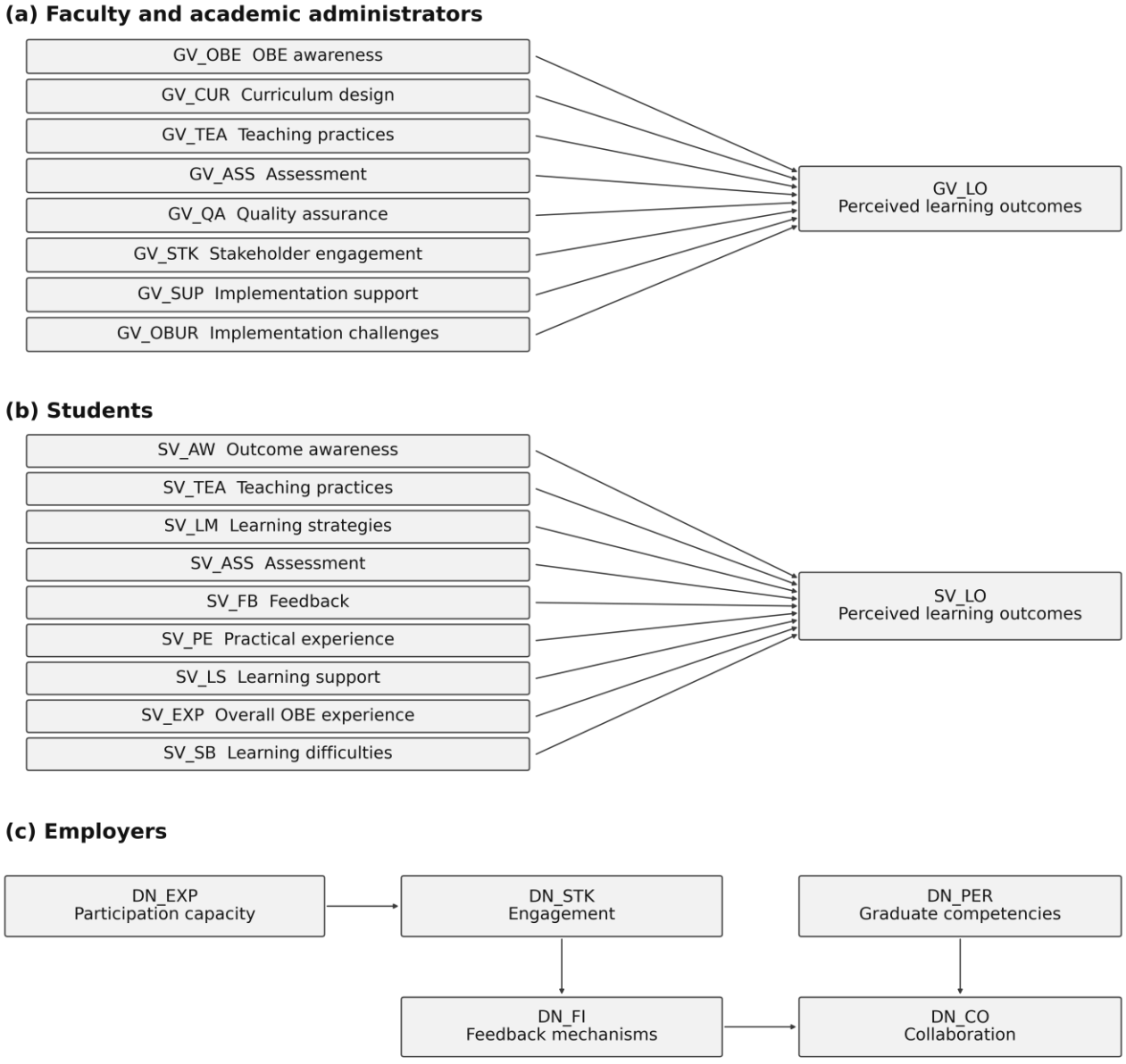

Figure 1. Stakeholder-Specific Structural Models of Outcome-Based Education Implementation at Vinh University.

3. Methods

3.1. Research design and participants

This study used a cross-sectional survey to examine OBE implementation at Vinh University, a multidisciplinary public university in Vietnam. Three online questionnaires addressed faculty members and academic administrators, students, and employers, capturing their respective assessments of implementation conditions, learning experiences, graduate competencies, and university–industry relationships. Data collection took place in March 2026 and yielded 413 valid responses: 107 from faculty members and academic administrators, 256 from students, and 50 from employers. Each stakeholder sample was analysed in a separate model. Responses were not linked across stakeholder groups or programmes; the analysis therefore examined

within-group associations rather than relationships between groups. Ethical approval and consent procedures are reported in the Declarations.

3.2. Instruments and constructs

The questionnaires covered constructs relevant to each group's involvement in educational provision. The OBE literature, including Asim et al. (2021) and Premalatha (2019), informed instrument development. These references provided conceptual background rather than establishing the item-level provenance of every measure. Table 1 summarises the constructs and their measurement structure. First-order constructs were specified as reflective, and each was described as comprising five items. The questionnaires also included open-ended prompts about implementation challenges, educational experiences, graduate competencies, and institutional improvement. The analyses reported here used the closed-ended responses; the open-ended material was not analysed as an independent qualitative component.

Table 1. Construct Definitions and Measurement Structure by Stakeholder Group

Code	Construct	Measurement focus	Indicators	Structural role
Faculty and academic administrators (n = 107)				
GV_OBE	OBE awareness	Understanding of OBE principles	5	Predictor
GV_CUR	Curriculum design	Curriculum planning and constructive alignment	5	Predictor
GV_TEA	Teaching practices	Implementation of teaching activities	5	Predictor
GV_ASS	Assessment	Outcome-based assessment practices	5	Predictor
GV_QA	Quality assurance	Internal quality assurance processes	5	Predictor
GV_STK	Stakeholder engagement	Collaboration with internal and external stakeholders	5	Predictor
GV_SUP	Implementation support	Institutional support for OBE implementation	5	Predictor
GV_OBUR	Implementation challenges	Perceived barriers to OBE implementation	5[a]	Predictor
GV_LO	Perceived learning outcomes	Perceived attainment of learning outcomes	5	Outcome
Students (n = 256)				
SV_AW	Learning outcome awareness	Awareness of intended learning outcomes	5	Predictor
SV_TEA	Teaching practices	Perceived quality of teaching	5	Predictor
SV_LM	Learning strategies	Student learning approaches	5	Predictor
SV_ASS	Assessment	Assessment experience	5	Predictor
SV_FB	Feedback	Quality and usefulness of feedback	5	Predictor
SV_PE	Practical experience	Workplace and practical learning experience	5	Predictor
SV_LS	Learning support conditions	Learning resources and institutional support	5	Predictor

Code	Construct	Measurement focus	Indicators	Structural role
SV_EXP	Overall OBE experience	Overall experience of OBE implementation	5	Predictor
SV_SB	Learning difficulties	Barriers encountered during learning	5	Predictor
SV_LO	Perceived learning outcomes	Perceived attainment of learning outcomes	5	Outcome
Employers (n = 50)				
DN_EXP	Participation capacity	Capacity to participate in university activities	5	Exogenous predictor
DN_STK	Employer engagement	Engagement with curriculum and educational activities	5	Endogenous; predicts DN_FI
DN_FI	Feedback mechanisms	Provision of graduate performance feedback	5	Endogenous; predicts DN_CO
DN_PER	Graduate competencies (higher-order)	Employer-rated graduate competencies	3 dimensions	Exogenous predictor
DN_CO	University–industry collaboration	Perceived university–industry collaboration	5	Outcome

3.3. Model specification

The three models were specified separately, one for each stakeholder sample, and each coefficient was estimated conditional on the other predictors of the same dependent construct.

In the faculty and academic administrator model, perceived learning outcomes (GV_LO) were specified as the dependent construct, with eight predictors: OBE awareness (GV_OBE), curriculum design (GV_CUR), teaching practices (GV_TEA), assessment (GV_ASS), quality assurance (GV_QA), stakeholder engagement (GV_STK), implementation support (GV_SUP), and implementation challenges (GV_OBUR). These constructs captured individual respondents' assessments of organisational conditions and educational practices rather than institution-level observations.

In the student model, perceived learning outcomes (SV_LO) were specified as the dependent construct, with nine predictors: learning outcome awareness (SV_AW), teaching practices (SV_TEA), learning strategies (SV_LM), assessment (SV_ASS), feedback (SV_FB), practical experience (SV_PE), learning support conditions (SV_LS), overall OBE experience (SV_EXP), and learning difficulties (SV_SB). Overall OBE experience was entered as a separate predictor rather than as a higher-order aggregate of the other learning-experience constructs, so its coefficient represents its association with perceived outcomes after accounting for the remaining predictors.

For implementation challenges (GV_OBUR) and learning difficulties (SV_SB), higher scores were presumed to indicate greater barriers; this coding requires verification against the item wording.

The employer model specified four structural paths: participation capacity (DN_EXP) to engagement (DN_STK), engagement to feedback mechanisms (DN_FI), feedback mechanisms

to university–industry collaboration (DN_CO), and perceived graduate competencies (DN_PER) to collaboration. Engagement and feedback mechanisms were therefore both dependent and predictor constructs within this sequence, whereas collaboration was the only construct with two predictors. Indirect effects were not interpreted. Graduate competencies were specified as a reflective higher-order construct comprising professional knowledge (DN_PRO), professional skills (DN_SKL), and professional attitudes (DN_ATT), and were estimated with the repeated-indicator approach (Sarstedt et al., 2019). This specification treats the dimensions as manifestations of a common competency construct; the interpretation of the higher-order measure depends on the suitability of that assumption.

3.4. Analytical procedure

Analyses were conducted in SmartPLS 4 using partial least squares structural equation modelling (PLS-SEM). Measurement assessment preceded structural interpretation. Internal consistency was examined with Cronbach's alpha (α) and composite reliability (ρC), and convergent validity with average variance extracted (AVE). Reference values were ≥ .70 for α and ρC and ≥ .50 for AVE; values above .95 were reviewed for possible indicator redundancy (Hair et al., 2019). Discriminant validity was considered using the heterotrait–monotrait ratio of correlations (HTMT), with .90 as the reported threshold (Henseler et al., 2015). These criteria were interpreted as evidence of specific measurement properties, not as sufficient confirmation of content validity or of the higher-order construct specification.

Structural relationships were evaluated using standardised path coefficients (β), bootstrap t statistics, and two-sided p values based on 5,000 bootstrap resamples. Because each model contained several simultaneous paths (8, 9, and 4 paths in the faculty and academic administrator, student, and employer models, respectively; 21 in total), Holm's sequential procedure (Holm, 1979) was applied within each model, with its paths treated as a separate family of tests. No adjustment was made across models, which address separate research questions in independent samples. Holm-adjusted p values were calculated from the reported (rounded) p values and are therefore approximate; where $p < .001$, an upper bound is given.

An association was regarded as statistically supported when its Holm-adjusted p was below .05. Associations with a nominal p below .05 that did not meet this criterion were treated as tentative, as were associations whose adjusted p fell close to .05, given that the adjustment was based on rounded values. Coefficients that did not meet the criterion were interpreted as insufficient evidence of a conditional direct association within the specified model, not as evidence that the corresponding educational practice was unimportant. R^2 values for the faculty and student outcome constructs describe in-sample explained variance, not out-of-sample predictive performance.

3.5. Interpretive principles

Interpretation retained the distinction between perceived attainment, employer evaluations, and institutional relationships. Faculty and student outcome measures did not independently verify learning achievement, and employer-rated competencies remained reported assessments. Coefficients and R^2 values were interpreted within each model; differences in their magnitude or statistical significance were not treated as between-group differences, because the samples, constructs, and outcome criteria differed. No cross-stakeholder effects were inferred. The

cross-sectional design, reliance on respondent reports, and the limited employer sample constrained causal interpretation and the precision of the estimates. The findings therefore provide evidence of stakeholder-specific associations relevant to institutional review, without directly measuring learning gains or discrepancies between documented curricula and enacted practice.

4. Results

4.1. Respondent characteristics

The analytical sample comprised 413 respondents: 107 faculty members and academic administrators (25.9%), 256 students (62.0%), and 50 employers (12.1%) (Table 2). These groups provided the samples for the three independent structural models.

Table 2. Distribution of Respondents by Stakeholder Group

Stakeholder group	n	%
Faculty and academic administrators	107	25.9
Students	256	62.0
Employers	50	12.1
Total	413	100.0

Among faculty members and academic administrators, 80.4% were academic staff, 60.7% held doctoral degrees, and 88.8% had more than 10 years of teaching experience. Women accounted for 87.1% of the student sample, and 63.7% of students reported no prior practical experience. Among employer respondents, 50.0% represented private-sector organisations and 48.0% held managerial positions (Table 3). The sample therefore combined an experienced academic group, a predominantly female student group in which most respondents lacked practical experience, and a small employer group.

Table 3. Selected Respondent Characteristics by Stakeholder Group

Characteristic	n	%
Faculty and academic administrators (n = 107)		
Academic staff	86	80.4
Doctoral degree	65	60.7
More than 10 years of teaching experience	95	88.8
Students (n = 256)		
Female	223	87.1
No prior practical experience	163	63.7
Employers (n = 50)		
Private-sector organisations	25	50.0
Managerial position	24	48.0

4.2. Measurement model assessment

Table 4 presents the reported internal-consistency and convergent-validity statistics. Cronbach's α ranged from .855 to .984, composite reliability (ρC) from .895 to .986, and AVE from .631 to .839. All constructs exceeded the reference values of .70 for internal consistency and .50 for AVE, which supports internal consistency and convergent validity under the specified measurement models.

Table 4. Reported Internal Consistency and Convergent Validity

Construct	Cronbach's α	ρC	AVE
Faculty and academic administrators (n = 107)			
OBE awareness (GV_OBE)	.922	.941	.763
Curriculum design (GV_CUR)	.859	.898	.637
Teaching practices (GV_TEA)	.925	.943	.769
Assessment (GV_ASS)	.917	.938	.752
Quality assurance (GV_QA)	.913	.934	.740
Stakeholder engagement (GV_STK)	.902	.927	.719
Implementation support (GV_SUP)	.950	.962	.835
Implementation challenges (GV_OBUR)[a]	.871	.920	.794
Perceived learning outcomes (GV_LO)	.923	.942	.766
Students (n = 256)			
Learning outcome awareness (SV_AW)	.929	.946	.778
Teaching practices (SV_TEA)	.947	.959	.825
Learning strategies (SV_LM)	.927	.945	.775
Assessment (SV_ASS)	.943	.956	.813
Feedback (SV_FB)	.933	.949	.789
Practical experience (SV_PE)	.945	.958	.821
Learning support conditions (SV_LS)	.926	.944	.772
Overall OBE experience (SV_EXP)	.938	.952	.800
Learning difficulties (SV_SB)	.931	.948	.785
Perceived learning outcomes (SV_LO)	.930	.947	.781
Employers (n = 50)			
Participation capacity (DN_EXP)	.857	.896	.634
Employer engagement (DN_STK)	.952	.963	.839
Feedback mechanisms (DN_FI)	.893	.919	.695
Graduate competencies (higher-order) (DN_PER)[b]	.984	.986	.832
University–industry collaboration (DN_CO)	.855	.895	.631

Several coefficients exceeded .95: ρC for GV_SUP, SV_TEA, SV_ASS, SV_PE, SV_EXP, DN_STK, and DN_PER, and α for DN_STK and DN_PER. Such values warrant attention to possible item overlap and construct breadth. For GV_OBUR, the reported ρC and AVE require reconciliation with the retained indicators and their loadings.

Discriminant validity could not be assessed beyond a summary statement. HTMT values were reported as below .90, but the full HTMT matrices and bootstrap confidence intervals were not available for verification, including for the pair SV_EXP–SV_LO. For the higher-order

construct DN_PER, the level at which the reported statistics were calculated requires verification, and dimension-specific statistics and higher-order loadings were not available. These gaps limit the evaluation of the reflective higher-order specification.

4.3. Faculty and academic administrator model

The model explained 58.4% of the in-sample variance in perceived learning outcomes (R^2 = .584). Stakeholder engagement was positively associated with perceived learning outcomes after accounting for the other seven predictors (β = .274, t = 2.761, p = .006). The Holm-adjusted p value was approximately .048, so the association met the adjusted criterion only marginally (Table 5).

Table 5. Structural Estimates for Faculty and Academic Administrators

Predictor	β	t	p	Holm p
OBE awareness (GV_OBE)	-.032	0.296	.767	1.000
Curriculum design (GV_CUR)	-.046	0.382	.703	1.000
Teaching practices (GV_TEA)	.194	1.390	.165	1.000
Assessment (GV_ASS)	.191	1.231	.218	1.000
Quality assurance (GV_QA)	.172	1.354	.176	1.000
Stakeholder engagement (GV_STK)	.274	2.761	.006	.048[a]
Implementation support (GV_SUP)	.149	1.409	.159	1.000
Implementation challenges (GV_OBUR)	.056	0.676	.499	1.000

None of the other paths was significant, either nominally or after adjustment (nominal $p \geq .159$; Holm p = 1.000). Positive estimates were observed for teaching practices (β = .194), assessment (β = .191), quality assurance (β = .172), implementation support (β = .149), and implementation challenges (β = .056). Curriculum design (β = -.046) and OBE awareness (β = -.032) had small negative estimates.

Stakeholder engagement was thus the only predictor with a statistically supported conditional direct association, and this support is tentative because the adjusted value is close to .05 and was calculated from a rounded p value. The result does not show that the coefficient for engagement differed from those of the other predictors, nor that the remaining implementation conditions lacked educational relevance.

4.4. Student model

The model explained 70.3% of the in-sample variance in perceived learning outcomes (R^2 = .703; Table 6). Overall OBE experience had the largest positive estimated coefficient (β = .453, t = 5.329, p < .001, Holm p < .009) and was the only predictor that remained significant after adjustment. The ordering of coefficients describes the estimates; differences between coefficients were not formally tested.

Table 6. Structural Estimates for Students

Predictor	β	t	p	Holm p
Learning outcome awareness (SV_AW)	-.004	0.057	.955	1.000
Teaching practices (SV_TEA)	.099	1.120	.263	.789
Learning strategies (SV_LM)	.046	0.574	.566	1.000
Assessment (SV_ASS)	-.207	1.592	.111	.555
Feedback (SV_FB)	.145	1.296	.195	.780
Practical experience (SV_PE)	.144	2.487	.013	.091
Learning support conditions (SV_LS)	.219	2.639	.008	.064
Overall OBE experience (SV_EXP)	.453	5.329	< .001	< .009
Learning difficulties (SV_SB)	.086	2.056	.040	.240

Three further paths were nominally significant but did not meet the adjusted criterion and are therefore tentative: learning support conditions (β = .219, t = 2.639, p = .008, Holm p = .064), practical experience (β = .144, t = 2.487, p = .013, Holm p = .091), and learning difficulties (β = .086, t = 2.056, p = .040, Holm p = .240). The positive coefficient for learning difficulties requires verification against the scale wording and coding, and the result does not support interpreting learning barriers as beneficial.

The remaining paths were not significant: feedback (β = .145, p = .195), teaching practices (β = .099, p = .263), learning strategies (β = .046, p = .566), learning outcome awareness (β = -.004, p = .955), and assessment (β = -.207, p = .111). The Holm p values for these paths ranged from .555 to 1.000. In particular, the negative estimate for assessment did not provide sufficient evidence of a negative association with perceived outcomes.

4.5. Employer model

Table 7 reports the employer-model estimates. Participation capacity was positively associated with engagement (β = .667, t = 7.830, p < .001, Holm p < .004), and engagement was positively associated with feedback mechanisms (β = .647, t = 4.233, p < .001, Holm p < .004). Perceived graduate competencies were positively associated with university–industry collaboration (β = .606, t = 2.807, p = .005, Holm p = .010). All three associations met the adjusted criterion. The direct association between feedback mechanisms and collaboration was positive but not significant (β = .138, t = 0.611, p = .541).

Table 7. Structural Estimates for Employers

Path	β	t	p	Holm p
Participation capacity → Employer engagement (DN_EXP → DN_STK)	.667	7.830	< .001	< .004
Employer engagement → Feedback mechanisms (DN_STK → DN_FI)	.647	4.233	< .001	< .004
Feedback mechanisms → University–industry collaboration (DN_FI → DN_CO)	.138	0.611	.541	.541
Graduate competencies (higher-order) → University–industry collaboration (DN_PER → DN_CO)	.606	2.807	.005	.010

These results comprise two connected participation relationships and a separate competency–collaboration association. They do not establish that feedback improved graduate competencies or mediated an association between engagement and collaboration. R^2 values for DN_STK, DN_FI, and DN_CO and specific indirect effects were not available, and the small sample (n = 50) limits the precision of the estimates.

4.6. Synthesis of stakeholder-specific findings

Table 8 summarises the three models. Of the 21 structural paths, 8 were nominally significant (1 of 8 in the faculty and academic administrator model, 4 of 9 in the student model, and 3 of 4 in the employer model). After Holm adjustment within each model, five paths remained significant: stakeholder engagement for faculty members and academic administrators (tentatively), overall OBE experience for students, and three paths in the employer model.

Table 8. Summary of Structural Results After Holm Adjustment

Research question and model	In-sample R^2	Nominal $p < .05$	Holm-adjusted results at .05
RQ1 Faculty and academic administrators (n = 107)	.584	1 of 8	Stakeholder engagement → perceived learning outcomes (β = .274, Holm p ≈ .048). Decision pending confirmation from the unrounded p value.
RQ2 Students (n = 256)	.703	4 of 9	Overall OBE experience → perceived learning outcomes (β = .453, Holm p < .009). Learning support, practical experience and learning difficulties exceeded .05 after adjustment.
RQ3 Employers (n = 50)	Unavailable	3 of 4	Participation capacity → engagement (β = .667, Holm p < .004) Engagement → feedback (β = .647, Holm p < .004) Graduate competencies → collaboration (β = .606, Holm p ≈ .010)

The three models identified complementary associations relevant to OBE implementation, but they address different aspects of educational provision and institutional relationships. Because they use independent samples and distinct constructs, their coefficients and R^2 values do not

establish differences in effects or explanatory performance across stakeholder groups. The synthesis therefore identifies issues for institutional investigation rather than a common ranking of determinants or a causal sequence linking implementation to graduate performance.

5. Discussion

5.1. Interpreting OBE implementation through stakeholder-specific evidence

The findings indicate that OBE implementation can be examined through complementary stakeholder perspectives, each addressing a different aspect of educational provision. Faculty members and academic administrators evaluated implementation conditions and perceived learning outcomes; students assessed their learning experiences and perceived development; employers evaluated graduate competencies and university relationships. The contribution lies in interpreting these perspectives together while preserving the distinction between their outcome criteria. Their combination broadens institutional inquiry, but it does not establish a single process linking curriculum design, student attainment, and employer collaboration.

This interpretation extends the implementation concerns identified by Ruge et al. (2019), who emphasised the connections between institutional policy and disciplinary practice. It also responds to Pham and Nguyen's (2024) observation that documentary evidence alone provides limited access to stakeholders' experiences of OBE. The present study adds respondent-level evidence about selected implementation conditions within one university. The strength of that evidence varies across models: after Holm adjustment, five of the 21 examined associations were statistically supported, one of them only marginally. Its findings should therefore be understood as a basis for investigating how OBE is experienced and evaluated, not as direct confirmation of a discrepancy between formal curricula and enacted practice.

5.2. Stakeholder engagement and perceived implementation conditions

In the faculty and academic administrator model, stakeholder engagement was the only predictor with a statistically supported conditional direct association with perceived learning outcomes. The support was marginal (Holm $p \approx .048$), because the adjusted value lies close to the threshold and was calculated from a rounded p value, so the association is best treated as tentative. One plausible interpretation is that engagement creates opportunities to clarify educational expectations, discuss evidence, and coordinate decisions across participants. From this perspective, participation matters when it helps programme teams connect curriculum intentions with the practical demands of teaching and assessment.

The study does not directly observe these activities, however. Respondents who regard learning outcomes favourably may also evaluate stakeholder engagement positively, and both assessments may reflect other programme conditions. Engagement is therefore best treated as a relevant correlate whose practical content requires further investigation. The result provides no basis for identifying it as the sole determinant of implementation effectiveness, nor for concluding that its coefficient differed from those of the other predictors.

The unsupported coefficients for curriculum design, teaching practices, assessment, quality assurance, OBE awareness, and implementation support also require careful interpretation. Each estimate represents the remaining association after the other predictors are included, and shared variance, measurement overlap, and estimation uncertainty may affect these coefficients. The findings consequently do not contradict constructive alignment or establish

that formal design and pedagogical practices are unimportant. Biggs's (1996) account concerns the coherence of outcomes, activities, and assessment; the present model estimates separate associations between reported constructs and perceived attainment. These are different analytical propositions.

The institutional implication is to examine what stakeholder engagement accomplishes. Attendance at consultations or the collection of opinions provides limited evidence of educational improvement. More informative evidence would show which concerns were raised, how they informed programme decisions, and whether subsequent assessment demonstrated the intended improvement. This would help distinguish participation as an administrative activity from participation that contributes to educational review.

5.3. Student experience, support, and perceived development

The student findings place experienced provision at the centre of interpretation. Overall OBE experience was positively associated with perceived learning outcomes and was the only student-model association that remained significant after adjustment. Learning support conditions and practical experience were also positively associated with perceived outcomes in nominal tests, but did not meet the adjusted criterion (Holm $p = .064$ and .091). Together, these results suggest that students' evaluations of their development are related to their overall appraisal of provision, while the contributions of specific forms of assistance and application remain tentative.

The practical-experience estimate is nevertheless relevant because most student respondents reported no prior practical experience. It supports examining how opportunities for application are distributed and experienced within programmes. Jackson's (2015) research similarly directs attention to both the practices supporting skill development and the barriers encountered in work-integrated learning. The present finding does not establish that placements, projects, simulations, or other forms of application are equally effective, and a perception-based measure cannot substitute for evidence of participation and assessed performance.

Overall OBE experience had the largest positive estimated coefficient, but this should not be translated into a recommendation to prioritise "experience" over specific educational practices. A broad appraisal may capture the coherence of provision, general satisfaction, or evaluative content shared with the outcome measure. Because it was entered alongside teaching, assessment, feedback, support, and practical experience, its interpretation depends on whether the instrument distinguishes these constructs adequately, and the full HTMT results needed to verify this, including for the pair SV_EXP–SV_LO, were not available. The result identifies a strong association within the specified model; it does not establish an independent experiential mechanism or a statistically verified ranking of educational influences.

The feedback finding illustrates a related distinction between educational provision and its use. Feedback literacy scholarship emphasises students' capacity to interpret information, judge quality, and act on feedback (Carless & Boud, 2018). This offers a reason to investigate feedback uptake in subsequent research, rather than assuming that favourable ratings of feedback provision correspond to learning gains. Because uptake was not separately measured, it cannot conclusively explain why the feedback coefficient was not supported.

The small positive coefficient for learning difficulties did not meet the adjusted criterion (Holm $p = .240$) and warrants no substantive explanation until the scale direction has been verified. If higher scores indicate greater obstacles, the estimate could reflect conditional relationships among correlated predictors, measurement problems, or sampling variation. It should not be recast as evidence that barriers improve learning. The distinction between productive intellectual challenge and obstructive learning conditions must be established through item content rather than inferred from the coefficient's sign.

5.4. Employer participation and university–industry collaboration

The employer model distinguishes the conditions enabling participation from evaluations associated with collaboration. Participation capacity was positively associated with engagement, and engagement with feedback mechanisms; both associations remained significant after adjustment. These relationships suggest that access to employer input may depend partly on whether organisations have the ability and opportunity to participate. Universities seeking sustained involvement should therefore examine the practical demands placed on partners, rather than assume that invitations alone create meaningful engagement.

Perceived graduate competencies were positively associated with collaboration, and this association also met the adjusted criterion (Holm $p = .010$). A plausible interpretation is that employers who value graduates' capabilities also regard the university as a worthwhile partner. Conversely, existing collaboration may increase familiarity with graduates or influence competency evaluations, and organisational relationships may shape both assessments. The findings cannot discriminate between these explanations, and the evaluation of the higher-order competency construct is limited by the unavailable dimension-level statistics.

The unsupported feedback–collaboration coefficient does not establish that employer feedback lacks value; with only 50 employers, the model may also have limited precision to detect modest associations. Providing feedback, incorporating it into programme decisions, and sustaining a partnership are distinct activities. The study measured the first relationship without tracing how comments were considered or implemented. A useful institutional response would be to document the movement from employer observations to programme decisions and subsequent evaluation, rather than simply increase the volume of feedback collected.

Employer evaluations should also retain their appropriate scope. Research identifies differences in how stakeholders understand employability and their responsibility for developing it (Cheng et al., 2022; Sin & Amaral, 2017). Employer-rated competencies and collaboration therefore contribute to programme review without serving as comprehensive measures of educational quality.

5.5. Contribution and implications for institutional improvement

The study contributes an account of OBE implementation that distinguishes organisational conditions, student experiences, and employer relationships. Its analytical value is to show how stakeholder-specific evidence can inform a shared institutional inquiry without assuming equivalent measures or empirically linked observations. It does not establish a new causal mechanism; it clarifies the questions that different sources of evidence can address.

This distinction is important for interpreting alignment in practice. A favourable perception of curriculum design, a positive learning experience, and an employer's assessment of graduate

competence are relevant observations, but each requires different corroborating evidence. The findings therefore support an approach to programme review that brings stakeholder judgements into dialogue with curriculum records, assessed student work, and documented partnership activities.

Three practical priorities follow, each proportionate to the strength of the corresponding evidence. First, programme teams could examine whether stakeholder consultations lead to identifiable decisions about outcomes, teaching, or assessment, bearing in mind that the supporting association was marginal. Second, they could assess students' access to learning support and opportunities to apply knowledge, using participation records and assessed work alongside survey responses; the associations motivating this priority were tentative. Third, employer engagement could be organised around specific competency expectations and feasible contributions to educational review. These priorities are proposals for investigation and improvement, not interventions whose effectiveness has been demonstrated by the present models.

Such an approach preserves the educational purpose of OBE. As Loughlin et al. (2021) argue, the value of constructive alignment lies in its contribution to teaching and learning. Institutional review should accordingly ask what changes in students' opportunities and performance, rather than regard completed documentation or favourable survey ratings as sufficient evidence of success.

5.6. Limitations and future research

Several limitations define the interpretation of these findings. The cross-sectional, single-institution design cannot establish temporal ordering or support statistical generalisation to Vietnamese higher education. Respondent reports are also susceptible to shared evaluative tendencies, social desirability, and reverse relationships. The predominance of women and the limited prior practical experience in the student sample further constrain transferability.

The three stakeholder samples were independent, and their outcome constructs differed. The findings therefore cannot establish cross-group differences, trace students' development into employment, or explain how one group's actions affect another group's outcomes. Future studies could link programme-level implementation evidence with student assessments and subsequent graduate and employer evaluations.

Measurement uncertainty also remains consequential. The broad OBE experience construct requires clearer separation from specific educational conditions and perceived outcomes, and the complete HTMT matrices were not available to verify discriminant validity. The direction of the difficulties measure requires verification, the ρC and AVE values for GV_OBUR require reconciliation with the retained indicators, and the reflective higher-order competency specification needs fuller theoretical and empirical assessment. High internal consistency does not resolve these issues.

Estimation uncertainty is especially relevant to the employer sample and to models containing several simultaneous predictors. Holm adjustment within each model reduces, but does not eliminate, the risk of false-positive findings; it was not applied across all 21 paths, and the adjusted values were calculated from rounded *p* values and are approximate. Findings close to the threshold, such as the faculty-model association for stakeholder engagement, should

therefore remain tentative. Complete confidence intervals, collinearity diagnostics, R^2 values for the employer model, model-specific sensitivity analyses, and fuller measurement results would improve assessment of the reported relationships.

Finally, the study did not directly compare documented curricula with observed educational practice. Longitudinal research combining curriculum analysis, assessment evidence, observations, and interviews would be better positioned to establish whether a design–implementation discrepancy exists and how it develops. The present findings identify where such investigation may be productive; they do not determine its conclusions.

6. Conclusion

This study examined OBE implementation at Vinh University, Vietnam, through three independent stakeholder models. Among faculty members and academic administrators, stakeholder engagement was positively associated with perceived learning outcomes, although the association was only marginal after Holm adjustment. Among students, overall OBE experience was positively associated with perceived outcomes and was the only association in that model that remained significant after adjustment; the associations for learning support and practical experience were nominally significant but tentative. Among employers, participation capacity was associated with engagement, engagement with feedback mechanisms, and perceived graduate competencies with university–industry collaboration, and all three associations remained significant after adjustment. These findings concern distinct stakeholder evaluations rather than successive stages of a single implementation process.

The study contributes a stakeholder-sensitive account that distinguishes perceived implementation conditions, student learning experiences, and employer evaluations. This distinction allows complementary evidence to inform programme review without treating different judgements as interchangeable measures of educational effectiveness. For institutional practice, the findings suggest priorities for examination: how stakeholder participation informs programme decisions, how students access support and opportunities for application, and how employer input contributes to educational review. The evidence for these priorities differs in strength, and their value requires corroboration through assessed student work, curriculum records, and documented changes in provision.

The cross-sectional, self-reported, and unlinked data, the measurement uncertainties, and the small employer sample limit these conclusions. The study neither establishes causal relationships nor directly demonstrates a design–implementation gap. Future research should connect programme-level evidence with student performance and with subsequent graduate and employer evaluations over time. Such evidence would clarify how intended outcomes are enacted, assessed, and revised in educational practice.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the ethical guidelines of the University of Vinh, Vietnam, to ensure the highest standards of research integrity. The study protocol was reviewed and approved by the Ethics Committee of the Vinh University on March 12, 2026. All participants provided written informed consent prior to participating in the study. Participation was entirely voluntary, and participants were informed of the purpose and procedures of the

study, as well as their right to withdraw at any time without consequences. The privacy and confidentiality of participants' personal information were strictly protected throughout the data collection and analysis processes in accordance with the University's ethical guidelines.

Consent for publication

Informed consent to publish was obtained from all participants and authors. The authors agreed to publish their identifying information and affiliation.

Competing interests

The author declares no competing interests.

Funding

This research was conducted within the framework of a ministerial-level project funded by the Ministry of Education and Training of Vietnam, entitled "Developing a model for curriculum development based on the OBE ecosystem in Vietnamese higher education in the new context" (Project Code: B2026-TDV-08).

Data availability

The data supporting the findings are available from the corresponding author upon reasonable request, subject to applicable consent and confidentiality restrictions.

References

Asim, H. M., Vaz, A., Ahmed, A., & Sadiq, S. (2021). A review on outcome based education and factors that impact student learning outcomes in tertiary education system. *International Education Studies, 14*(2), 1–11. https://doi.org/10.5539/ies.v14n2p1

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education, 32*(3), 347–364. https://doi.org/10.1007/BF00138871

Biggs, J., Tang, C., & Kennedy, G. (2022). *Teaching for quality learning at university* (5th ed.). Open University Press.

Carless, D., & Boud, D. (2018). The development of student feedback literacy: Enabling uptake of feedback. *Assessment & Evaluation in Higher Education, 43*(8), 1315–1325. https://doi.org/10.1080/02602938.2018.1463354

Cheng, M., Adekola, O., Albia, J., & Cai, S. (2022). Employability in higher education: A review of key stakeholders' perspectives. *Higher Education Evaluation and Development, 16*(1), 16–31. https://doi.org/10.1108/HEED-03-2021-0025

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review, 31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Harden, R. M. (1999). AMEE Guide No. 14: Outcome-based education: Part 1—An introduction to outcome-based education. *Medical Teacher, 21*(1), 7–14. https://doi.org/10.1080/01421599979969

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hussey, T., & Smith, P. (2002). The trouble with learning outcomes. *Active Learning in Higher Education, 3*(3), 220–233. https://doi.org/10.1177/1469787402003003003

Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education, 40*(2), 350–367. https://doi.org/10.1080/03075079.2013.842221

Loughlin, C., Lygo-Baker, S., & Lindberg-Sand, Å. (2021). Reclaiming constructive alignment. *European Journal of Higher Education, 11*(2), 119–136. https://doi.org/10.1080/21568235.2020.1816197

McCowan, T. (2015). Should universities promote employability? *Theory and Research in Education, 13*(3), 267–285. https://doi.org/10.1177/1477878515598060

Nguyen, C. H., Nong, H. H. T., Saynavong, N., & Nguyen, S. T. (2024). Implementing outcome-based education in higher education programs: A multiple case study in Vietnam and Laos. *Vietnam Journal of Education, 8*(2), 112–120. https://doi.org/10.52296/vje.2024.385

Pereira, E. T., Vilas-Boas, M., & Rebelo, C. F. (2020). University curricula and employability: The stakeholders' views for a future agenda. *Industry and Higher Education, 34*(5), 321–329. https://doi.org/10.1177/0950422220901676

Pham, H. T., & Nguyen, P. V. (2024). ASEAN quality assurance scheme and Vietnamese higher education: A shift to outcomes-based education? *Quality in Higher Education, 30*(2), 285–312. https://doi.org/10.1080/13538322.2023.2261974

Premalatha, K. (2019). Course and program outcomes assessment methods in outcome-based education: A review. *Journal of Education, 199*(3), 111–127. https://doi.org/10.1177/0022057419854351

Ruge, G., Tokede, O., & Tivendale, L. (2019). Implementing constructive alignment in higher education – cross-institutional perspectives from Australia. *Higher Education Research & Development, 38*(4), 833–848. https://doi.org/10.1080/07294360.2019.1586842

Sarstedt, M., Hair, J. F., Jr., Cheah, J.-H., Becker, J.-M., & Ringle, C. M. (2019). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal, 27*(3), 197–211. https://doi.org/10.1016/j.ausmj.2019.05.003

Sin, C., & Amaral, A. (2017). Academics' and employers' perceptions about responsibilities for employability and their initiatives towards its development. *Higher Education, 73*(1), 97–111. https://doi.org/10.1007/s10734-016-0007-y

Spady, W. G. (1994). *Outcome-based education: Critical issues and answers*. American Association of School Administrators. https://eric.ed.gov/?id=ED380910

Villarroel, V., Bloxham, S., Bruna, D., Bruna, C., & Herrera-Seda, C. (2018). Authentic assessment: Creating a blueprint for course design. *Assessment & Evaluation in Higher Education, 43*(5), 840–854. https://doi.org/10.1080/02602938.2017.1412396