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Increasing Effectiveness of Cultural Intelligence (CQ) Development Process for Business School Students

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Abstract: As workplaces grow increasingly multicultural, cultural intelligence (CQ) has become an essential competence for graduates entering the global workforce. Yet research on CQ development has largely focused on comparing methods such as study abroad, simulations, and classroom instruction, while paying less attention to the underlying factors that make these methods effective. This study addresses that gap by empirically testing a conceptual model of CQ development derived from a preceding qualitative phase. Specifically, it examines the extent to which five antecedents, namely learning environment, learning journey, student characteristics, educator capability, and institutional support, are associated with the effectiveness of the CQ development process among business school students. Data were collected from 302 students at internationally accredited business schools in Indonesia and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4. The measurement model demonstrated satisfactory validity and reliability across all constructs. The structural model showed that all five antecedents were positively associated with the CQ development effectiveness, jointly explaining 45% of its variance ($R^2 = 0.45$). Learning environment was the strongest predictor ($\beta = 0.400$), followed by learning journey ($\beta = 0.371$), student characteristics ($\beta = 0.284$), institutional support ($\beta = 0.177$), and educator capability ($\beta = 0.168$). The findings suggest that developing CQ in business schools requires more than selecting the right teaching method; it also depends on careful attention to the conditions surrounding how, where, and by whom learning is delivered.

Keywords: Cultural Intelligence; CQ development; learning environment; learning journey; student characteristics; educator capability; institutional support

1. Introduction

Today's borderless economy has made the workplace become progressively more multicultural, with teams and businesses constantly conducted across culturally diverse backgrounds. Consequently, the ability to adapt effectively has become a key competence for employees to navigate at work (Azevedo & Shane, 2019). Cultural intelligence (CQ), defined as the ability to function effectively in multicultural contexts (Ang et al., 2007), has thus been recognized as a critical employability attribute, especially in multicultural environments (Menzies, 2020).

Studies suggest that CQ has been linked positively with effective professional outcomes, such as increased job satisfaction, leadership, decision making, and performance (Ang et al., 2007; Konanahalli et al., 2014; Shu et al., 2017). Meanwhile, empirical evidence has also shown that ignoring employees' CQ may create problems such as low motivation, which can lead to high turnover and the loss of clients (Weglowska, 2019). This presents a pressing issue since many graduates from

business schools often enter the workforce unprepared for intercultural demands (Han et al., 2022).

These findings indicate that CQ carries clear value and relevance for both individuals and organizations. Therefore, developing CQ during formal education is essential to equip students with the skills required to work productively in diverse environments (Eisenberg et al., 2013; Erez et al., 2013; Gustomo et al., 2018). These demands further intensify calls for business schools to prepare their students with the competence needed to enter today's workforce.

To date, there are various methods in developing CQ, such as experiential learning, study abroad programs, and intercultural courses (Eisenberg et al., 2013; Gustomo et al., 2018; MacNab, 2012). However, previous research has shown that the effectiveness of these development processes is inconsistent, with outcomes varying across studies. For example, Gustomo et al. (2018) found that a study abroad program significantly improved students' CQ, whereas Wood and St. Peters (2014) showed no significant relationship with behavioral dimension. Additionally, through its systematic review, Urgan et al. (2025) found that, even though cross-cultural training can increase CQ, it does not always show a significant positive relationship. These inconsistencies suggest that underlying factors determine the effectiveness of CQ development methods.

The preceding qualitative phase of this study identified five variables that play a significant role in developing business school students' CQ, namely learning environment, learning journey, student characteristics, educator capability, and institutional support. Learning environment refers to the contextual setting in which CQ development takes place, including the level of cultural diversity and the available facilities and technology. Learning journey refers to how the development process is designed and delivered, encompassing the quality of instruction, the duration of the program, and the evaluation process, including debrief and reflection. Student characteristics are individual traits that shape learning receptivity and thereby affect CQ development, including motivation, awareness, knowledge, communication skills, and prior cross-cultural experience. Educator capability refers to the knowledge and experience of educators, as well as their ability to deliver the chosen method. Finally, institutional support refers to the extent of institutional collaboration and the funding allocated to support the CQ development process.

However, although these variables were identified through a qualitative approach, the conceptual model remains preliminary until it is tested empirically. While there is theoretical support for the influence of each variable, empirical evidence confirming the predictive validity of the integrated model is still lacking. Institutional support, in particular, has rarely been tested as a direct predictor in previous research.

Therefore, building on the preceding qualitative phase, this study adopts a quantitative approach to test and validate the relationships specified in the CQ development model, that is, the extent to which learning environment, learning journey, student characteristics, educator capability, and institutional support are associated with the effectiveness of the CQ development process among business school students. By validating this model, the study contributes to theory on CQ development and provides practical guidance for business schools seeking to prepare their graduates for the global workforce.

2. Theoretical Framework and Hypothesis Development

Cultural Intelligence, or also known as Cultural Quotient (CQ), is a framework

developed of late by Earley and Ang (2003) that is defined as “the capability to function effectively in intercultural contexts, including across national, ethnic, organizational, generational, and many other contexts” (p.4). In other words, it is understood as one’s ability to adapt and perform accordingly in any given intercultural situation (Earley & Ang, 2003). Meanwhile, CQ is more than just one’s intelligence but encompasses metacognitive, cognitive, motivational, and behavioral (Ang et al., 2007). CQ thus extends the concept of emotional intelligence by addressing what emotional intelligence does not, namely coping with people in unfamiliar cultural settings (Earley & Mosakowski, 2004).

Several scholars have done research to define and establish elements that constitute CQ. Earley and Mosakowski (2004) proposed that CQ consists of three sources: cognitive (head), physical (body), and emotional/motivational (heart). The cognitive dimension concerns the process of learning the beliefs, customs, and taboos of foreign cultures and understanding how to adjust to them. The physical dimension relates to how individuals act and behave in new cultural settings, including the ability to imitate local behaviors to interact effectively. The emotional/motivational dimension addresses the internal drive that enables someone to adapt and act effectively in unfamiliar cultural environments.

Building on this initial conceptualization, Ang et al. (2007) further refined CQ into a multi-dimensional framework comprising four interrelated dimensions: metacognitive, cognitive, motivational, and behavioral. These four dimensions are inseparably linked; CQ cannot be fully realized if any single dimension is lacking. An individual may possess extensive cultural knowledge (cognitive CQ) yet fail to apply it due to insufficient motivation. Similarly, high motivation without adequate knowledge or behavioral flexibility will yield limited results. Among the four, the behavioral dimension holds particular significance because it serves as the execution mechanism for the other three: appropriate action is what translates the other three capabilities into effective intercultural functioning.

Because CQ is multi-dimensional, it is developed through various approaches, ranging from traditional classroom methods to experiential learning. Traditional classroom methods cover approaches such as lectures, readings, case studies, and film-based learning that focus on transferring knowledge related to cultural concepts and norms (Buchtel, 2014; Eisenberg et al., 2013; Rehg et al., 2012). These methods have been proven to increase one’s cultural intelligence. Multiple studies have demonstrated meaningful improvements in the cognitive, behavioural, and metacognitive dimensions of CQ (Azevedo & Shane, 2019; Bobanovic & Grzinic, 2019; Presbitero & Toledano, 2018; Ramsey & Lorenz, 2016; Rehg et al., 2012), even though an increase in only one dimension, the metacognitive, was also observed (Buchtel, 2014).

Experiential learning, defined as learning through the transformation of experiences (Kolb, 1984), has also been proven to improve CQ through structured training, cross-cultural interactions, and international experiences. MacNab (2012) proposed a seven-stage experiential learning model that demonstrates how structured experiential intervention is effective in developing students’ overall CQ, especially in the metacognitive, motivational, and behavioral dimensions. Subsequently, other scholars have extended MacNab’s (2012) research. Alexandra (2018b, 2018a) findings validated cross-cultural training enhance CQ, while (Eisenberg et al., 2013) found that the combination of experiential and classroom methods increased overall, metacognitive, and cognitive CQ significantly.

Besides structured training programs, international visits represent another learning approach for developing CQ. They can be divided into two forms: short-term visits and longer-term visits through exchange programs. Short-term overseas visits show mixed results. Wood and St. Peters (2014) found that short-term visits improved all CQ dimensions except the behavioral dimension, whereas in Gustomo et al. (2018), short visits improved all CQ dimensions. Meanwhile, for exchange programs that last longer, it also increased all CQ dimensions (Chao et al., 2017).

Technology-based methods, such as virtual teams pioneered by Erez et al. (2013), is another approach to developing CQ. Studies proved that virtual project teams and online global interaction develop participants' CQ significantly (Erez et al., 2013). The use of virtual reality (VR) has also been explored for workplace CQ training which can improve motivational CQ (Philip et al., 2023). However, Kirste & Holtbrügge (2019) found only slight improvement using experiential learning through digital platforms, suggesting variation in outcomes of technology-based methods.

Another approach to developing CQ is cultural simulation. A study by Bücken & Korzilius (2015) revealed that participants using the Ecotonos simulation game showed significant improvement in motivational, metacognitive, and behavioral CQ. Similarly, role-play and simulation combined with lecturing and discussion can produce a significant increase in all CQ dimensions (Bobanovic & Grzanic, 2019). In contrast, Fischer (2011) who used a simulation game (BAFA BAFA) with behavior-modification sessions, reported a decrease in the metacognitive and cognitive aspects, with nonsignificant changes in motivational and behavioral CQ. This variability in outcomes suggests that the effectiveness of cultural simulation methods depends on design and implementation factors (Fischer, 2011).

Taken together, prior studies have examined the effectiveness of various methods for developing CQ. However, most of this research focuses on the methods themselves, while paying less attention to the underlying factors within each method that shape learning outcomes. These underlying factors may ultimately determine whether a given method succeeds in developing CQ.

In line with that, several studies already recognized the importance of these variables without thoroughly investigating them. To illustrate, Fischer (2011) pointed out that using overly complicated methods may confuse participants. While such confusion might help them understand the challenges of working in multicultural settings, it could also have a detrimental effect on metacognitive and cognitive CQ (Fischer, 2011). Similarly, Tuleja (2014) noted that the components of a training program directly affect its effectiveness.

In terms of process, Gustomo et al. (2018) study demonstrated that the success of short-visit methods in developing students' CQ depends on careful attention to both content and process. Factors such as the duration of the visit, the schedule, the destination, and the activities undertaken during the trip are all important considerations for improving the learning experience. Interestingly, however, Varela & Gatlin-Watts (2014) found that duration itself is less important than having a clear, focused structure.

Participant-related factors have also received attention. Sheetal et al., (2018) suggested culturally diverse participants make mentoring more effective in CQ development. Teixeira and Klein (2024) also found that strong social interactions can accelerate CQ development by prompting students to question their own cultural assumptions and viewpoints.

Educators who deliver the CQ development programs also matter. Educators

who are well-organized, communicate effectively, and provide constructive feedback tend to produce better learning outcomes (Taras et al., 2013). Furthermore, educators who can utilize a range of teaching methods and encourage teamwork can also enhance the effectiveness of CQ development programs (Taras et al., 2013).

Based on the previous research and preceding qualitative stage, the conceptual model was created as follows:

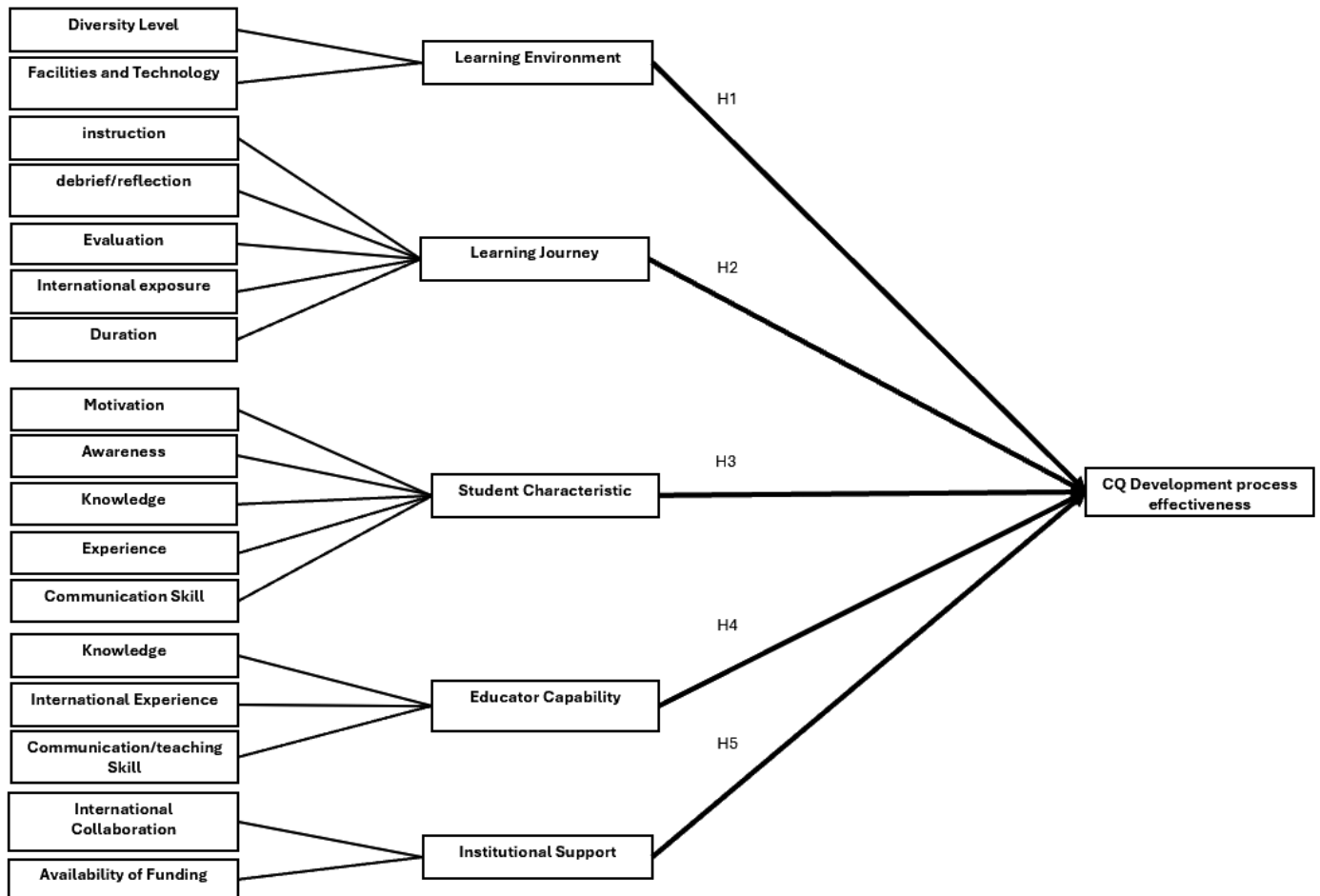


Figure 1. Conceptual Model of CQ Development

From the figure, there are five hypotheses that will be tested in this research. Those hypotheses are:

Hypothesis 1 (H1): Learning Environment has a positive and significant effect on the CQ Development Process Effectiveness.

Hypothesis 2 (H2): Learning Journey has a positive and significant effect on the CQ Development Process Effectiveness.

Hypothesis 3 (H3): Student Characteristics have a positive and significant effect on the CQ Development Process Effectiveness.

Hypothesis 4 (H4): Educator Capability has a positive and significant effect on the CQ Development Process Effectiveness.

Hypothesis 5 (H5): Institutional Support has a positive and significant effect on the CQ Development Process Effectiveness.

3. Methodology

The selection of an appropriate multivariate analytical technique is a critical step

in aligning research objectives with the nature of empirical data. In this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) is employed as the primary analytical approach to examine the relationships among multiple constructs within a single model. PLS-SEM has been widely adopted in human resource management and behavioral research due to its flexibility in handling complex models and its suitability for predictive-oriented studies (Hair et al., 2019; Ringle et al., 2020). Unlike covariance-based SEM, PLS-SEM does not impose strict limitations on model complexity, allowing researchers to analyze multiple constructs simultaneously if minimum sample size requirements are fulfilled (Hair et al., 2019).

To measure the constructs in this research, a questionnaire using Likert scale was utilized, which is commonly treated as an interval-level measurement in social science studies. This approach is appropriate for capturing perceptions and attitudes that are inherently abstract and cannot be directly observed. Consequently, the study focuses on latent variables, which are theoretical constructs measured indirectly through observable indicators. PLS-SEM is particularly advantageous in this context as it enables the estimation of relationships between latent constructs and their indicators, thereby facilitating the analysis of complex and unobservable phenomena (Ringle et al., 2020).

The questionnaire comprised 59 items representing the observable indicators of the constructs. Applying the guideline that the minimum sample should be at least five times the number of indicators, this yielded a minimum requirement of 295 respondents. Respondents were students at business schools in Indonesia that hold international accreditation. These schools were selected because their international orientation makes the intercultural competence of their students a salient concern. A total of 302 students participated, thereby exceeding the minimum sample requirement.

The measurement instrument was developed from the themes identified in the preceding qualitative phase of this research, which surfaced the five antecedents of CQ development. Each theme was translated into observable indicators, which were then refined against the established cultural intelligence literature (Ang et al., 2007; Earley & Ang, 2003) and the management education and CQ development literature (Eisenberg et al., 2013; Gustomo et al., 2018; Taras et al., 2013). A summary of the construct definitions, dimensions, sample items, and item sources is provided in the table below.

Table 1. Operationalization of constructs

Construct	Definition	Dimensions	Items	Sample item	Source
Learning Environment	The contextual setting in which CQ development takes place.	Diversity level; facilities & technology	6	"I frequently interact with students from different national cultural backgrounds."	Derived from the qualitative phase; refined against CQ and management-education literature.
Learning Journey	The design and delivery of the CQ development process.	Instruction; debrief/reflection; evaluation; international exposure; duration	17	"Reflection/debriefing on my cross-cultural learning experiences helps me better understand other cultures."	Derived from the qualitative phase; refined against CQ and management-education literature.

Continuation Table:

Construct	Definition	Dimensions	Items	Sample item	Source
Student Characteristics	Learner traits that shape receptivity to CQ development.	Motivation; awareness; knowledge; experience; communication skill	16	"I am interested in learning about other cultures."	Derived from the qualitative phase; refined against CQ literature.
Educator Capability	Educators' knowledge, experience, and ability to deliver the method.	Knowledge; international experience; communication/teaching skill	9	"My lecturers/facilitators have extensive knowledge of national cultural differences."	Derived from the qualitative phase; refined against CQ literature.
Institutional Support	Institutional collaboration and funding that enable CQ activities.	International collaboration; availability of funding	6	"My business school actively collaborates with educational institutions or companies abroad."	Derived from the qualitative phase; refined against CQ literature.
CQ Development Effectiveness	Perceived improvement in CQ after development activities.	(single dimension)	5	"The CQ development activities I participated in have made me feel better prepared to work in an international business environment."	Adapted from Ang et al. (2007); Earley & Ang (2003).

4. Results

Quantitative analysis was conducted to examine the influence among variables within the research model using the Structural Equation Modeling (SEM) approach. The analysis stages included testing the outer model to assess the validity and reliability of the indicators, evaluating the inner model to examine the relationships among constructs, and hypothesis testing to determine the significant effects among the variables studied.

4.1. Measurement Model (Outer Model)

The measurement model was used to assess the extent to which the indicators represent the research constructs (Hair et al., 2021). The evaluation of the measurement model was carried out through validity and reliability tests.

4.1.1. Convergent Validity

Convergent validity was tested through the outer loading values of each indicator. According to Hair et al. (2021), a loading factor value ≥ 0.70 is considered ideal, although values ≥ 0.60 are acceptable during the initial stages of instrument development. Based on the analysis, the correlation values between the constructs and their respective indicators indicate that all indicators meet the convergent validity criteria. This is demonstrated by outer loading values all above 0.70, exceeding the minimum threshold of 0.50–0.60 during the early stages of instrument development. These high outer loading values indicate that each indicator effectively reflects the latent construct being measured.

4.1.2. Discriminant Validity

Discriminant validity ensures that a construct is distinct from other constructs. According to Hair et al. (2021), this test is conducted through cross-loading values, where indicators should have the highest loading on the construct they measure compared to other constructs. Based on the results, the cross-loading test shows that each indicator has a higher loading value on its respective construct than on other constructs. This indicates that each indicator can clearly distinguish its construct from others within the research model.

4.1.3. Average Variance Extracted (AVE)

Average Variance Extracted (AVE) measures the construct's ability to explain the variance of its indicators. According to Hair et al. (2021), an AVE value ≥ 0.50 indicates that the construct has achieved convergent validity. Based on the results, the AVE values for each variable are ≥ 0.50 , indicating that all constructs in the model explain more than half of the variance in their indicators, thus meeting the convergent validity criteria.

Table 2. Average Variance Extracted Score

Variable	AVE	Information
CQ Development Process Effectiveness	0.542	Valid
Learning Environment	0.751	Valid
Learning Journey	0.674	Valid
Student Characteristics	0.698	Valid
Educator Capability	0.707	Valid
Institutional Support	0.659	Valid

Source: Primary data processed by SmartPLS 4, 2026

4.1.4. Reliability Tests

Cronbach's Alpha measures the internal consistency of a construct. According to Hair et al. (2021), a value ≥ 0.70 indicates good reliability. All variables have Cronbach's Alpha values ≥ 0.70 , indicating that all constructs in this study possess good reliability.

Table 3. Cronbach's Alpha Score

Variable	Cronbach's Alpha	Information
CQ Development Process Effectiveness	0.787	Reliable
Learning Environment	0.934	Reliable
Learning Journey	0.963	Reliable
Student Characteristics	0.971	Reliable
Educator Capability	0.949	Reliable
Institutional Support	0.897	Reliable

Source: Primary data processed by SmartPLS 4, 2026

Composite reliability assesses the internal consistency among indicators within a reflective construct. A construct is considered reliable if it has a composite reliability value above 0.70 (Hair et al., 2017). The composite reliability values for each variable exceed 0.70, indicating that all constructs in this study are reliable and meet the recommended internal consistency criteria.

Table 4. Composite Reliability Score

Variable	Composite Reliability	Information
CQ Development Process Effectiveness	0.855	Reliable
Learning Environment	0.948	Reliable
Learning Journey	0.967	Reliable
Student Characteristic	0.974	Reliable
Educator Capability	0.956	Reliable
Institutional Support	0.921	Reliable

Source: Primary data processed by SmartPLS 4, 2026

4.2. Structural Model (Inner Model)

After confirming the adequacy of the measurement model, the structural (inner) model was assessed to examine the hypothesised associations among constructs. The evaluation covered the coefficient of determination (R^2) and the significance of the path coefficients.

4.2.1. Coefficient of Determination (R^2)

The R^2 value indicates the proportion of variance in the endogenous variable explained by the exogenous variables. According to Hair et al. (2021), an R^2 of 0.45 represents a moderate level. The R^2 value of 0.45 indicates that the exogenous variables explain 45% of the variance in CQ Development Process Effectiveness, which is categorized as moderate.

Table 5. Coefficient of Determination Score

Variable	R-square	Adjusted R-square
CQ Development Process Effectiveness	0.450	0.439

Source: Primary data processed by SmartPLS 4, 2026

4.2.2. Path Coefficient Test

The path coefficient test was used to examine the significance of relationships among variables in the model. According to Hair et al. (2021), significance is determined by a t-statistic > 1.96 or a p-value < 0.05 .

Table 6. Path Coefficient Score

Effect	Original Sample (O)	Sample Mean (M)	STDEV	T Statistic	P Value
Learning Environment $\rightarrow$ CQ Development Process Effectiveness	0.400	0.398	0.042	9.492	0.000

Continuation Table:

Effect	Original Sample (O)	Sample Mean (M)	STDEV	T Statistic	P Value
Learning Journey → CQ Development Process Effectiveness	0.371	0.373	0.042	8.812	0.000
Student Characteristic → CQ Development Process Effectiveness	0.284	0.287	0.041	6.860	0.000
Educator Capability → CQ Development Process Effectiveness	0.168	0.175	0.045	3.761	0.000
Institutional Support → CQ Development Process Effectiveness	0.177	0.181	0.040	4.487	0.000

Source: Primary data processed by SmartPLS 4, 2026

The results indicate that Learning Environment ($\beta = 0.400$, $t = 9.492$, $p = 0.000$), Learning Journey ($\beta = 0.371$, $t = 8.812$, $p = 0.000$), Student Characteristic ($\beta = 0.284$, $t = 6.860$, $p = 0.000$), Educator Capability ($\beta = 0.168$, $t = 3.761$, $p = 0.000$), and Institutional Support ($\beta = 0.177$, $t = 4.487$, $p = 0.000$) were all significant positive predictors of CQ development process effectiveness.

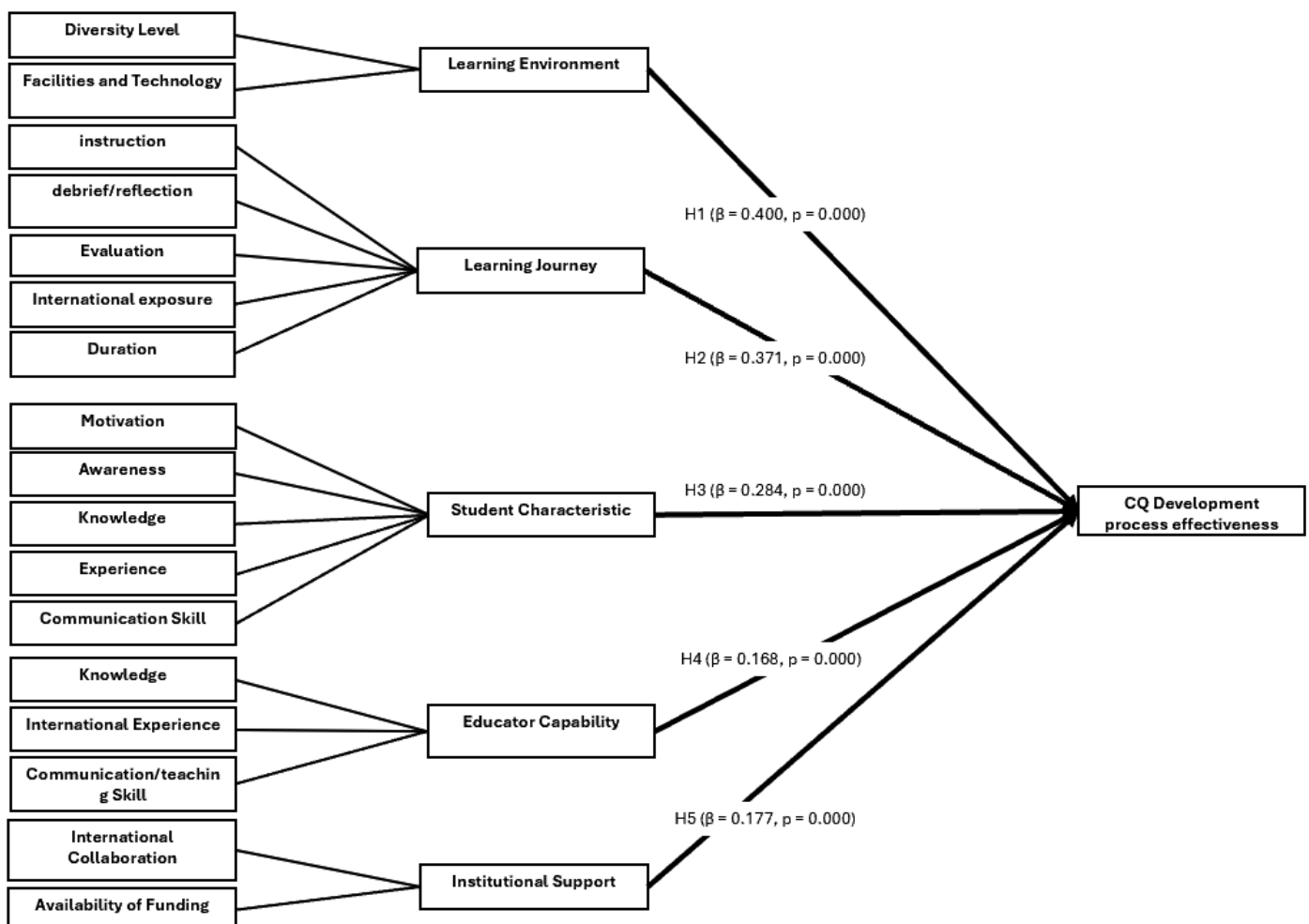


Figure 2. Path Coefficient Score

4.2.3. Common Method Bias

Since all data were obtained from a single self-report instrument, Harman's

single-factor test was conducted to assess common method bias. As shown in **Table 7** below, the first (unrotated) factor accounted for 45.34% of the total variance, which is below the 50% threshold. This indicates that no single factor dominates the variance and that common method bias is unlikely to threaten the validity of the findings.

Table 7. Harman's single-factor test (total variance explained)

Component	Eigenvalue	% of variance	Cumulative %
1	26.752	45.343	45.343
2	7.795	13.212	58.555
3	5.792	9.817	68.371
4	3.617	6.131	74.503
5	3.139	5.320	79.823
6	1.024	1.736	81.559

4.2.4. Collinearity Assessment

To rule out multicollinearity among the exogenous constructs, the inner variance inflation factor (VIF) values were examined. All values were well below the conservative threshold of 5 (educator capability = 1.415, institutional support = 1.316, learning environment = 1.343, learning journey = 1.541, and student characteristics = 1.336), indicating that multicollinearity is not a concern and that the path estimates are not distorted by overlap among the predictors.

Table 8. Inner VIF values

Predictor (toward CQ Dev. Effectiveness)	Inner VIF
Educator Capability	1.415
Institutional Support	1.316
Learning Environment	1.343
Learning Journey	1.541
Student Characteristics	1.336

4.2.5. Effect Size (f^2)

The effect size (f^2) of each predictor was assessed to assess its contribution to the explained variance in CQ development process effectiveness. The results indicated medium effects for learning journey ($f^2 = 0.221$), learning environment ($f^2 = 0.194$), educator capability ($f^2 = 0.164$), and student characteristics ($f^2 = 0.153$), and a small effect for institutional support ($f^2 = 0.073$).

Table 9. Effect sizes (f^2)

Predictor	f^2	Effect
Learning Journey	0.221	Medium
Learning Environment	0.194	Medium

Continuation Table:

Predictor	f^2	Effect
Educator Capability	0.164	Medium
Student Characteristics	0.153	Medium
Institutional Support	0.073	Small

4.2.6. Predictive Relevance (Q^2) and Model Fit

Predictive relevance was evaluated using a blindfolding procedure. The Q^2 value for CQ development process effectiveness was 0.632, which is well above zero and indicates that the model has strong predictive relevance for the endogenous construct. In addition, the standardized root mean square residual (SRMR) for the saturated model was 0.026, below the 0.08 threshold, which indicates a good model fit.

4.2.7. Discriminant Validity: HTMT

Discriminant validity was further assessed using the heterotrait-monotrait ratio of correlations (HTMT), reported in **Table 10** below. All HTMT values ranged from 0.263 to 0.694, with the highest value observed between learning journey and CQ development process effectiveness (0.694) and the lowest between learning environment and student characteristics (0.263). Since all values fell below both the lenient (0.90) and the stricter (0.85) thresholds, discriminant validity was therefore confirmed across all constructs.

Table 10. Heterotrait-monotrait ratio of correlations (HTMT)

	CQDPE	EC	IS	LE	LJ	SC
CQ Dev. Effectiveness						
Educator Capability	0.639					
Institutional Support	0.549	0.320				
Learning Environment	0.621	0.464	0.308			
Learning Journey	0.694	0.432	0.431	0.391		
Student Characteristics	0.588	0.324	0.384	0.263	0.449	

Note. CQDPE = CQ development process effectiveness; EC = educator capability; IS = institutional support; LE = learning environment; LJ = learning journey; SC = student characteristics.

4.2.8. Discriminant Validity: Fornell-Larcker Criterion

Discriminant validity was also confirmed using the Fornell-Larcker criterion, presented in **Table 11**. The square root of the Average Variance Extracted ($\sqrt{AVE}$) of each construct is greater than its correlations with the other constructs. The $\sqrt{AVE}$ values are 0.933 for CQ Development Process Effectiveness, 0.894 for Educator Capabilities, 0.903 for Institutional Support, 0.904 for Learning Environment, 0.903 for Learning Journey, and 0.892 for Student's Characteristic. For example, the $\sqrt{AVE}$ of Educator Capabilities (0.894) is higher than its correlations with CQ Development Process Effectiveness (0.618), Institutional Support (0.309), Learning Environment (0.448), Learning Journey (0.424), and Student's Characteristic (0.316), and the same pattern holds for all other constructs. It can therefore be concluded that each construct

is distinct and measures its intended concept accurately. Accordingly, all variables in this study satisfy the discriminant validity criterion based on the Fornell-Larcker criterion.

Table 11. Fornell-Larcker criterion

	CQDPE	EC	IS	LE	LJ	SC
CQ Dev. Effectiveness	0.933					
Educator Capability	0.618	0.894				
Institutional Support	0.528	0.309	0.903			
Learning Environment	0.597	0.448	0.296	0.904		
Learning Journey	0.678	0.424	0.419	0.380	0.903	
Student Characteristics	0.573	0.316	0.372	0.255	0.444	0.892

Note. Diagonal values are the square root of the AVE; off-diagonal values are inter-construct correlations. CQDPE = CQ development process effectiveness; EC = educator capability; IS = institutional support; LE = learning environment; LJ = learning journey; SC = student characteristics.

5. Discussion

The findings provide empirical support for the proposed model, indicating that learning environment, learning journey, student characteristics, educator capability, and institutional support are all significant predictors of the effectiveness of the CQ development process among business school students. This section discusses these findings in relation to existing literature and draws out their theoretical and practical implications.

The hypotheses relationships and their corresponding empirical results are summarized in **Table 12**. All five hypotheses were statistically supported, though the strength of the effects varied considerably across predictors. The subsections that follow examine each finding in turn, situating it within the existing CQ literature.

Table 12. Summary of Hypothesis Testing Results

Hypothesis	Path	β	p-value	Result
H1	Learning Environment $\rightarrow$ CQ Development Process Effectiveness	0.400	0.000	Supported
H2	Learning Journey $\rightarrow$ CQ Development Process Effectiveness	0.371	0.000	Supported
H3	Student Characteristics $\rightarrow$ CQ Development Process Effectiveness	0.284	0.000	Supported
H4	Educator Capability $\rightarrow$ CQ Development Process Effectiveness	0.168	0.000	Supported
H5	Institutional Support $\rightarrow$ CQ Development Process Effectiveness	0.177	0.000	Supported

Source: Primary data processed by SmartPLS 4, 2026.

5.1. Learning Environment

The results provide strong support for Hypothesis 1. Learning environment was significantly and positively associated with CQ Development Process Effectiveness ($\beta = 0.400$, $p < 0.05$), and in fact emerged as the strongest predictor in the model. This learning environment becomes the strongest variable probably because having

both multi-cultural environments and adequate facilities and technology will force and help students to interact and adapt their behavior to different cultures both in class and outside class. This continuous interaction will increase their CQ and support any method used to develop students' CQ.

This finding is consistent with previous research suggesting that a multicultural environment and the availability of facilities and technology are central to developing students' CQ. Teixeira and Klein (2024), in their study on situated learning and CQ, found that everyday social interactions in culturally diverse settings were the primary drivers of CQ growth, particularly in the motivational and cognitive dimensions. Similarly, Sousa et al. (2023) reported that participation in cultural exposure activities, such as community engagement and exchange programs, can significantly predict higher CQ levels among higher education members in Portugal.

Another research that aligns with the finding is research done by Grosch et al. (2023), which analysed data from over 10,000 students across eleven Dutch institutions, found that greater student diversity in the international classroom was positively associated with motivational CQ. However, their study also showed that classroom diversity alone was insufficient; it needed to be accompanied by deliberate educational interventions aimed at intercultural learning. This supports the present finding that learning environment, although it has the strongest effect, needs to operate alongside other variables.

Furthermore, the finding also aligns with Iskhakova et al. (2022) findings, which showed that cultural distance during short-term study abroad programs can stimulate CQ development by placing students in environments that require active adaptation. Similarly, Chédru and Ostapchuk (2023) found that study abroad significantly enhanced ten out of eleven subdimensions of expanded CQ. All this previous research collectively suggests that the learning environment can act as a catalyst for CQ development.

5.2. Learning Journey

Hypothesis 2, which proposed a positive effect of learning journey on CQ development process effectiveness, was supported by empirical data ($\beta = 0.371$, $p < 0.05$), making it the second strongest predictor in the model. This suggests the importance of how CQ development programs are designed and evaluated. This finding is supported by experiential learning theory (Kolb, 1984), which suggests that meaningful learning occurs through a cyclical process of experience, reflection, conceptualization, and active experimentation. When a method is implemented without clear instruction and design, it tends to create confusion among students. Furthermore, methods that lack evaluation, such as a debrief and reflection guided by a lecturer or mentor, can lead students misinterpreting their cultural knowledge and experience. Therefore, methods that deliberately attend to the student's learning journey, combining sound instruction, process, and evaluation, are more likely to produce effective CQ development.

This significance of learning journey as a predictor is also consistent with Alexander et al. (2021) quasi-experimental study that found a nine-week cultural course abroad—incorporating reflective journaling and cultural mentoring—produced significant improvements in cognitive, metacognitive, and behavioral CQ. Design elements of the learning journey, such as reflective journaling, can help students internalise their intercultural experiences. Moreover, Gustomo et al. (2018) demonstrated that the success of developing students' CQ during a field trip abroad depended on how the trip was designed, with attention to trip duration, scheduling,

destination selection, and activity design. Furthermore, Varela and Gatlin-Watts (2014) added the important finding that study abroad alone is not enough to improve the motivational and behavioral aspects of CQ; it needs to be supported by clear guidance and reflection that facilitate understanding and build confidence in interacting with local people. Similarly, Roux et al. (2018) found that learners are expected to have student reflections so they can link their personal experience with cultural knowledge. Lastly, the integration of classroom learning with real-world immersion appears to be particularly effective when reflection mechanisms are embedded during the process (Taras et al., 2013).

All of this research support the importance of having a good design of learning journey to improve the effectiveness of CQ development process.

5.3. Student Characteristics

Hypothesis 3 was supported, indicating that student characteristics play an important role in CQ development process effectiveness ($\beta = 0.284$, $p < 0.05$). Individual characteristics such as awareness, motivation, knowledge, and prior cross-cultural exposure appear to improve students' capacity to understand and apply intercultural competence. Students who are highly motivated to learn about different cultures are likely to be more open to them, which helps them adjust both their knowledge and their behavior to a new culture. This finding aligns with the meta-analytic work of Li et al. (2016) who found that openness, together with agreeableness, can influence an individual's CQ. Chédru and Ostapchuk (2023) further support the findings through their longitudinal study of more than 300 engineering students, which showed that openness and extraversion were positively associated with higher initial levels of metacognitive, cognitive, and motivational CQ.

Students' awareness also plays an important relationship with cultural intelligence. When students are aware of their own capabilities and of the importance of CQ, they are better able to develop it. Xiaoying et al. (2024) showed, for international students in China, that behavioral CQ can affect students' academic adaptation, an effect that is strengthened by academic self-efficacy. This is consistent with research by MacNab and Worthley (2012). The research found that self-efficacy holds as important key to the higher CQ.

Knowledge and prior exposure to multicultural contexts are also important. Students who already possess relevant knowledge and an international background tend to find it easier to understand and adapt to different cultures, because such situations are not new to them. Research by Crowne (2008) showed that both education and employment abroad can be a predictor of someone's CQ. This is also supported by Li et al. (2013), through the research over around 290 international executives and graduate business students, found that the length of international experience has positive correlation with the level of CQ.

These findings collectively support the importance of student characteristics as an antecedent in the CQ development model.

5.4. Educator Capability

Hypothesis 4 was supported, with educator capability showing a significant positive association with CQ development process effectiveness ($\beta = 0.168$, $p < 0.05$). It was the weakest of the five direct predictors, but this likely reflects how educator capability operates rather than meaning that educators matter less. A plausible interpretation is that educator capability operates largely indirectly: skilled educators shape the learning journeys and learning environments that emerged as the

strongest predictors, for example by designing well-structured cross-cultural material, sequencing activities, and facilitating debrief and reflection. Its direct effect may be able to be developed naturally or program design is weaker and students depend more heavily on guidance. Some elements of CQ can develop with little formal instruction, for instance through travel abroad or independent reading, yet educator guidance helps students interpret and consolidate those experiences. For example, educators can design structured cross-cultural material and methods and provide feedback on students' cross-cultural understanding and experience. To do this effectively, however, educators themselves need solid knowledge and experience of cross-cultural issues, together with strong communication and teaching skills.

Even though the research about the impact of educators to the development of CQ is still limited, Taras et al. (2013) similarly argued that instructors who are well organised, communicate effectively, and employ diverse teaching methods can produce better learning outcomes in cross-cultural settings. These effects can be further strengthened by internationally oriented curriculum design, resource allocation, and recognition systems.

5.5. Institutional Support

Institutional support was also significantly associated with CQ development process effectiveness ($\beta = 0.177$, $p < 0.05$), providing support for Hypothesis 5. Institutions play an important role in allocating budget to cross-cultural activities and in enabling diverse programs, such as double degrees, student exchanges, summer camps, and internships, through international collaboration with foreign universities and multinational companies. Without institutional support, many cross-cultural programs would be difficult to run.

This finding is consistent with the broader literature on the role of higher education institutions in fostering intercultural competence. Sousa et al. (2023) concluded that institutions play a pivotal role in CQ development by designing targeted programs, promoting international experiences, and environments that support intercultural interactions. Their study also noted that domestic cultural exposure activities, such as interaction with international students on campus, foreign language learning, and participation in multicultural events, can be as impactful as international mobility, which is particularly relevant for students who lack the resources or opportunity to study abroad.

The significant direct effect of institutional support also aligns with the findings from a systematic review on intercultural communication competence by Hang and Zhang (2023) who identified institutional constraints as a major challenge in developing intercultural competencies. Their review emphasized the role of institutions such as student management, pedagogy design, and organizational culture and norms that support cross-cultural interaction. This is further reinforced by Brady et al. (2024) which demonstrated that leadership-level cultural interventions in educational institutions can change educators' beliefs and practices, ultimately creating more inclusive learning environments. Therefore, institutional support is not merely a background condition but an active ingredient in CQ development.

6. Conclusion

This study aimed at validating a model of CQ development by examining whether learning environment, learning journey, student characteristics, educator capability, and institutional support are associated with the effectiveness of the CQ development process. Using PLS-SEM, the results showed that all five variables

are significant positive predictors of CQ development, and that the overall model accounts for 45% of the variance, a moderate but meaningful level of explanatory power.

Among the predictors, learning environment had the strongest association with CQ development effectiveness. This suggests that creating an environment which gives students opportunities to interact with people from different cultural backgrounds, supported by good facilities and technology, can increase the effectiveness of any method a business school adopts to develop students' CQ. Close behind was learning journey, which underscores the importance of how a method is designed, including its instruction, duration, and evaluation, such as the debrief process and reflection.

Student characteristics also emerged as a significant predictor. Traits such as awareness, motivation, and prior cross-cultural exposure influence how receptive a learner is to CQ development. This does not mean that only "ready" students can benefit; rather, it implies that a development method may need to actively build readiness rather than assume it. Educator capability, although it had the smallest direct effect, remains important, because the presence of educators provides the guidance and feedback that improve the effectiveness of the CQ development process. Finally, institutional support plays an important role by allocating the budget that allows programs to run and opening cultural programs through international collaboration.

From a theoretical perspective, this study contributes by shifting the analytical focus from the CQ development method itself to the underlying factors that determine how effective that method is. Prior research has extensively examined whether specific methods, such as study abroad, simulations, and classroom instruction, can improve CQ, often with inconsistent results. By distinguishing development methods from development-effectiveness factors, this study offers a more complete framework that helps explain why the same type of method can produce different outcomes across settings. The five antecedents were selected because the preceding qualitative phase identified them as recurring determinants of effectiveness, and together they extend CQ development theory in three ways. First, they show that a method's effectiveness depends on its surrounding context and on how it is delivered. Second, they treat institutional support as a direct predictor rather than just a background factor. Third, they connect the CQ literature to wider research in human resource development and management education, which shows how learning environments, learning journey, and learner characteristics work together to shape the development of CQ.

Practically, the findings suggest that business schools should adopt a systemic approach to students' CQ development. This means enriching the learning environment by upgrading facilities and technology and fostering a multicultural setting; designing learning journeys that integrate experience with clear instruction and structured reflection; preparing students through admissions selection and training; supporting educators through training and exchange programs; and ensuring that institutions allocate funding and explore opportunities for international education.

This study is not without limitations. First, the model explains 45% of the variance in CQ development effectiveness, indicating that other relevant factors lie outside the current model and warrant further investigation. Second, the data are cross-sectional and were collected entirely through student self-reports using a single survey instrument, which raises the possibility of common method bias and limits causal inference; future studies could adopt multi-source or longitudinal designs.

Third, because respondents were drawn from internationally accredited business schools in Indonesia, the findings may not generalise to other disciplines or national contexts. Future research could test the model with additional antecedents, in different settings, and using designs that more directly support causal interpretation.

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Appendix

Table A1. Questionnaire items (59 items)

Construct	Dimension	Item
Learning Environment	Diversity Level	I study at a university with students from various countries.
Learning Environment	Diversity Level	I frequently interact with students from different national cultural backgrounds.
Learning Environment	Diversity Level	Having students from different countries makes classroom learning more engaging and enriches my perspectives.
Learning Environment	Facilities and Technology	University facilities, such as classrooms and internet access, support cross-cultural learning.
Learning Environment	Facilities and Technology	The technology provided by the university (e.g., online learning platforms) facilitates my learning process.
Learning Environment	Facilities and Technology	I can connect with students or lecturers from other countries through the systems provided by the university.
Learning Journey	Instruction	Clear instructions provided by lecturers/facilitators during cross-cultural learning activities support my learning process.
Learning Journey	Instruction	The instructions provided by lecturers/facilitators during cross-cultural learning activities clearly explain what I am expected to do.
Learning Journey	Instruction	The instructions provided by lecturers/facilitators during cross-cultural learning activities allow me to engage in personal exploration.
Learning Journey	Debrief/Reflection	Reflection/debriefing on my cross-cultural learning experiences helps me better understand other cultures.
Learning Journey	Debrief/Reflection	My lecturers/facilitators guide me in understanding how people from other countries think.
Learning Journey	Debrief/Reflection	Reflection/debriefing sessions after class help me understand cultural differences across countries.
Learning Journey	Evaluation	Feedback is important for improving my understanding of other cultures.
Learning Journey	Evaluation	The evaluation I receive from my lecturers helps me interact more effectively with people from different cultures.
Learning Journey	Evaluation	The assessment and evaluation process encourages me to learn more about cross-cultural issues.
Learning Journey	Evaluation	The evaluation I receive is detailed enough to help me improve my ability to interact with people from other countries.
Learning Journey	International Exposure	My university learning incorporates cross-cultural perspectives.
Learning Journey	International Exposure	I have attended lectures or discussions led by lecturers from other countries.
Learning Journey	International Exposure	Through university activities, I have learned about business practices in other countries.
Learning Journey	Duration	The duration of the cross-cultural learning program is sufficient for effective learning.

Continuation Table:

Construct	Dimension	Item
Learning Journey	Duration	During cross-cultural learning activities, I have enough time to adapt and learn about other cultures.
Learning Journey	Duration	A learning period that is too short hinders my cross-cultural learning.
Learning Journey	Duration	A learning period that is too long makes me feel bored.
Student Characteristics	Motivation	I am interested in learning about other cultures.
Student Characteristics	Motivation	I want to work in a company with multicultural teams from different countries.
Student Characteristics	Motivation	I recognize the importance of understanding other cultures for success in the global workplace.
Student Characteristics	Awareness	I am aware that workplace cultures differ across countries.
Student Characteristics	Awareness	I try to understand how people from other countries think and work.
Student Characteristics	Awareness	I understand that what is considered appropriate in one country may not be appropriate in another.
Student Characteristics	Knowledge	I have good knowledge of cultures from various countries.
Student Characteristics	Knowledge	I am familiar with examples of business practices in other countries.
Student Characteristics	Knowledge	My knowledge will help me develop my ability to interact with people from other countries.
Student Characteristics	Experience	I had visited another country before entering university.
Student Characteristics	Experience	I had worked with people from other countries before entering university.
Student Characteristics	Experience	I had participated in cross-cultural training before entering university.
Student Characteristics	Communication Skill	I can communicate my ideas clearly to people from other countries.
Student Characteristics	Communication Skill	I know how to adapt my communication style in international settings.
Student Characteristics	Communication Skill	I feel comfortable communicating with people from different cultures.
Student Characteristics	Communication Skill	I understand the body language of people from other countries.
Educator Capability	Knowledge	My lecturers/facilitators have a good understanding of business practices in different countries.
Educator Capability	Knowledge	My lecturers/facilitators have extensive knowledge of national cultural differences.
Educator Capability	Knowledge	The materials delivered by my lecturers/facilitators reflect strong global perspectives.
Educator Capability	International Experience	My lecturers/facilitators have firsthand experience studying or working abroad.

Continuation Table:

Construct	Dimension	Item
Educator Capability	International Experience	My lecturers/facilitators frequently share their personal experiences related to cultural differences across countries.
Educator Capability	International Experience	I believe my lecturers/facilitators are credible because of their international background.
Educator Capability	Communication/Teaching Skill	My lecturers/facilitators teach in a way that is easy for all students to understand, including international students.
Educator Capability	Communication/Teaching Skill	My lecturers/facilitators frequently use interesting examples from different countries when explaining course materials.
Educator Capability	Communication/Teaching Skill	My lecturers/facilitators help us understand differences in perspectives across countries in an engaging way.
Institutional Support	International Collaboration	My business school actively collaborates with educational institutions or companies abroad.
Institutional Support	International Collaboration	I observe many international collaborative activities facilitated by my university, such as student exchange programs, double-degree programs, and others.
Institutional Support	International Collaboration	My university provides clear information and easy access to international programs.
Institutional Support	Availability of Funding	Financial assistance or scholarships are available for participation in international programs.
Institutional Support	Availability of Funding	I do not feel financially burdened because of the university's support for international activities.
Institutional Support	Availability of Funding	My university provides administrative and financial support for students participating in international activities.
Cultural Intelligence (CQ) Development		I feel that my motivation to learn about other cultures has increased after participating in CQ development activities.
Cultural Intelligence (CQ) Development		I feel that my understanding of other cultures has improved after participating in CQ development activities.
Cultural Intelligence (CQ) Development		The CQ development activities I participated in have increased my motivation to work in an international (multicultural) environment.
Cultural Intelligence (CQ) Development		The CQ development activities I participated in have increased my confidence in interacting with people from different countries.
Cultural Intelligence (CQ) Development		The CQ development activities I participated in have made me feel better prepared to work in an international business environment.

Table A3. Outer loadings of all indicators

Construct	Indicator	Outer loading
CQ Dev. Effectiveness	CQ1	0.928
	CQ2	0.945
	CQ3	0.930
	CQ4	0.929

Continuation Table:

Construct	Indicator	Outer loading
Educator Capability	CQ5	0.931
	TS1	0.913
	TS2	0.902
	TS3	0.899
	EE1	0.874
	EE2	0.892
	EE3	0.866
	EK1	0.878
	EK2	0.926
	EK3	0.897
Institutional Support	FN1	0.887
	FN2	0.894
	FN3	0.902
Learning Environment	IC1	0.937
	IC2	0.890
	IC3	0.910
	FAC1	0.905
	FAC2	0.898
	FAC3	0.901
	ME1	0.893
	ME2	0.901
	ME3	0.924
	DU1	0.871
Learning Journey	DU2	0.886
	DU3	0.906
	DU4	0.921
	EV1	0.905
	EV2	0.887
	EV3	0.915
	EV4	0.910
	EV5	0.875
	EV6	0.922
	EV7	0.934

Continuation Table:

Construct	Indicator	Outer loading
Student Characteristics	EXL1	0.881
	EXL2	0.918
	EXL3	0.877
	IN1	0.900
	IN2	0.931
	IN3	0.906
	AW1	0.892
	AW2	0.889
	AW3	0.896
	CP1	0.901
	CP2	0.847
	CP3	0.883
	CP4	0.882
	EXP1	0.909
	EXP2	0.888
	EXP3	0.920
	KN1	0.909
	KN2	0.877
	KN3	0.892
	MT1	0.891
	MT2	0.896
	MT3	0.903

Note. Indicator codes follow the SmartPLS output. All loadings exceed 0.70, confirming indicator reliability.