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Learning Motivation and Self-Efficacy of Indonesian International Students in Malaysian Universities: A Structural Equation Modeling (SEM) Approach

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ABSTRACT: *This study investigates the structural relationship between academic self-efficacy and learning motivation—both intrinsic and extrinsic—using structural equation modeling (SEM). A total of 402 Indonesian students enrolled in five Malaysian universities participated by completing a validated online questionnaire. The findings reveal that academic self-efficacy strongly predicts both intrinsic and extrinsic motivation, with a more robust effect on the former. In turn, intrinsic motivation significantly contributes to self-efficacy and academic performance, whereas extrinsic motivation has a limited influence. The reciprocal effects between self-efficacy and motivation support the frameworks of social cognitive theory and self-determination theory, highlighting the psychological adaptability of students in culturally adjacent yet institutionally distinct environments. The study offers theoretical and practical insights into fostering student agency and sustainable learning motivation in international education, particularly within Southeast Asia. This suggests that universities should prioritize initiatives that develop intrinsic motivation and self-efficacy to enhance student adjustment and achievement in foreign academic systems.*

Keywords: academic self-efficacy, learning motivation, Indonesian students, international education, structural equation modeling

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INTRODUCTION

In today's globalized higher education landscape, international students are increasingly navigating academic environments that challenge their personal, social, and cognitive capacities. Among the key psychological factors influencing their academic adjustment and performance are learning motivation and self-efficacy—constructs widely recognized for their critical role in determining how students initiate, sustain, and regulate learning behavior (Bandura, 1997; Zimmerman, 2000). According to self-determination theory (Deci & Ryan, 1985), motivation is not a singular force but a spectrum ranging from amotivation to intrinsic motivation, with external regulation in between. In parallel, self-efficacy, as conceptualized by Bandura (1997), refers to one's belief in their ability to organize and execute actions required to manage prospective situations. When learners perceive themselves as efficacious, they are more likely to exert greater effort, persevere through challenges, and adopt adaptive learning strategies (Zheng et al., 2021; Basileo et al., 2024).

For international students, especially those studying in cross-cultural and multilingual environments, the stakes of academic self-efficacy and motivation are even higher. Studies have shown that learners with high academic self-efficacy and motivation tend to report better engagement and achievement outcomes, even under disruptive educational conditions such as the COVID-19 pandemic (Alesi et al., 2023; Mamolo, 2022). However, these psychological constructs are deeply shaped by contextual, cultural, and institutional factors (Wei et al., 2022; Goke et al., 2021). While much of the literature has focused on local or Western student populations, there remains a notable paucity of research exploring the academic psychological experiences of Southeast Asian international students, particularly Indonesians studying abroad.

Malaysia, as a top regional hub for international education, annually hosts thousands of Indonesian students due to its geographical proximity, shared religious values, and partial linguistic overlap (Mun & Sam, 2022). These cultural similarities may help reduce acculturative stress and allow students to sustain intrinsic motivation more readily. Indonesian students still face challenges in academic and psychological adaptation related to language barriers, unfamiliar pedagogy, and socioemotional isolation, which may affect their motivation and academic self-efficacy (Tang & Siti Zuraidah, 2022; Omotoy, 2023). However, despite surface-level familiarity, Malaysian higher education institutions often differ from their Indonesian counterparts in terms of

instructional approaches, assessment styles, and academic expectations. This creates a unique educational tension: students feel culturally comfortable yet must navigate unfamiliar academic systems. Such duality makes Indonesian students in Malaysia an ideal population for examining how cultural proximity and institutional contrast interactively shape psychological constructs such as motivation and self-efficacy. Surprisingly, the empirical literature on this demographic remains fragmented, with little integration of structural modeling techniques to analyze how these constructs influence one another in this context.

Previous research has often treated learning motivation and self-efficacy as isolated variables or used general survey approaches without delving into their structural relationships. Structural equation modeling (SEM), however, offers a more nuanced understanding of how latent variables influence one another, allowing the identification of direct, indirect, and mediating effects (Teng et al., 2023; Alogiliy, 2024). Recent studies employing SEM approaches have revealed that self-efficacy significantly predicts motivation and academic outcomes across diverse educational contexts, yet these findings remain under validated in ASEAN-based international student contexts (Basileo et al., 2024; Hidayatullah et al., 2024).

Addressing this gap, the present study investigates the interrelationships between learning motivation and self-efficacy among Indonesian international students enrolled in Malaysian universities. This focus is theoretically and practically significant. Theoretically, it contributes to the expanding discourse on student psychology in transnational education settings. In practice, it informs institutional policies and support systems that aim to foster academic resilience and performance in international cohorts. By employing SEM analysis, this study provides an empirically grounded model of the psychological dimensions underpinning Indonesian students' academic adjustment.

Unlike earlier studies that predominantly focused on students in Western higher education systems or treated self-efficacy and motivation as separate constructs, this study integrates both variables in a structural model within a Southeast Asian transnational education setting. A notable distinction lies in the cultural proximity yet institutional divergence between Indonesia and Malaysia—a relationship rarely examined through the lens of academic psychology. While studies such as Alogiliy (2024) and Kryshko et al. (2022) have employed SEM to explore motivation and self-efficacy, their samples are drawn from Western or Middle Eastern contexts and do not consider regional, linguistic, and religious overlaps that may shape psychological experiences in more subtle ways. By embedding these constructs within a culturally adjacent, underrepresented international student group, this research complements and extends the global literature, offering a more contextually grounded model. Moreover, it addresses the limited use of SEM in ASEAN-based international education studies and emphasizes the dynamic interdependence of motivation and self-efficacy as students navigate academic and cultural transitions simultaneously.

Guided by this aim, the study is framed by the following research questions:

RQ1: To what extent does academic self-efficacy influence learning motivation

among Indonesian international students in Malaysian universities?

RQ2: How do different components of learning motivation (e.g., intrinsic vs. extrinsic) relate to self-efficacy beliefs within this population?

RQ3: What is the structural model that best explains the relationship between self-efficacy, motivation, and academic performance for Indonesian students in Malaysian higher education contexts?

By addressing these questions, this study advances a comprehensive understanding of how psychological factors interact to support or hinder academic success among one of Southeast Asia's largest international student groups. The findings are expected to contribute not only to the scholarly literature but also to institutional practices geared toward optimizing learning outcomes for international students in culturally diverse settings.

LITERATURE REVIEW

Theoretical Foundation: Self-Efficacy and Motivation in Academic Contexts

Albert Bandura's (1997) theory of self-efficacy remains foundational to understanding learners' cognitive and behavioral engagement in academic settings. Defined as individuals' beliefs in their capacity to perform tasks and achieve specific goals, self-efficacy influences the choice of activities, effort, resilience, and persistence (Zheng et al., 2021; Liu, 2024). Bandura's framework also argues for reciprocal determinism between personal beliefs, environmental contexts, and behaviors—a relationship particularly salient for international students navigating unfamiliar academic terrains (Wei et al., 2022).

In parallel, motivation theories such as self-determination theory (SDT) (Deci & Ryan, 1985) distinguish between intrinsic motivation—driven by internal satisfaction—and extrinsic motivation—stimulated by external rewards or pressures. In academic settings, these motivational constructs are often seen as predictors of learning strategies, performance, and psychological well-being (Alesi et al., 2023; Shao & Kang, 2022). Importantly, self-efficacy and motivation do not function independently. A growing body of literature shows that self-efficacy beliefs are both antecedents and consequences of motivational processes (Basileo et al., 2024; Hammad et al., 2022).

Despite this theoretical clarity, empirical inconsistencies persist regarding how these constructs operate across different student populations and learning environments. Contextual and cultural factors, including instructional modality, language barriers, social integration, and academic culture, significantly influence how self-efficacy and motivation are experienced and expressed (Mamolo, 2022; Tang & Siti Zuraidah, 2022).

Empirical Insights: The Interplay Between Self-Efficacy and Motivation

Empirical studies in diverse educational contexts have documented a positive and often bidirectional relationship between self-efficacy and motivation. Alogiliy (2024), using SEM analysis among Jordanian EFL students, found that academic self-efficacy indirectly influenced achievement by

learning motivation, with socioeconomic status acting as a moderator. This study highlights the value of mediation and moderation analysis in capturing the complexity of motivational dynamics—an approach echoed by Kryshko et al. (2022) in their work on STEM undergraduates, which showed that motivational regulation mediated the effect of self-efficacy on academic satisfaction.

However, these findings often rely on homogeneous student populations or contextually limited environments. In the Malaysian and broader Southeast Asian context, few studies have critically interrogated how self-efficacy and motivation manifest among international student populations. Mun and Sam (2022) explored online learning motivation among Malaysian university students during the pandemic but did not disaggregate the experiences of international students, particularly those from culturally proximate but institutionally different countries such as Indonesia.

Moreover, studies involving Southeast Asian students frequently treat motivation and self-efficacy as isolated predictors rather than components of an interrelated model. For instance, Hidayatullah et al. (2024) explored mathematics self-efficacy among primary school students in Indonesia but stopped short of modeling its structural impact on motivation and engagement. Similarly, Tang and Siti Zuraidah (2022) identified self-efficacy and motivation among Malaysian vocational students during COVID-19 but lacked a robust theoretical or statistical framework to analyze their interdependence.

The lack of specificity in existing models raises critical questions: How do motivation and self-efficacy interact structurally in international academic settings? Do current frameworks sufficiently capture the nuanced experiences of mobile student populations as they simultaneously adjust academically, linguistically, and socioculturally?

Motivation and Self-Efficacy among International Students

For international students, particularly those from developing countries studying in more industrialized regions, the academic transition is often marked by cognitive and emotional stress. González-Benito et al. (2021) found that students' perceived self-efficacy significantly predicted academic motivation and performance in distance learning among Spanish university students. However, such results cannot be uncritically generalized to Indonesian students on Malaysian campuses without attention to regional, linguistic, and cultural nuances.

Cai et al. (2021) and Ciloglu and Ustun (2023) further demonstrated how specific instructional designs (e.g., AR-based learning) can enhance self-efficacy and motivation. However, these studies were primarily context-bound and did not explore long-term adaptation or the mediating factors of cross-border education. What is particularly absent in this line of research is how students' national identity, language proximity, and perceived academic support might shape motivational constructs and self-efficacy development in a host country such as Malaysia.

Although the literature shows that various pedagogical and technological

interventions can improve motivation and self-efficacy, the broader structural factors affecting international students' psychological engagement—such as institutional culture, peer interaction, and personal expectations—remain underexplored. Existing studies (e.g., Bárkányi, 2021; Xu et al., 2025) have attempted to integrate affective variables such as anxiety, control of learning beliefs, and achievement emotions but often lack a culturally grounded or regional focus.

Toward a Structural Model: Justifying the Use of SEM

A significant limitation in current research is the fragmented use of analytic models to account for the dynamic interplay between motivation and self-efficacy. Few studies go beyond correlation or regression-based analyses to test theoretically grounded structural models (Teng et al., 2023; Amjad et al., 2025). SEM, in this regard, offers methodological precision in mapping out both direct and indirect relationships, including mediators such as intrinsic/extrinsic motivation or moderators such as academic adaptation challenges.

As shown in recent work by De Backer et al. (2022) and Cai & Yu (2024), SEM allows researchers to assess latent constructs with multiple indicators while accounting for measurement error. In international student contexts, such statistical rigor is necessary to parse out the complex interactions between individual cognition and broader academic environments.This study builds upon the conceptual and methodological insights from the literature but addresses a clearly articulated gap: the absence of a validated structural model explaining the relationship between self-efficacy and learning motivation among Indonesian international students in Malaysia. Unlike prior research that often treats these variables in isolation or within Western samples, this study positions the constructs within a culturally and contextually situated SEM framework. It also contributes empirical clarity on whether intrinsic and extrinsic motivations act as mediators or outcomes of self-efficacy in an internationalized educational space.

In doing so, the current study aligns with calls in the literature for more culturally responsive, theoretically grounded, and statistically robust investigations into the psychological dimensions of academic success (Albashtawi & Al Awabdeh, 2023; Satrio & Sahid, 2023). The research questions guiding this study are thus not only timely but also necessary to bridge the gap between psychological theory and the lived realities of international student populations in Southeast Asia.

METHOD

This study adopted a quantitative cross-sectional survey design utilizing structural equation modeling (SEM) to examine the relationship between academic self-efficacy and learning motivation among Indonesian international students studying in Malaysian universities. SEM was chosen for its ability to simultaneously analyze complex interrelations among latent constructs and to test both measurement and structural models (Kline, 2015; Hair et al., 2019). This approach was appropriate given the study's objective of understanding the structural pathways linking self-efficacy and the dimensions of motivation,

including intrinsic and extrinsic factors, in a culturally specific international education context.

Participants

Participants in this study were Indonesian students currently enrolled in undergraduate and postgraduate programs at five public and private universities across Malaysia, selected because of their high proportion of Indonesian students. A purposive sampling strategy was used to target students with at least 1 completed semester, ensuring sufficient academic exposure to reflect on their self-efficacy and motivational experiences. The inclusion criteria were as follows: (1) Indonesian nationality, (2) current enrollment in a Malaysian higher education institution, and (3) willingness to participate voluntarily in the study.

A total of 402 valid responses were collected through an online questionnaire administered via institutional mailing lists, WhatsApp academic groups, and student associations. The sample size exceeded the recommended minimum threshold for SEM analysis, which suggests at least 200 cases or 10 cases per parameter estimate (Hair et al., 2019). Participants came from diverse academic disciplines, including social sciences, engineering, education, and health sciences. The demographic characteristics of the sample are summarized in Table 1.

Table 1. *Demographic Characteristics of the Participants*

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	167	41.5
	Female	235	58.5
Age	18–21	116	28.9
	22–25	181	45.0
	26 and above	105	26.1
Study Level	Undergraduate	274	68.2
	Postgraduate	128	31.8
Duration of Study	1–2 semesters	98	24.4
	3–4 semesters	147	36.6
	More than 4 semesters	157	39.0
University Type	Public	229	57.0
	Private	173	43.0

Instrumentation

The data were collected using a structured online questionnaire composed of three main sections: demographic information, academic self-efficacy scale, and academic motivation scale. Academic self-efficacy was measured using a modified version of the Academic Self-Efficacy Scale (Chemers et al., 2001), adapted for international student contexts and previously validated in Asian educational environments (Liu, 2024; Teng, 2024). The scale consists of 8 items

on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), capturing confidence in managing coursework, meeting deadlines, and achieving academic goals.

Academic motivation was measured using the Academic Motivation Scale (AMS) based on Self-Determination Theory (Deci & Ryan, 1985), including both intrinsic and extrinsic subscales. This 18-item instrument includes constructs such as motivation to know, motivation to accomplish, and external regulation. The scale has demonstrated high internal reliability and construct validity in cross-cultural student populations (Alesi et al., 2023; Shao & Kang, 2022).

All items were translated into Bahasa Indonesia and back-translated into English to ensure linguistic and conceptual equivalence (Brislin, 1986). A pilot test with 30 Indonesian students in one Malaysian university was conducted to assess clarity and face validity. The pilot test yielded Cronbach's alpha coefficients of 0.89 for the self-efficacy scale and 0.91 for the motivation scale, indicating high internal consistency.

Data Collection Procedures

Data collection was conducted over a six-week period in early 2025. Participants were recruited through formal collaborations with international student offices and Indonesian student associations at selected universities. The online questionnaire was hosted on Google Forms and included an informed consent section detailing the voluntary nature of participation, confidentiality assurances, and the study's academic purpose. Ethical approval was obtained from the Social Research Ethics Committee of the lead researcher's institution, and local permissions were granted by participating Malaysian universities.

Participants were allowed to complete the questionnaire anonymously and at their convenience. To encourage participation, small incentives such as e-certificates and entry into a book voucher raffle were offered. After data screening and removal of incomplete responses, 402 valid responses were retained for analysis.

Data Analysis

Data were analyzed using IBM SPSS 26 for preliminary analyses and AMOS 24 for structural equation modeling. Descriptive statistics were used to examine demographic distributions and item responses. Reliability and validity tests, including Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE), were conducted to ensure measurement quality. CFA was first applied to validate the measurement model, ensuring acceptable fit indices, including CFI > 0.90, RMSEA < 0.08, and $\chi^2/df < 3$ (Hu & Bentler, 1999).

Subsequently, the structural model was tested to evaluate hypothesized relationships among academic self-efficacy, intrinsic motivation, extrinsic motivation, and academic adjustment. Indirect effects were also explored using bootstrapping methods with 2,000 resamples to determine the mediating role of motivation between self-efficacy and academic outcomes.

The model fit was evaluated using standard SEM fit indices: comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). These indices provided the basis for confirming the suitability of the structural model and determining the strength and direction of relationships among constructs.

RESULTS

The following section presents the findings of the study, organized according to the three research questions. Prior to testing the structural model, assumptions were verified, and a confirmatory factor analysis (CFA) was conducted to ensure construct validity. The measurement model demonstrated acceptable fit (χ^2/df = 2.18, CFI = 0.944, TLI = 0.937, RMSEA = 0.054), indicating that the proposed latent constructs—academic self-efficacy, intrinsic motivation, and extrinsic motivation—were statistically valid and reliable for further structural testing.

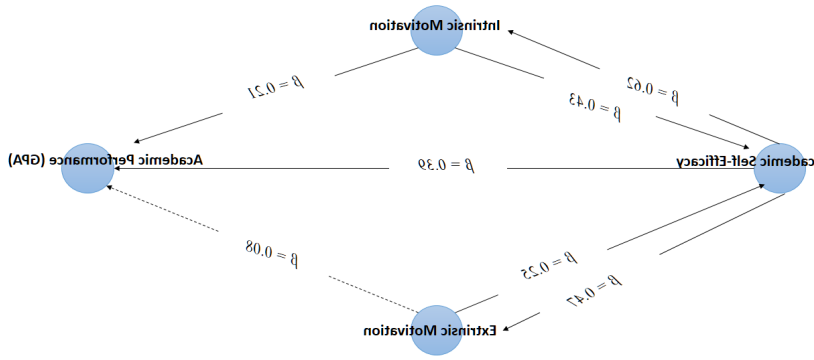

Figure 1. Structural Model: Self-Efficacy, Motivation, and Academic Performance

The final structural model illustrating the relationships between academic self-efficacy, learning motivation dimensions, and academic performance is presented in Figure 1. The model displays standardized path coefficients and demonstrates the interconnected nature of these psychological constructs within the Indonesian international student context.

RQ1: To what extent does academic self-efficacy influence learning motivation among Indonesian international students in Malaysian universities?

Descriptive statistics revealed that participants reported moderate to high

levels of academic self-efficacy (M = 3.84, SD = 0.62) and learning motivation (M = 3.91, SD = 0.66). The SEM analysis tested the direct paths from academic self-efficacy to both intrinsic and extrinsic motivation. As illustrated in Figure 2, academic self-efficacy demonstrates a stronger path coefficient toward intrinsic motivation (β = 0.62) compared to extrinsic motivation (β = 0.47), visually reinforcing the statistical findings shown in Table 2.

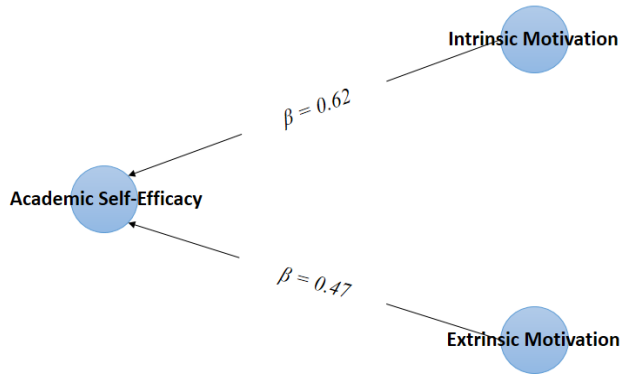

Figure 2. Structural equation model: academic self-efficacy and learning motivation

Table 2. *Standardized path coefficients from academic self-efficacy to motivation types*

Path	**β (Standardized)**	**p value**	**Interpretation**
Self-Efficacy → Intrinsic Motivation	0.62	< .001	Strong positive effect
Self-Efficacy → Extrinsic Motivation	0.47	< .001	Moderate positive effect

The strength of the relationship between self-efficacy and intrinsic motivation was notably stronger, consistent with prior studies emphasizing that confidence in one's academic abilities fosters self-driven learning goals (Cai & Yu, 2024; Teng et al., 2023). This suggests that Indonesian international students who perceive themselves as competent learners are more likely to engage in learning for personal fulfillment, curiosity, and academic challenge. Meanwhile, the significant but weaker relationship with extrinsic motivation indicates that self-efficacy also supports goal attainment for external rewards,

such as grades or future employment, though not as strongly as internal drivers. This pattern reflects a healthy motivational profile in which Indonesian students abroad are not merely functioning under external pressure but are also developing personal academic agency, possibly influenced by their exposure to diverse educational cultures in Malaysia.

RQ2: How do different components of learning motivation (e.g., intrinsic vs. extrinsic) relate to self-efficacy beliefs within this population?

To assess reciprocal effects, the structural model was extended to test whether intrinsic and extrinsic motivation predicted academic self-efficacy. As shown in Table 3, intrinsic motivation emerged as a significant predictor of academic self-efficacy ($\beta = 0.43$, $p < .001$), while extrinsic motivation had a smaller but still significant effect ($\beta = 0.25$, $p = .007$). Figure 3 visually represents the reciprocal effects model, where both intrinsic and extrinsic motivation predict academic self-efficacy, with the former exerting a stronger influence.

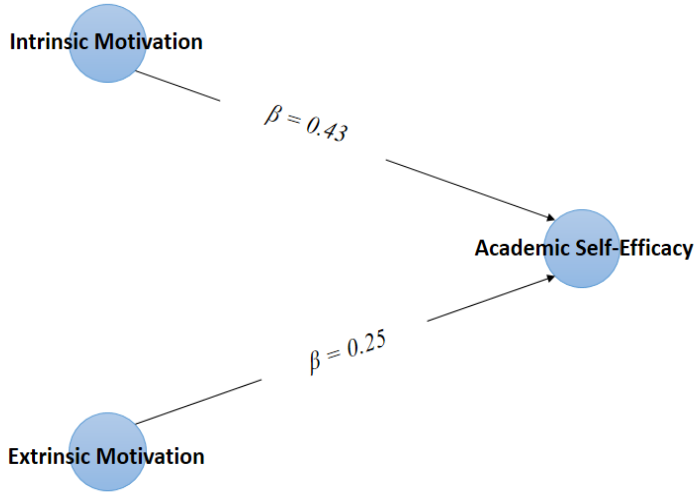

Figure 3. Reciprocal Effects: Motivation Components Predicting Academic Self-Efficacy

Table 3. *Standardized path coefficients from motivation types to academic self-*

efficacy

Path	β (Standardized)	p value	Interpretation
Intrinsic Motivation → Self-Efficacy	0.43	< .001	Moderate positive effect
Extrinsic Motivation → Self-Efficacy	0.25	.007	Weak to moderate positive effect

These findings reinforce the bidirectional nature of the relationship between self-efficacy and motivation, which is supported by the theoretical framework of reciprocal determinism (Bandura, 1997). The stronger predictive power of intrinsic motivation suggests that students who are personally invested in their learning also develop stronger beliefs in their academic abilities. This may be a result of positive academic experiences reinforcing both their interest and self-perception as effective learners.

Interestingly, extrinsic motivation also contributes to self-efficacy development, although to a lesser extent. This may reflect contextual influences such as pressure from family expectations, scholarship conditions, or professional goals. These factors can encourage students to perform, but they might not sustain deep engagement unless coupled with intrinsic motivation. These findings are aligned with the empirical results of Liu (2024) and Basileo et al. (2024), who showed that motivation and self-efficacy form reinforcing loops in academic achievement pathways.

RQ3: What is the structural model that best explains the relationship between self-efficacy, motivation, and academic performance for Indonesian students in Malaysian higher education contexts?

The final model incorporated academic performance (self-reported GPA) as an outcome variable influenced by both motivation types and academic self-efficacy. The overall model fit remained within acceptable limits ($\chi^2/df = 2.25$, CFI = 0.936, TLI = 0.928, RMSEA = 0.056). Academic self-efficacy had a direct positive effect on academic performance ($\beta = 0.39$, $p < .001$), while intrinsic motivation had a smaller yet significant effect ($\beta = 0.21$, $p = .019$). Extrinsic motivation did not significantly predict GPA ($\beta = 0.08$, $p = .276$). Figure 4 illustrates the structural model linking academic self-efficacy and types of motivation to academic performance, in which self-efficacy emerges as the strongest predictor.

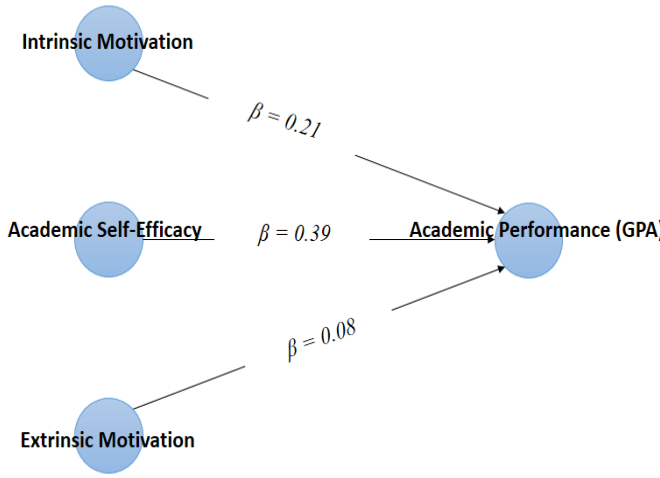

Figure 4. Structural Model Predicting Academic Performance

Table 4. *Structural Effects on Academic Performance (GPA)*

Predictor	**β (Standardized)**	**p value**	**Interpretation**
Self-Efficacy	0.39	< .001	Moderate positive effect
Intrinsic Motivation	0.21	.019	Small but significant effect
Extrinsic Motivation	0.08	.276	Not statistically significant

The findings confirm that academic self-efficacy is the most powerful predictor of students' academic outcomes, consistent with studies by Alogiliy (2024) and Zheng et al. (2021). This implies that confidence in managing academic tasks is essential for international students to thrive in a foreign academic environment. Intrinsic motivation, although less potent, contributes positively, suggesting that students who study out of personal interest and intellectual engagement tend to perform better academically. The nonsignificant role of extrinsic motivation may reflect its limited capacity to sustain long-term performance, possibly due to cultural shifts or adaptation fatigue.

In summary, the best-fitting structural equation model for Indonesian

international students in Malaysian universities reveals that academic self-efficacy functions as both a predictor and an outcome of learning motivation. Notably, intrinsic motivation emerges as a key mediating factor in promoting academic success. These findings underscore the critical role of fostering students' internal motivational frameworks and enhancing their self-belief in navigating the challenges of transnational education. By strengthening confidence-building strategies and nurturing intrinsic goals, institutions can better support students' academic resilience, engagement, and long-term achievement in cross-cultural learning contexts. This model offers valuable insights for international student development programs.

DISCUSSION

This study aimed to examine the structural relationship between academic self-efficacy and learning motivation among Indonesian international students in Malaysian universities using an SEM framework. The findings reveal a strong, reciprocal relationship between academic self-efficacy and motivation—particularly intrinsic motivation—which aligns with the core assumptions of Bandura's (1997) social cognitive theory and the Self-Determination Theory of Deci and Ryan (1985). These results contribute to an enriched understanding of how psychological resources function in a cross-border academic context, offering both theoretical validation and contextual nuance.

The first major finding indicates that academic self-efficacy significantly predicts both intrinsic and extrinsic motivation, with a stronger influence on the former. This aligns with prior research (Mehar-Singh, 2015; Cai & Yu, 2024; Teng et al., 2023), which shows that students who perceive themselves as capable tend to engage in learning driven by internal interests. This relationship is critical for Indonesian students studying abroad, as self-efficacy appears to serve not only as a confidence booster but also as a catalyst for sustained academic engagement. The weaker, although still significant, effect on extrinsic motivation may reflect the broader pressures many international students face, such as maintaining scholarships, fulfilling family expectations, or seeking future employment (Liu, 2024; Putri et al., 2024). While these external drivers are present, they do not appear to dominate students' motivational orientations, possibly because the students in this study have already demonstrated baseline resilience and adaptability by choosing to study in another country.

The reverse relationship, in which intrinsic and extrinsic motivation predict self-efficacy, further supports the reciprocal nature of these constructs. Intrinsic motivation's moderate predictive strength aligns with findings by Basileo et al. (2024) and Hammad et al. (2022), which suggest that when students are internally motivated, they are more likely to build confidence in their academic abilities. The effect of extrinsic motivation, although weaker, still holds statistical significance, echoing the conclusions of Kryshko et al. (2022), who demonstrated that motivational regulation can indirectly enhance self-perceptions of competence. However, what distinguishes this study is the demographic and cultural context of Indonesian students in Malaysian universities, where similarities in language and religious practices might reduce cultural barriers, allowing intrinsic motivation to flourish more easily. This

factor may partially explain why intrinsic motivation showed such a robust relationship with self-efficacy, suggesting that the educational and sociocultural fit of the host country is a critical moderator in the self-efficacy–motivation nexus (Arwin et al., 2024; Hazizah et al., 2024).

Furthermore, the final model identifies academic self-efficacy as the strongest predictor of academic performance, reinforcing literature that has long recognized its pivotal role in influencing academic outcomes (Kelly et al., 2020; Zheng et al., 2021; Alogiliy, 2024). The significant yet smaller contribution of intrinsic motivation to performance supports the argument that personal interest and internal value in learning contribute meaningfully to sustained academic effort (Alesi et al., 2023), even in the face of transitional and intercultural challenges. Conversely, the finding that extrinsic motivation does not significantly predict academic performance diverges from some studies conducted in more performance-oriented contexts (Alkhalifah, 2023; Xue & Kaur-Mehar, 2025). This divergence may be due to a gradual motivational shift among students who, once immersed in the Malaysian higher education system, begin to internalize their goals and rely less on extrinsic reinforcements. This shift could also reflect institutional emphasis on independent learning and critical thinking, which may de-emphasize reward-based outcomes and instead cultivate competence-based self-regulation.

Importantly, this study makes a unique contribution by integrating self-efficacy and motivation within a single validated structural model using SEM, specifically focused on a Southeast Asian international student population. While numerous studies have examined these constructs separately, few have modeled them together within a regional cross-border context (Nachatar-Singh & Jack, 2021; Idrus & Halim, 2023). The focus on Indonesian students in Malaysian universities brings a culturally proximate yet institutionally distinct perspective that has been largely overlooked in the literature. The findings underscore how even culturally familiar settings require psychological adaptation and how motivation and self-belief function as essential psychological capital to navigate this transition. Moreover, the study's structural approach provides methodological strength by demonstrating the direct and indirect pathways through which motivation and self-efficacy influence each other and academic outcomes.

Theoretically, the study reinforces the dynamic interaction proposed by social cognitive theory, where environmental, personal, and behavioral factors coinfluence one another. It also substantiates the claims of self-determination theory, particularly the notion that autonomy and competence, as reflected in intrinsic motivation and self-efficacy, are mutually reinforcing (Sunarti et al., 2024; Zainil et al., 2024). The context-specific nature of this study demonstrates how these universal theories play out in regional educational landscapes, where institutional culture, student background, and cross-border identity intersect to shape learning behavior.

In summary, the findings not only validate existing psychological theories of motivation and efficacy but also extend them into a culturally specific context that has been underrepresented in the global literature. The study calls for more nuanced, culturally responsive research on international students, particularly

from the Global South, and encourages universities to create support systems that foster both motivational autonomy and confidence-building for academic success.

CONCLUSION

This study has revealed a dynamic and reciprocal relationship between academic self-efficacy and learning motivation among Indonesian international students in Malaysian universities. The findings demonstrate that self-efficacy is a critical driver of both intrinsic and extrinsic motivation, with a stronger influence on intrinsic motivation. Conversely, intrinsic motivation significantly enhances students' academic self-beliefs and indirectly contributes to better academic performance, while extrinsic motivation, although statistically significant in predicting self-efficacy, shows a weaker and nonsignificant effect on academic outcomes. These results align with and extend the theoretical propositions of Bandura's Social Cognitive Theory and Deci and Ryan's Self-Determination Theory by illustrating how these constructs interact in a culturally contextualized Southeast Asian educational setting.

A unique contribution of this study lies in its application of a structural model to explore the psychological experiences of students navigating transnational academic environments that are both familiar and distinct in language, religion, and institutional culture. Practically, the findings underscore the need for universities to implement support systems that build students' academic confidence and promote intrinsically motivating learning experiences, especially for those studying across national borders. This could include peer mentoring, academic skill-building workshops, and culturally responsive pedagogy that validates students' identities while fostering autonomy and competence. For example, institutions might develop orientation programs led by senior international students, embed motivational goal-setting modules into first-year seminars, or revise assessment strategies to encourage self-regulated learning and reflective practice.

However, the study is not without limitations. It relied on self-reported data and employed a cross-sectional design, which restricts the ability to draw causal conclusions about the directionality of effects between motivation, self-efficacy, and academic performance. As such, while the SEM suggests strong associations, longitudinal or experimental studies would be necessary to establish temporal or causal pathways among these constructs. Additionally, the sample, while diverse, may not represent the full spectrum of Indonesian students' experiences across all Malaysian institutions. Therefore, caution should be exercised in extending these findings to different institutional contexts or national populations without further validation. Future research could adopt longitudinal or mixed-method approaches to capture the evolving nature of motivation and efficacy over time and include comparative analyses across different nationalities or institutional types. Exploring the impact of contextual factors such as cultural congruence, language barriers, and institutional support systems would also enhance the explanatory power of future models in international student research.

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☐ None
☐ Some sections, with minimal or no editing
☑ Some sections, with extensive editing
☐ Entire work, with minimal or no editing
☐ Entire work, with extensive editing

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