Canadian Journal of Educational and Social Studies
Vol. 6(4), 2026, pp. 133-174

Factors Influencing Academic Adjustment among Cambodian Undergraduate Students: A Structural Equation Modeling Approach

Chhayna Cheng[1] & Borey Ngoeurn[2]

[1]BELTEI International University, Phnom Penh, Cambodia
https://orcid.org/0009-0007-5195-8867
[2] BELTEI International University, Phnom Penh, Cambodia
https://orcid.org/0009-0006-7406-3145
Correspondence: Chhayna Cheng, BELTEI International University, Phnom Penh, Cambodia
Email: chhaynacheng@gmail.com

DOI: 10.53103/cjess.v6i4.537

Abstract

Academic adjustment during the transition to higher education plays a crucial role in shaping students' learning experiences, academic success, and overall development. It demonstrates students' capability to cope with and adapt to changes in academic learning environments. Prior studies have investigated various competence-based, psychological, and behavioral factors associated with students' academic adjustment in higher education. However, these studies aimed to examine individual predictors independently, while unified SEM-based evidence from Cambodian higher education remains limited. This study addresses this critical gap in empirical research by examining key influencing factors in a cohesive framework to predict students' academic adjustment in the Cambodian context. Using a quantitative correlational method, data were collected from 385 undergraduate students across four faculties at BELTEI International University using a structured questionnaire and convenience sampling approach, and analyzed using SPSS and AMOS. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to assess the factor structure and validity of the measurement model, while structural equation modeling (SEM) was employed to examine the hypothesized relationships among constructs. The results indicate that core English language competence, ICT knowledge, self-efficacy, and self-directed learning significantly and positively influence students' academic adjustment, collectively explaining 69% of the variance. Students' self-efficacy emerged as the strongest factor, followed by self-directed learning and ICT knowledge, while core English language competence demonstrated a comparatively smaller yet still significant effect. The findings suggest that academic adjustment among Cambodian undergraduate students is shaped by the interaction of psychological, behavioral, and competence-based factors. The study provides practical implications for higher education institutions to strengthen students' academic adjustment through English language support, ICT development, and learning strategies that foster self-efficacy and self-

directed learning. Future research is encouraged to further refine this integrated framework by incorporating additional predictors and investigating its applicability across diverse disciplinary, geographical, and institutional settings.

Keywords: Academic Adjustment, Cambodia, Higher Education, Structural Equation Modeling (SEM)

Introduction

High school life, particularly Grade 12, is commonly regarded as the final stage of secondary education and a pivotal period during which students face significant challenges and transitions (Kiak et al., 2024). Students serve as a vital resource for national development (Kiak et al., 2024), contributing to national stability (Ban & Heng, 2023) and advancing a knowledge-based society (Heng, 2023). Additionally, Grade 12 students are required to make rational and well-informed decisions that significantly influence their future, including their transition to higher education (Kiak et al., 2024). Numerous studies have indicated that academic transition success in higher education is not merely an ordinary milestone, as it requires individuals to be sufficiently adapted for advanced educational levels and their new roles as university students (Lei et al., 2020; Trigueros et al., 2020; Mulaudzi, 2023). Many countries, including Cambodia's Ministry of Education, Youth, and Sport (MoEYS), have institutionalized scholarship awareness initiatives to promote equitable access to higher education, offering tuition waivers and subsistence allowances to support the transition of high school graduates to university (Hun, 2025). For instance, in Cambodia, the number of undergraduate enrollments peaked in 2013–2014, then declined in the following years, stabilized around 2017–2018, and decreased slightly during the COVID-19 pandemic, before rebounding sharply to 237,243 students in 2022–2023 (MoEYS, 2024).

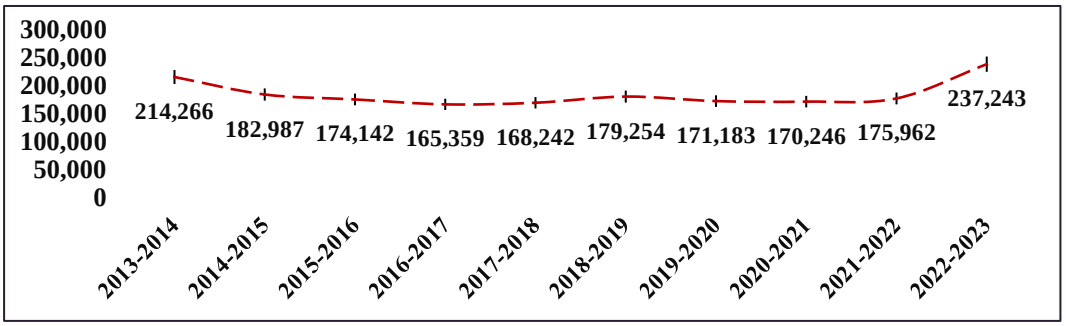

Figure 1: Statistics of bachelor's degree students (2013-2023)
Source: Adapted from MoEYS (2024)

Additionally, this achievable academic adjustment facilitates students' progression to higher levels of education by providing opportunities to develop further their educational and life experiences, including knowledge empowerment, social engagement, independence, responsibility, and future career prospects (Trigueros et al., 2020; Mulaudzi, 2023). For instance, a study of first-year students in Malaysia exhibited that academic adjustment was motivated by academic development and aspirations for a satisfying, well-paid career (Abd Rahim & Hussien, 2022). Similarly, Kiak (2024) found that successful adjustment among undergraduate students in Indonesia created significant opportunities for both educational and real-life development, influenced by factors such as family support and future career preparation. Despite its valuable opportunities, the successful academic adjustment also presents substantial challenges for students to navigate (Lei et al., 2020; Ungureanu, 2025). Lei et al. (2020) reported that 3–4-year undergraduates in the United Kingdom faced challenges such as adapting to new lectures, interacting with new peers, and managing daily life. Similarly, Ungureanu (2025) found that first-year students in Romania struggled with knowledge management, adopting new learning strategies, and coping with emerging issues.

Therefore, several studies have identified effective strategies for coping with challenges during the academic adjustment to higher education across diverse contexts, including core English language competence (Suyansah & Gabda, 2020), information and communication technology (ICT) knowledge (Oguguo et al., 2020), students' self-efficacy (Konaszewski et al., 2021), and self-directed learning (Nguyen et al., 2021). Although previous studies have investigated factors influencing students' academic adjustment, these studies have mostly focused on individual predictors, limiting understanding of how multiple factors collectively and interactively influence academic adjustment. Students' academic adjustment is determined across interconnected domains, including competence-based, psychological, and behavioral factors; hence, assessing these variables separately provides an inadequate understanding of their unified effects. Additionally, empirical evidence from developing contexts, particularly Cambodian undergraduate students, remains limited. This study aims to address these gaps by examining an integrated model of key competence-based, psychological, and behavioral factors influencing undergraduate students' academic adjustment through structural equation modeling.

Literature Review

Overview of Academic Adjustment to Higher Education

Kiak et al. (2024) emphasized that completing 12 years of high school does not mark the end of education; instead, it reflects a stage for students to consolidate their learning and progress toward enhancing their academic competencies at university. This milestone in higher education marks a critical stage in both personal and academic

development, particularly in terms of academic adjustment (Trigueros et al., 2020). Academic adjustment is the process by which students adapt to new learning environments, both in and out of class (Sahoo & Kharwar, 2021). It supports successful academic transition, integration into university life (Nonglait & Myrthong, 2021), and effective learning strategies for satisfactory performance (Sahoo & Kharwar, 2021). For example, numerous studies have emphasized the important opportunities linked to academic adjustment during students' pursuit of higher education, including shaping career aspirations (Hitka et al., 2021; Vital, 2021; Adu-Yeboah et al., 2022; Kibona, 2024), developing professional competencies (Daineko et al., 2020; Makarova et al., 2022; Cheng, 2025), advancing digital literacy (Al-Abdullatif & Gameil, 2020; Pertiwi & Siti, 2022; Chan & Sung, 2025), and building social connections (Gogu & Kumar, 2021; Crawford et al., 2023; Dooley et al., 2025). These opportunities foster students' academic engagement and sustainable empowerment by building their capacities, professionalism, and knowledge for adaptation to contemporary society and job markets (Cheng, 2025).

However, considerable challenges persist beyond the academic transition, including information and communication technology challenges (Mushimiyimana et al., 2022; Faloye & Ajayi, 2022; Mbambo & du Plessis, 2025), students' financial problems (Norazlan et al., 2020; Moore et al., 2021; Sharmin & Tirno, 2022; Qasim et al., 2023), academic stress (Deng et al., 2022; Ali & Roy, 2024; Gobena, 2024; Taj et al., 2024), and difficulties with academic adjustment (Bengesai et al., 2022; Mweene et al., 2024; Mokhampanyane, 2024; Hako et al., 2025). Thus, previous studies have identified several effective strategies for academic adjustment in higher education, which can be categorized into three interconnected domains: competence-based factors (Kadwa & Alshenqeeti, 2020; Bhatti & Alzahrani, 2024; Sadia et al., 2021; Suyansah & Gabda, 2020; Oguguo et al., 2020; Batez, 2021; Ishaq et al., 2020), psychological factors (Konaszewski et al., 2021; Griffiths et al., 2021; Al-Qadri et al., 2024; Meng & Zhang, 2023), and behavioral factors (Tomak & Seferoğlu, 2021; Algouzi et al., 2023; Nguyen et al., 2021. Competence-based factors include English language competence and ICT knowledge. English language competence has been associated with academic adjustment success among university students in Saudi Arabia (Kadwa & Alshenqeeti, 2020; Bhatti & Alzahrani, 2024), Pakistan (Sadia et al., 2021), and Malaysia (Suyansah & Gabda, 2020).

Similarly, ICT knowledge has been identified as an important factor influencing students' academic adjustment in studies conducted in Nigeria (Oguguo et al., 2020), Serbia (Batez, 2021), and Pakistan (Ishaq et al., 2020). These findings suggest that students require sufficient academic and technological competencies to engage with university learning environments and meet academic expectations effectively. Psychological factors include students' self-efficacy, which has been found to positively contribute to academic adjustment among university students in Poland (Konaszewski et al., 2021), the United Kingdom (Griffiths et al., 2021), Yemen (Al-Qadri et al., 2024), and China (Meng &

Zhang, 2023). This suggests that students' belief in their own abilities plays a critical role in enabling them to cope with academic challenges, develop psychological readiness, and adapt effectively to university life. Behavioral factors include self-directed learning practices, which have emerged as effective strategies for academic adjustment in studies conducted in Turkey (Tomak & Seferoğlu, 2021), Saudi Arabia (Algouzi et al., 2023), and Vietnam (Nguyen et al., 2021). These findings imply that students who actively manage and regulate their own learning processes are more likely to adapt successfully to the demands of higher education and develop a stronger sense of responsibility toward university life.

In the Cambodian context, empirical research examining factors that facilitate students' academic adjustment to higher education is scarce. Most existing studies have concentrated on challenges of higher education and educational pathways (Sovanak et al., 2027; Moeurn, 2025). While Moeurn et al. (2024) examined the challenges faced by first-year students using a small qualitative sample, and Lan et al. (2024) proposed a conceptual framework of factors influencing academic adjustment, their model has not been empirically tested, leaving a significant research gap. However, these studies have examined these factors separately and provided limited integrated analysis of how multiple factors collectively influence students' academic adjustment. Since students' academic adjustment is shaped by interconnected domains, including competence-based, psychological, and behavioral factors, examining these indicators may provide a comprehensive understanding of students' success. Therefore, this study integrates four key factors into a unified structural equation modeling (SEM) framework to investigate their combined explanatory power in predicting academic adjustment among Cambodian undergraduate students. This study contributes conceptually by unifying multiple key factors into a cohesive model, contextually by offering empirical evidence from Cambodian higher education, and methodologically through the application of quantitative and SEM-based analysis.

Theoretical Background

This study is theoretically grounded in an integration of two foundational theories: Social Cognitive Theory (Bandura, 1986), particularly its concept of self-efficacy, and Self-regulated Learning Theory (Zimmerman, 2002). These theories collectively offer an insightful and rigorous explanation of how students' skills, psychological factors, and learning behaviors contribute to their academic adjustment in higher education (Zimmerman, 2000; Bandura, 1986). Self-efficacy reflects individuals' beliefs in their capabilities to perform academic tasks, which influence motivation, resilience, and effort in academic performance (Bandura, 1986). Self-regulated Learning Theory explains how students effectively engage in planning, task-related strategies, goal setting, and problem-

solving processes, while also serving as a central mechanism in the development of lifelong learning skills (Zimmerman, 2000). Additionally, core English language competencies (listening, reading, and language use) (Jong et al., 2025) and ICT knowledge (the ability to access, manage, evaluate, and communicate information using digital tools) are integrated to emphasize the role of foundational skills in supporting learning access, engagement, and academic adjustment in higher education (Ben Youssef et al., 2022).

By drawing on these theoretical foundations, students' academic adjustment is understood as a multidimensional construct shaped by three interconnected domains. First, competence-based factors, including core English language competence and ICT knowledge, enhance students' ability to access, understand, and engage with learning content in higher education. Second, psychological factors, such as self-efficacy, foster students' confidence, motivation, and resilience in the academic environment. Third, behavioral factors, including self-directed learning, support students in managing their studies, expanding their knowledge, and engaging in active academic participation. Therefore, these factors are integrated into a cohesive model explaining how skills, psychological attributes, and academic behaviors collectively enhance students' academic adjustment in higher education.

Hypothesis Development

Core English Language Competence and Students' Academic Adjustment

English is widely recognized as a global language that plays a vital role in communication across diverse contexts (Fadhil et al., 2025). Additionally, it is spoken by over 400 million people worldwide and has become the dominant language in many sectors, particularly education (Fadhil et al., 2025). Core English language competence offers greater access to higher education opportunities, especially bachelor's degree programs, and supports students' academic adjustment (Fadhil et al., 2025). Jajere and Alice (2025) further emphasize that core English language competence serves as a critical bridge to academic adjustment by improving learning acquisition, interaction with educational materials, and overall learning outcomes. Empirical studies consistently show that core English language competencies contribute to successful adjustment in higher education, improved cumulative grade point average, better examination performance, deeper subject understanding, and greater learning independence (Suyansah & Gabda, 2020; Kadwa & Alshenqeeti, 2020; Sadia et al., 2021; Bhatti & Alzahrani, 2024). Accordingly, the following hypothesis is proposed.

H1. Core English language competence has a significant positive effect on students' academic adjustment.

Information and Communication Technology Knowledge and Students' Academic Adjustment

In the contemporary era, education is undergoing a significant transformation driven by technological advancements, with the integration of information and communication technology serving as a fundamental pillar of modern education (Gómez-Poyato et al., 2022). ICT knowledge facilitates access to information, communication, and learning both inside and outside the classroom, while also supporting research, interactive engagement, and independent learning in higher education (Al-Rahmi et al., 2020; Gómez-Poyato et al., 2022; Lokpo et al., 2023). Core ICT knowledge includes understanding hardware, software, networks, and digital media used to collect, manage, process, and deliver information (Al-Rahmi et al., 2020). Empirical studies indicate that students with strong ICT competencies, such as proficiency in MS Word, Excel, PowerPoint, and search engines, demonstrate better academic adjustment by organizing assignments effectively, managing coursework efficiently, and completing academic tasks successfully (Oguguo et al., 2020; Ishaq et al., 2020; Batez, 2021).

H2. ICT knowledge has a significant positive effect on students' academic adjustment.

Students' Self-Efficacy and Students' Academic Adjustment

Self-efficacy, introduced by Bandura (1977), refers to individuals' beliefs in their ability to perform tasks and achieve desired goals, thereby influencing life outcomes (Zhai, 2025). In educational settings, this concept is known as students' self-efficacy, which shapes students' confidence in their capabilities, sustains learning development, guides career decisions, and serves as both a motivational and strategic factor that enhances academic performance and adjustment (Greco et al., 2022). Meng and Zhang (2023) further emphasize that strengthening academic self-efficacy is a key mechanism for improving university students' academic adjustment. Empirical evidence indicates that students' self-efficacy supports task-oriented strategies, reduces avoidance and emotion-focused coping, enhances skill development, improves learning outcomes, and lowers withdrawal rates in higher education (Konaszewski et al., 2021; Griffiths et al., 2021; Meng & Zhang, 2023; Al-Qadri et al., 2024). Based on this, the following hypothesis is proposed.

H3. Students' self-efficacy has a significant positive effect on their academic adjustment.

Self-Directed Learning and Students' Academic Adjustment

Self-directed learning is a learner-centered approach in which students take responsibility for planning, practicing, and evaluating their own learning (Dahal & Bhat, 2023). It promotes discipline and independent knowledge acquisition, thereby strengthening students' competencies in higher education (Rogan et al., 2021). Murzina et al. (2021) argued that self-directed learning helps students adapt to academic demands, such as diverse teaching styles, digital resources, assignment submission, course planning, and progress monitoring. Moreover, it fosters learning adaptability, academic management, and responsibility, which contribute significantly to academic adjustment (Rogan et al., 2024; Chin et al., 2024). Empirical studies consistently show that self-directed learning enhances academic adjustment, intrinsic motivation, critical thinking, and overall learning outcomes in higher education (Nguyen et al., 2021; Tomak & Seferoğlu, 2021; Algouzi et al., 2023).

H4. Self-directed learning has a significant positive effect on their academic adjustment.

Conceptual Framework

Drawing on the existing literature, this study develops an integrated conceptual framework to examine the collective influence of four empirically supported factors on students' academic adjustment in Cambodian higher education. The proposed framework bridges the identified theoretical gap and serves as the basis for formulating the study's hypotheses and structural model, as presented in Figure 2.

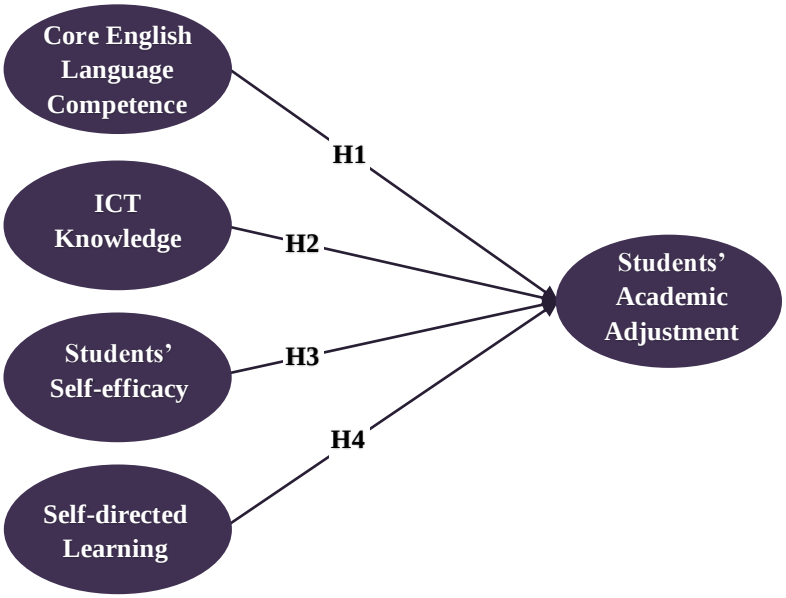

Figure 2: Conceptual framework
Source: Proposed by the authors (2026)

Methodology

Research Design

This study adopted a quantitative correlational research design to examine the relationships between the identified factors and academic adjustment among undergraduate students. A quantitative approach was deemed appropriate because it allows for the systematic assessment of variables, the statistical analysis of relationships among constructs, and the inclusion of a relatively large sample, thereby strengthening statistical validity and the representativeness of the participants. Additionally, a correlational design was employed to investigate the relationships between the four proposed factors and undergraduate students' academic adjustment. Data were gathered from undergraduate students through the administration of survey questionnaires. This method was selected because it enabled efficient data collection from a large sample and supported the structured analysis of participants' perceptions and experiences. Overall, the chosen research design was considered appropriate for achieving the research objectives and evaluating the proposed hypotheses.

Sample and Sampling Design

When the population size is unknown, the sample size was determined and computed using Cochran's formula: $n = z^2 / 4(e)^2$ (Cochran, 1977). Using a 95% confidence level (e = .05; z = 1.96), the required sample size was computed as 385 undergraduates (Uakarn et al., 2021). The participants were recruited through convenience sampling (Scholtz, 2021; Golzar et al., 2022) from four faculties at BELTEI International University, Chom Chao Flyover Campus (Campus 2), Phnom Penh, Cambodia, such as the Faculty of Business Administration, the Faculty of Finance and Banking, the Faculty of Law, and the Faculty of Information Technology. A sufficient sample size strengthens the reliability of multiple regression analysis, with a suggested case-to-independent-variable ratio of 40:1 (Norng, 2022). Although the sample offers adequate data for statistical analysis, its non-random nature limits representativeness. Hence, the findings might be interpreted as reflecting trends within this specific context rather than being generalizable to the broader student population.

Research Instruments

According to Table 1, the structured questionnaire consisted of respondents' demographic profiles and the main constructs adopted from diverse existing literature. These items represent the initial measurement instrument before data analysis. Items were modified to align with the local context and research objective, thereby enabling clarity, reliability, and validity. Additionally, the instrument was translated into Khmer and back-translated into English by two bilingual colleagues, with minor wording revisions made following pilot testing to enhance clarity and comprehension. A bilingual (Khmer–English) version was utilized for data collection. Participant responses were assessed employing a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), with mean score interpretations as follows: 1.00–1.80 = strongly disagree (SD), 1.81–2.60 = disagree (D), 2.61–3.40 = neutral (N), 3.41–4.20 = agree (A), and 4.21–5.00 = strongly agree (SA) (Joshi et al., 2015; Nyutu et al., 2021).

Table 1: A summary of the construct measurement

Construct	Description of Items	Sources
Core English Language Competence	CELC1, CELC2, CELC3, CELC4, CELC5	Sudirman et al. (2022)
Information and Communication Technology Knowledge	ICTK1, ICTK2, ICTK3, ICTK4, ICTK5, ICTK6,	Naeem et al. (2022)
Students' Self-efficacy	SSE1, SSE2, SSE3, SSE4, SSE5, SSE6,	Oguguo et al. (2020)
Self-directed Learning	SDL1, SDL2, SDL3, SDL4, SDL5,	Doménech-Betoret et al. (2017)
Students' Academic Adjustment	SAA1, SAA2, SAA3, SAA4, SAA5, SAA6, SAA7	Greco et al. (2022)

Data Collection Procedures

Data were collected in two sequential stages from undergraduate students across four faculties participating in the study. In the first stage, a pilot study (n = 100), conducted on February 20, 2025, was used to assess item clarity and to explore the preliminary factor structure through exploratory factor analysis (EFA). Given the relatively small sample size, this stage was intended solely for item refinement rather than definitive construct validation. In the second stage, the main survey was administered to 385 undergraduate students from five majors across four faculties between February 25 and March 18, 2026. During the data collection process, both authors met with the vice-deans of each of the four faculties to seek permission and explain the purpose of the study. Subsequently, each author approached the targeted classes, obtaining permission from lecturers and students in each class before explaining the study and conducting the data collection. The questionnaire was distributed via Google Forms through electronic platforms, including Telegram. Participation was voluntary, informed consent was obtained from all respondents, and confidentiality was assured. Finally, the data from the main study were used to validate the measurement model using confirmatory factor analysis (CFA) and to test the hypothesized relationships through structural equation modeling (SEM).

Data Analysis Method

Data analysis was performed using Microsoft Excel 2015, Statistical Package for the Social Sciences (SPSS 27), and Analysis of Moment Structures (AMOS 23). Microsoft Excel was employed for preliminary data screening, coding, and data cleaning procedures.

SPSS was applied to conduct descriptive statistical analysis, reliability testing, and exploratory factor analysis (EFA). EFA was conducted using principal component analysis with varimax rotation to examine the underlying factor structure and improve the measurement scales (Groth et al., 2013). The appropriateness of the data for factor analysis was evaluated using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity (Kaiser, 1974; Hutcheson & Sofroniou, 1999). A KMO value of ≥ .60 and a statistically significant Bartlett's test ($p < .05$) were regarded as acceptable indicators for factor analysis (Kaiser, 1974; Hutcheson & Sofroniou, 1999). Factor extraction was determined based on eigenvalues (E) above 1, factor loadings (FL) of at least .60, cross-loadings lower than .40 (Hair et al., 2019), and cumulative variance (Cu%) exceeding 60% (Hair et al., 2014; Kline, 1994).

Furthermore, Teare et al. (2014) suggested a pilot sample of at least 55 participants to evaluate construct reliability and item clarity before the main data collection. Reliability was assessed using Cronbach's alpha and average inter-item correlation (AIIC) (Bujang et al., 2024). Cronbach's alpha values above .70 indicate acceptable reliability (Hertzog, 2008), while AIIC values between .30 and .70 suggest adequate internal consistency; values above 0.70 may indicate item redundancy (Gharaibeh et al., 2017). Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were performed using AMOS 23 to examine the measurement model and structural associations among variables. Measurement validity was evaluated based on standardized factor loadings of .60 or higher (Hair et al., 2019). Model fit was examined using several fit indices, including CMIN/DF (χ^2/df), RMSEA, NFI, CFI, GFI, AGFI, TLI, and IFI, in accordance with established criteria (Bollen, 1989; Hu & Bentler, 1999; Schermelleh-Engel et al., 2003), as shown in Table 2. In addition, modification indices were reviewed, and model refinements were applied only when supported by theoretical justification.

Table 2: Measurement model fit indices

Model Fit Indices	Acceptable Fit	Good Fit
Chi-square divided by degrees of freedom ($\chi 2$ /df)	$2< \chi 2\leq 3$	$0\leq \chi 2/df\leq 2$
Root Mean Square Error of Approximation (RMSEA)	.05<RMSEA≤.08	0≤RMSEA≤0.05
Normed Fit Index (NFI)	.90≤NFI<.95	.95≤NFI≤1.00
Comparative Fit Index (CFI)	.95≤CFI<.97	.97≤CFI≤1.00
Goodness -of-Fit Index (GFI)	.90≤GFI<.95	.95≤GFI≤1.00
Adjusted Good-of-Fit Index (AGFI)	.85≤AGFI<.90	.90≤AGFI≤1.00
Tucker-Lewis Index (TLI)	.90≤TLI<.95	.95≤TLI≤1.00
Incremental Fit Index (IFI)	.90≤IFI<.95	.95≤IFI≤1.00

Convergent validity was assessed using average variance extracted (AVE ≥ .50) and composite reliability (CR ≥ .70), following the criteria proposed by Fornell and Larcker (1981). The formulas for AVE (a) and CR (b) are presented below.

$$\mathbf{AVE}=\frac{\sum_{i=1}^{n}\lambda_i^2}{\mathbf{n}} \qquad \text{(a)} \qquad \mathbf{CR}=\frac{(\sum_{i=1}^{n}\lambda_i)^2}{(\sum_{i=1}^{n}\lambda_i)^2+(\sum_{i=1}^{n}\delta_i)} \qquad \text{(b)}$$

where **λ** (Lamda) represents the standardized factor loading, and **i** is the number of items (1), and **δ** (Delta) represents error variance terms (2), while $\boldsymbol{\delta} = 1 - \lambda 2i$. Standardized factor loadings were expected to be greater than .60, accompanied by significant t-values exceeding 1.96 and p-values lower than .001 (Hair et al., 2014). Discriminant validity was investigated using the heterotrait–monotrait (HTMT) ratio, employing cutoff values of .85 for the strict criterion and .90 for the more flexible criterion (Henseler et al., 2015). It was further assessed using the Fornell–Larcker criterion, whereby the square root of the average variance extracted (√AVE) for each construct should exceed its correlations with other constructs, indicating adequate discriminant validity (Henseler et al., 2015). Pearson correlation analysis was also utilized to determine the associations among the study constructs, with coefficients ranging from –1 to +1 to represent the magnitude and direction of the relationships between variables (Krehbiel, 2004).

Moreover, common method bias was examined using the common latent factor (CLF) technique by comparing CFA models with and without the inclusion of the CLF, since self-administered survey data may be vulnerable to such bias (Podsakoff et al., 2003). Variations in standardized factor loadings below .20 suggested that the level of bias was negligible (Afthanorhan et al., 2021). Lastly, multiple regression analysis was employed to investigate the effects of CELC, ICTK, SSE, and SDL on SAA. The predictive capability of the model was determined using the squared multiple correlation coefficient (R^2). According to Ozili (2023), an R^2 value ranging from .51 to .99 reflects moderate explanatory strength and is regarded as acceptable in social science studies, particularly when the majority of predictors are statistically significant (p. 140). Overall, multiple regression analysis was conducted to assess variable relationships, and the general regression equation is written below:

$$\mathbf{SAA = \beta_0 + \beta_1(CELC) + \beta_2(ICTK) + \beta_3(SSE) + \beta_4(SDL) + \varepsilon_i}$$

Where:

SAA = Dependent Variable

β_0 = Intercept term

$\beta_{1i} \ldots \beta_4$ = Regression coefficient for each independent variable

CELC = Independent variable

Path relationships

Hypothesis 1: CELC → SAA

Hypothesis 2: ICTK → SAA

Hypothesis 3: SSE → SAA

Hypothesis 4: SDL → SAA

ICTK = Independent variable
SSE = Independent variable
SDL = Independent Variables
εi = Error Term

Results

The results of this study are reported in several categories. The results begin with respondent demographics and descriptive statistics, followed by exploratory factor analysis and a reliability analysis. Subsequently, confirmatory factor analysis, convergent validity, composite reliability, and discriminant validity were conducted to examine the measurement model. In addition, correlation analysis and common method bias were performed as supplementary analyses. Finally, the SEM results are presented to test the hypothesized relationships among the study variables.

Respondent Demographics

Table 3 highlights the demographic and academic adjustment characteristics of the 385 participants. The sample was predominantly female and largely composed of younger undergraduate students aged 18–20 years. Business Administration students represented the largest academic group, showing stronger participation from business-related disciplines compared to other majors. Most participants reported experiencing moderate academic challenges, indicating that academic pressure was relatively common among students. In terms of living arrangements, nearly half of the participants lived with their parents, while a considerable proportion resided with relatives or in rented accommodations.

Table 3: Results of respondent demographics

Demographic	Description (n = 385)	Frequency	Percentage (%)
Gender	Female	266	69.1
	Male	119	30.9
Age	18-20 years	233	60.5
	21-23 years	138	35.8
	24-26 years	9	2.3
	Above 26 years	5	1.3
Faculty	Business Administration	193	50.1
	Finance and Banking	38	9.9
	Information Technology and Science	106	27.5
	Law	48	12.5
Academic Challenges	Challenging	74	19.2
	Moderate	180	46.8
	Not challenging	7	1.8
	Slightly challenging	104	27.0
	Very challenging	20	5.2
Living Arrangement	Living with parents	180	46.8
	Living with relatives	99	25.7
	Renting alone	58	15.1
	Renting with friends	42	10.9
	University dormitory	6	1.6

Descriptive Statistics

Table 4 indicates that all five constructs were rated at the "Agree" level, suggesting overall positive perceptions among respondents. Self-directed learning (SDL) received the highest evaluation, indicating that students demonstrated relatively strong independent learning behaviors. In contrast, students' self-efficacy (SSE) showed the lowest mean score, implying that confidence in their own abilities was comparatively weaker than the other constructs.

Table 4: Results of descriptive statistics

Construct	Minimum	Maximum	Mean	Standard Deviation	Level of Agreement
CELC	1.00	5.00	3.916	.771	Agree
ICTK	1.00	5.00	3.844	.693	Agree
SSE	1.00	5.00	3.727	.709	Agree
SDL	1.00	5.00	3.955	.726	Agree
SSA	1.00	5.00	3.809	.663	Agree

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was conducted in the first stage using an independent dataset (n = 100), collected individually from the main sample, to examine the underlying factor structure and support item refinement. Given the exploratory nature of this preliminary stage and the relatively minimal sample size, the EFA results were used primarily for item purification and should not be interpreted as definitive evidence of construct validity. Item refinement was based on a dual-criterion technique that combined statistical evidence with theoretical rationale, ensuring that item deletion decisions were not solely dependent on empirical results and that the retained items sufficiently reflected the conceptual dimensions of each construct. The findings indicate that several items with relatively low factor loadings were removed to improve construct validity. Specifically, one item was excluded from both CELC (CELC4, FL = .567) and SSP (SPP5, FL = .569), whereas ICTK, SSE, and SAA required the removal of two items each due to insufficient factor loadings.

The deleted items included ICTK5 (FL = .502) and ICTK6 (FL = .590), SSE3 (FL = .528) and SSE4 (FL = .503), as well as SAA4 (FL = .519) and SAA5 (FL = .577). From statistical perspectives, these items were excluded due to insufficient factor loadings, cross-loadings above .40, and inadequate contribution to variance explained, highlighting weak statistical performance. From theoretical rational, they were also considered less aligned with their intended constructs and showed signs of conceptual overlap, which reduced construct clarity. In contrast, the SDL construct required no item removal, as all items met the required thresholds for factor loadings, sampling adequacy, eigenvalues, and variance explained. Overall, the final retained items across all constructs demonstrated satisfactory measurement quality, such as FL, KMO, E, and Cu%, confirming the adequacy and stability of the refined measurement model, as shown in Table 5.

Table 5: Results from factor analysis

Code	Description	Factor Analysis			
		FL	KMO	E	Cu%
Core English Language Competence					
CELC1	English plays a vital role in supporting and strengthening my reading abilities.	.822	.788	2.449	61.232
CELC2	English is essential as it facilitates my comprehension of my instructors' teaching.	.774			
CELC3	English is crucial in enabling me to achieve my expected learning outcomes.	.772			
CELC5	English facilitates my independent research, which contributes to effective group discussions and presentations.	.761			
CELC4	English plays an important role in motivating me to actively engage with coursework and maintain focused attention.	.567			
Information and Communication Technology Knowledge					
ICTK1	I think ICT facilitates my communication with classmates through digital tools, such as Telegram and other platforms.	.814	.784	2.488	62.206
ICTK3	ICT knowledge helps me access digital materials from my teachers and other sources.	.809			
ICTK4	ICT knowledge facilitates my coursework, including assignments and individual tasks from my teachers.	.780			
ICTK2	ICT knowledge helps me create engaging presentation slides using PowerPoint or Canva.	.750			
ICTK6	ICT knowledge helps me organize and submit my tasks on time while following my lecturers' instructions.	.509			
ICTK5	ICT knowledge helps me correct mistakes in spelling and grammar while preparing my academic work.	.502			
Students' Self-efficacy					
SSE6	I believe I can manage academic stress during my university studies.	.819	.734	2.478	61.946

SSE1	I believe I can manage my study time effectively.	.807			
SSE2	I believe I can organize my assigned tasks to meet my teachers' requirements.	.765			
SSE5	I believe I can handle new learning challenges in my academic courses, such as different teaching styles or examinations	.754			
SSE3	I believe I can adjust myself effectively to participate in group work.	.528			
SSE4	I believe I can achieve my learning goals and meet my academic expectations during my university studies.	.503			
Self-directed Learning					
SDL2	I consider that self-directed learning helps me review knowledge from previous lessons.	.835	.747	3.144	62.883
SDL5	I think that self-directed learning helps me solve problems independently.	.815			
SDL3	I think that self-directed learning helps me connect in-class and out-of-class learning.	.795			
SDL4	I consider that self-directed learning helps me improve my research and reading skills.	.769			
SDL1	I consider that self-directed learning helps me generate ideas for new lessons before class.	.748			
Students' Academic Adjustment					
SAA7	I have adjusted to academic stress, taken on more responsibilities, and continued to move forward.	.886	.811	2.179	66.603
SAA2	I actively seek academic support when I experience learning difficulties.	.831			
SAA1	I have adjusted well to the teaching methods used at university.	.818			
SAA6	I apply what I study in class to complete tasks outside the classroom.	.751			
SAA3	I am satisfied with the academic workload at university.	.735			
SAA5	I feel academically integrated into the	.577			

	university learning environment.				
SAA4	I have adapted myself to pass all the learning requirements, such as assignments, presentations, mid-term, and final exam.	.519			

Reliability Test

Table 6 indicates that all constructs achieved acceptable reliability, with Cronbach's alpha (α) values ranging from .786 to .852. The average inter-item correlation (AIIC) values also reflected adequate internal consistency among the measurement items. Overall, these findings suggest that the instrument was reliable and appropriate for subsequent analysis.

Table 6: Results from reliability analysis

Construct	Items	Cronbach's α (n = 100)	AIIC
Core English Language Competence (CELC)	4	.789	.482
Information and Communication Technology Knowledge (ICTK)	4	.797	.495
Students' Self-efficacy (SSE)	4	.795	.492
Self-directed Learning (SDL)	5	.852	.535
Students' Academic Adjustment (SAA)	4	.786	.423

Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was performed in the second stage employing the main sample (n = 385) to verify the measurement model and confirm the factor structure identified through exploratory factor analysis based on an independent sample. This stage evaluated the measurement characteristics of all latent constructs before examining the structural model. The CFA comprised two major components: (1) the First-Order Factor Model and (2) the Second-Order Factor Model. In the first-order model, observed indicators were specified to load onto their corresponding latent constructs, whereas the second-order model represented higher-order constructs derived from the first-order factors. The results of the first-order model showed that all items loaded above .60, and the model demonstrated an acceptable fit. For construct-level analysis, the first-order factor model was retained to examine each research construct independently. All items demonstrated standardized loadings above .60, except for one item (SAA7 = .54), which was dropped before estimating the second-order model. Subsequently, the second-order factor model was also adopted to examine the fitness of the overall model. Subsequently,

a second-order factor model was employed to assess the overall model fit. The results indicate that the χ^2/df ratio was 1.262, well below the recommended threshold of 2, while the RMSEA value was .026, indicating a good model fit. Incremental fit indices also revealed strong model fit, including NFI = .957, CFI = .991, TLI = .946, and IFI = .991. In addition, absolute fit indices such as GFI (.952) and AGFI (.933) satisfy good threshold values, indicating an adequate overall model fit. Overall, the fit indices highlight that the measurement model is good. All items were retained, supporting the stability of the factor structure. The CFA results provide validation of the measurement model and support its use for subsequent structural analysis.

Convergent Validity and Composite Reliability

Table 7 demonstrates strong convergent validity and composite reliability of the measurement model. Composite reliability values ranged from .821 to .931, and average variance extracted values exceeded the grounded threshold of .50, with the lowest value of .535. All standardized loadings (λ) were above the acceptable level of .60, ranging from .668 to .826. All t-values were statistically significant, ranging from 12.845 to 18.175, with all p-values below .001, thereby confirming the robustness and stability of the factor structure. Cronbach's alpha (α) values further supported internal consistency, with all constructs exceeding .70. Overall, the findings suggest that the measurement model satisfies recommended reliability and validity criteria.

Table 7: Confirmatory factor analysis results

Constructs		Standardized (λ)	t-Value	p-value	CR	AVE	α
Core English Language Competence							
CELC1	←	.826	–	–	.875	.636	.874
CELC2	←	.811	18.175	***			
CELC3	←	.778	17.237	***			
CELC5	←	.774	17.141	***			
Information and Communication Technology Knowledge							
ICTK2	←	.792	–	–	.848	.582	.828
ICTK3	←	.769	15.412	***			
ICTK1	←	.747	14.870	***			
ICTK4	←	.742	13.623	***			
Students' Self-efficacy							
SSE5	←	.785	–	–	.821	.535	0.81
SSE1	←	.751	14.778	***			1
SSE2	←	.717	14.286	***			
SSE6	←	.668	12.845	***			
Self-directed Learning							
SDL5	←	.785	–	–	.931	.604	.885
SDL2	←	.785	16.458	***			
SDL4	←	.781	16.359	***			
SDL1	←	.772	16.139	***			
SDL3	←	.763	15.892	***			
Students' Academic Adjustment							
SAA2	←	.812	–	–	.902	.570	.831
SAA3	←	.739	15.539	***			
SAA6	←	.729	14.933	***			
SAA1	←	.736	15.120	***			

Note: **=P<.05; ** = P<.01; ***=P<.001 (2-tailed)*

Discriminant Validity and Correlation Matrix

The results indicate that most construct pairs satisfied the recommended HTMT threshold values, supporting adequate discriminant validity, as presented in Table 8. Although the relationship between SSE and SSA showed a relatively strong relationship, the HTMT value remained below the acceptable threshold of .90, indicating that the two constructs were still sufficiently distinct from one another. Overall, the findings confirm

the presence of discriminant validity among the constructs, demonstrating the suitability of the measurement model for further structural analysis.

Table 8: Discriminant validity results (HTMT criteria)

Constructs	CELC	ICTK	SSE	SDL	SAA
CELC	–				
ICTK	.843	–			
SSE	.750	.794	–		
SDL	.831	.811	.757	–	
SAA	.717	.769	.855	.811	–

Table 9 shows that all constructs were significantly and positively correlated at the 0.01 level (2-tailed). Among the constructs, CELC and ICTK indicated the strongest correlation (r = .727, SIC = .529), highlighting that approximately 52.9% of the variance was shared between the two constructs. Similarly, SDL and SAA (r = .701, SIC = .491), as well as ICTK and SDL (r = .696, SIC = .484), also illustrated strong positive relationships, suggesting substantial conceptual relatedness among these variables. In contrast, CELC and SAA showed the comparatively weakest correlation (r = .621, SIC = .386), although the relationship remained moderately strong and statistically significant. Overall, the findings support the expected relationships among the study constructs and confirm the adequacy of the proposed measurement model. Overall, all diagonal values (√AVE) ranged from .738 to .800 and were higher than the corresponding correlation coefficients, demonstrating satisfactory discriminant validity among the constructs.

Table 9: Correlation analysis and Fornell–Larcker criterion

Constructs	CELC	ICTK	SSE	SDL	SAA
CELC	**.800**				
ICTK	.727**				
	(.529)	**.738**			
SSE	.647**	.654**			
	(.419)	(.428)	**.773**		
SDL	.676**	.696**	.646**		
	(.457)	(.484)	(.417)	**.775**	
SAA	.621**	.644**	.699**	.701**	
	(.386)	(.415)	(.489)	(.491)	**.762**

Note: **p < .01 (2-tailed). Values in parentheses are squared inter-construct correlations (SIC). Bold diagonal values represent √AVE.

Common Method Bias

Given the use of a single-source, self-reported questionnaire administered at one point in time, common method bias was evaluated using the common latent factor method within the confirmatory factor analysis model. The findings revealed that several items demonstrated differences in standardized loadings greater than the 0.20 threshold; however, the overall measurement model remained consistent, with only minimal changes in model fit indices. These results indicate that common method variance was unlikely to significantly affect the measurement model or the relationships investigated in this study. However, due to the cross-sectional and single-source design, the potential influence of common method bias cannot be eliminated, and the findings should therefore be interpreted with caution.

Structural Equation Modeling Results

According to the SEM results presented in Figure 3, all proposed predictors significantly and positively influence students' academic adjustment. Among the predictors, students' self-efficacy demonstrates the strongest effect ($\beta = .457$, t-value = 7.199, $p < .001$), followed by self-directed learning ($\beta = .429$, t-value = 6.849, $p < .001$), information and communication technology knowledge ($\beta = .414$, t-value = 6.922, $p < .001$), and core English language competence ($\beta = .350$, t-value = 7.046, $p < .001$). These findings suggest that students' confidence in their academic capabilities and their ability to regulate learning play relatively stronger roles in facilitating academic adjustment compared to language competence and ICT knowledge.

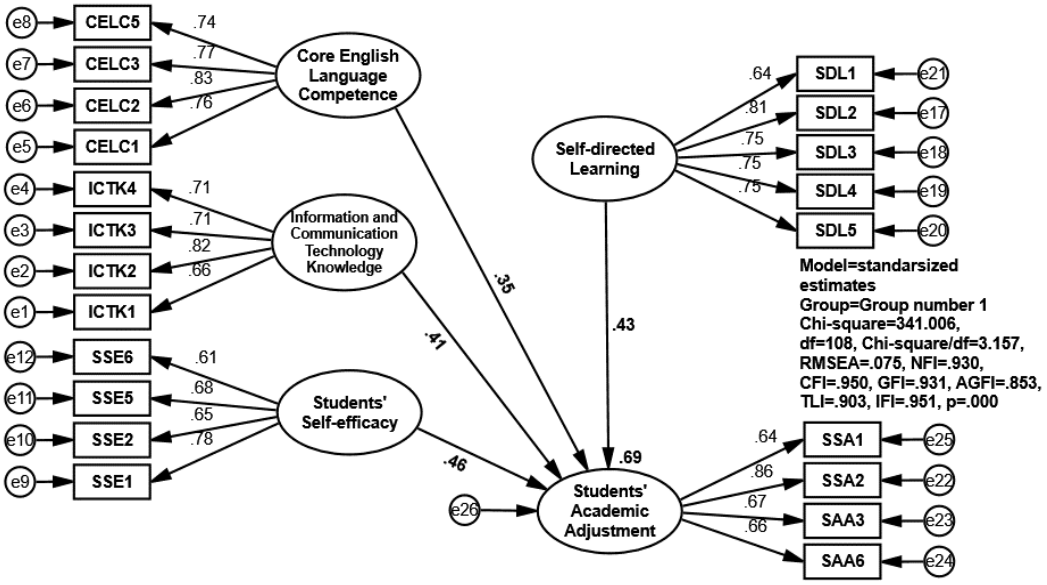

Figure 3: Proposed structural equation model results

Table 10 shows the standardized path coefficients, t-values, and p-values for all hypothesized relationships. The results indicate that all proposed hypotheses (H1, H2, H3, and H4) are supported, as each predictor variable significantly and positively influences students' academic adjustment. Among these predictors, students' self-efficacy (H3) exhibits the strongest effect on academic adjustment, followed by self-directed learning (H4), core English language competence (H1), and information and communication technology knowledge (H2). These findings suggest that psychological factors, especially students' self-efficacy, significantly boost their confidence in academic abilities and encourage persistence toward reaching academic goals. Additionally, behavioral factors like self-directed learning improve students' ability to regulate and control their own learning processes. Competence-based factors, such as core English language skills and ICT knowledge, also support students' adaptation to academic settings by facilitating learning activities, academic communication, information access, and task completion. These factors collectively contribute to successful academic adjustment in higher education. Overall, the squared multiple correlation coefficient (R^2) was .69, showing that the proposed model explains 69% of the variance in students' academic adjustment, indicating strong explanatory power.

Table 10: Hypothesis testing results

Constructs	Hypothesis	Path Relationships	β	t-value	p-value	Results
Core English Language Competence (CELC)	H1	CELC→ SAA	.350	7.046	***	Supported
Information and Communication Technology Knowledge (ICTK)	H2	ICTK→ SAA	.414	6.922	***	Supported
Students' Self-efficacy (SSE)	H3	SSE→ SAA	.457	7.199	***	Supported
Self-directed Learning (SDL)	H4	SDL→ SAA	.429	6.849	***	Supported

Note. *β=standardized path coefficient; path significance is as follows: *p<.05, **p<.01, ***p<.001, t-value > 1.96*

Discussion

The findings indicate that students' academic adjustment among the surveyed Cambodian undergraduate students is determined by a combination of competence-based, psychological, and behavioral factors. The model explained 69% of the variance in students' academic adjustment, with students' self-efficacy exerting the strongest predictor, followed by self-directed learning, core English language competence, and information and communication technology knowledge. This pattern suggests that successful academic adjustment depends on associated factors, including students' confidence in their abilities, capacity for independent learning, communication and technology knowledge, and English competence, which collectively support adaptation to higher education demands. The findings further indicate that students' academic adjustment should be understood as an integrated framework shaped by interconnected psychological, behavioral, and competence-based factors. Among these, psychological factors, particularly students' self-efficacy, demonstrated relatively stronger effects, highlighting the importance of confidence in one's abilities during academic transition in higher education. Higher self-efficacy contributes to the adoption of task-oriented strategies, emotion-focused coping, enhanced skill development, improved learning outcomes, and lower withdrawal rates. Self-directed learning functioned as a behavioral factor facilitating students' adaptation to academic demands, including diverse teaching styles, digital resources, assignment submission, course planning, and progress monitoring.

It also contributed to positive academic management, adaptability, responsibility, academic sustainability, persistence, and overall learning performance. Furthermore, core English language competence and information and communication technology knowledge

served as competence-based factors by enhancing students' learning acquisition, access to additional academic resources, and overall academic outcomes. These competencies also supported students in preparing and managing academic materials, such as presentation slides, assignments, and online assessments, through digital tools and platforms, including MS Word and PowerPoint. The findings are consistent with Social Cognitive Theory, which emphasizes the role of self-beliefs and foundational skills, and Self-Regulated Learning Theory, which highlights psychological, behavioral, and competence-based factors in facilitating academic adjustment. Psychological and behavioral factors, particularly students' self-efficacy and self-directed learning, demonstrated relatively stronger effects, suggesting that psychologically empowered students are better able to adapt to higher education demands. Self-efficacy appears to enhance students' confidence, active engagement, and goal-oriented behavior, whereas self-directed learning supports independent knowledge acquisition, academic discipline, and sustainable learning performance. In the Cambodian higher education context, these findings may indicate students' transition from relatively instruction-centered education to university contexts, including academic systems or programs, requiring greater autonomy and independent learning.

Students with stronger self-efficacy and self-directed learning skills may therefore be better equipped to adapt to diverse instructional styles, digital resources, and academic responsibilities. These findings align with prior studies showing that self-efficacy and self-directed learning support students in meeting academic needs and achieving academic milestones in higher education. Core English language competence and ICT knowledge functioned as competence-based factors supporting students' academic adjustment. ICT knowledge demonstrated a relatively stronger effect than core English language competence, suggesting that communication and technology literacy play a more prominent role in supporting students' access to academic resources and engagement with online learning platforms. However, core English competence still plays a supporting role by enabling students to comprehend and effectively utilize English-based digital learning materials. In the Cambodian higher education context, this may reflect the growing use of English-medium resources and references, particularly in university learning. ICT knowledge demonstrated a relatively stronger effect than core English competence, highlighting its key role in facilitating students' engagement with digital platforms and academic task completion. These findings align with prior studies indicating that digital knowledge and language competence contribute to students' academic readiness and facilitate adaptation to higher education demands. Therefore, the findings may suggest that students' academic adjustment is determined by the combined influence of psychological, behavioral, and competence-based factors.

This study contributes to the existing literature by offering empirical evidence from a Cambodian higher education context and proposing an integrated framework of academic

adjustment among undergraduate students. The findings extend existing knowledge by demonstrating that students' self-efficacy and self-directed learning may play stronger roles in facilitating academic adjustment than competence-based factors alone. However, the findings should be interpreted cautiously, as the study was limited to undergraduate students from a private university in Cambodia. Future research may investigate whether these relationships remain consistent across different institutional, disciplinary, and geographical contexts.

Conclusion

This study primarily aimed to identify the key factors influencing students' academic adjustment among Cambodian undergraduate students. Despite the importance of academic milestones, empirical studies in the Cambodian context remain limited. The study developed a unified framework comprising four indicators, namely core English language competence, ICT knowledge, students' self-efficacy, and self-directed learning, to assess their combined influence on students' academic adjustment in a developing higher education setting. The findings revealed that all four proposed hypotheses were significantly supported in explaining academic adjustment among Cambodian undergraduate students. In addition, among the significant predictors, students' self-efficacy demonstrated the largest standardized effect on academic adjustment, followed by self-directed learning and ICT knowledge. These results suggest that psychological and behavioral determinants exert relatively stronger explanatory power compared to competence-based factors within the model. Although the remaining significant variables, namely core English language competence, exhibited comparatively smaller effects, their positive coefficients indicate that they still contribute meaningfully and significantly to explaining students' academic adjustment in a complementary manner. Overall, the results indicate that students' academic adjustment is more strongly shaped by psychological and behavioral factors, as well as the inclusion of competence-based factors to support their academic milestones in higher education. Although this study provides empirical evidence from a Cambodian higher education context by investigating and assessing an integrated model of psychological, behavioral, and competence-based factors in predicting academic adjustment among undergraduate students, it remains restricted to a single private university; hence, the findings should not be overgeneralized to other contexts. Future research is encouraged to explore whether these patterns are replicated across diverse institutional, geographical, and cultural contexts, thereby enhancing the generalizability of the findings.

Implications of the study

The empirical findings provide several substantial implications for both theoretical and practical perspectives. Theoretically, this study contributes to the existing literature on academic adjustment among Cambodian undergraduate students by developing and empirically validating a four-factor integrated model comprising core English language competence, ICT knowledge, self-efficacy, and self-directed learning. Extending prior research that has examined these variables separately or within restricted integrated frameworks, this study unified these factors into three interconnected domains: competence-based, psychological, and behavioral factors. The findings highlight the complementary rather than independent roles of these domains, suggesting that competence-based factors alone are insufficient to explain academic adjustment without psychological factors, including students' self-efficacy, and active learning regulation, involving self-directed learning. This integrated perspective refines fragmented models and provides an in-depth explanation of students' adaptation in higher education. Practically, the findings provide relevant implications for key stakeholders, including students, educators, and universities. For students, strengthening competence-based factors such as English proficiency and ICT literacy is crucial for enhancing access to academic materials and digital learning platforms, while developing self-efficacy and self-directed learning skills can enhance confidence, persistence, and independent learning behavior.

For educators, the findings illustrate the importance of integrating ICT-supported instruction and incorporating ICT-based academic tasks (e.g., assignment preparation, presentation slides, and online assessments), alongside English-friendly teaching approaches. In addition, instructors should design learning activities that enhance students' self-efficacy through constructive feedback, scaffolding, and active participation strategies that foster independent learning. For educational institutions, the study highlights the need to establish structured support systems, including English language enhancement programs, ICT skill development workshops, and digital learning infrastructure. In addition, universities should implement academic consultation and mentoring systems that foster students' self-efficacy and encourage self-directed learning disciplines, especially in environments where students are transitioning from teacher-centered to more autonomous learning models. Overall, these implications suggest that improving students' academic adjustment requires coordinated development across psychological, behavioral, and competence-based domains, supported by aligned efforts from students, educators, and institutional policy structures.

Limitations and Future Research

The study offers new insights into effective strategies to support students'

academic adjustment by integrating four well-supported indicators into a cohesive framework, providing meaningful conceptual, contextual, and methodological contributions within the Cambodian higher education setting. However, several limitations should be acknowledged. First, the study was conducted at a single private university in Cambodia using convenience sampling, with undergraduate students predominantly drawn from business, finance, information technology, and finance-related disciplines, and a higher proportion of female students. These patterns may limit the generalizability of the findings to other institutional, disciplinary, and demographic contexts. Second, the study employed self-reported cross-sectional data, which may introduce response bias and limit causal interpretation. Although a common latent factor method was implemented, the possibility of common method variance cannot be entirely ruled out. Future research is encouraged to incorporate multiple data sources, objective measures, or longitudinal designs to better mitigate this issue. The exploratory factor analysis was conducted using a relatively minimal independent sample, which may affect the stability of the factor structure. Lastly, as this study primarily employed a quantitative approach, future research should consider adopting qualitative or mixed-methods designs to provide deeper insights into students' academic adjustment. In addition, studies involving multiple institutions, regions, and more diverse participant groups would further enhance the robustness and generalizability of the findings. Despite these limitations, the study provides valuable theoretical and practical implications for understanding and improving academic adjustment in developing contexts.

Acknowledgment

The authors gratefully acknowledge all stakeholders who supported this research. Special thanks are extended to Dr. Nay Un for his continuous guidance and insightful feedback throughout the writing process, and to Dr. Veasna Sou for his instructional videos on SPSS and AMOS, which significantly contributed to the data analysis. Appreciation is also given to the faculty members for facilitating data collection by granting access to classrooms for the survey. The authors further acknowledge the use of artificial intelligence tools to assist in understanding statistical concepts such as HTMT, CR, and AVE, which supported the analysis and interpretation of results. Finally, the authors sincerely thank the journal editors and anonymous reviewers for their constructive comments and valuable suggestions, which greatly improved the quality of this manuscript.

Declaration of AI Use

The authors used Grammarly to improve linguistic clarity in selected sections of the manuscript and consulted ChatGPT solely for explanations of statistical concepts and procedures (e.g., HTMT ratio, CR, AVE, and AMOS analysis). The authors confirm that

all research design, data analysis, interpretation, and conclusions are entirely their own original work.

References

Abd Rahim, S. M., & Hussien, S. (2022). Why go to university? Exploring the purpose of attaining higher education among first-born students from B40 and M40 Malay families. *IIUM Journal of Educational Studies, 10*(1), 22–39. https://doi.org/10.31436/ijes.v10i1.420

Adu-Yeboah, C., Kwaah, C. Y., Ayinselya, R. A., & Opoku, E. (2022). Students' Career Aspirations and Pedagogical Experiences in Ghanaian Universities. *Journal of Educational Development and Practice, 6*(1), 67–91. https://doi.org/10.47963/jedp.v6i.1468

Al-Abdullatif, A., & Gameil, A. (2020). Exploring students' knowledge and practice of digital citizenship in higher education. *International Journal of Emerging Technologies in Learning (iJET), 15*(19), 122-142. https://doi.org/10.3991/ijet.v15i19.15611

Algouzi, S., Alzubi, A. A. F., & Nazim, M. (2023). Enhancing EFL students' critical thinking skills using a technology-mediated self-study approach: EFL graduates and labor market in perspective. *PLOS ONE, 18*(10), Article e0293273. https://doi.org/10.1371/journal.pone.0293273

Ali, J., & Roy, U. (2024). Causes, impact of academic stress among the students of higher educational institutions and educational resolution of stress in Kolkata, West Bengal. *TWIST, 19*(2), 98–103. https://doi.org/10.5281/zenodo.10049652#135

Al-Rahmi, W. M., Alzahrani, A. I., Yahaya, N., Alalwan, N., & Kamin, Y. B. (2020). Digital communication: Information and communication technology (ICT) usage for education sustainability. *Sustainability, 12*(12), 5052. https://doi.org/10.3390/su12125052

Al-Qadri, A. H., Mouas, S., Saraa, N., & Boudouaia, A. (2024). Measuring academic self-efficacy and learning outcomes: The mediating role of university English students' academic commitment. *Asian-Pacific Journal of Second and Foreign Language Education, 9*(1), 35. https://doi.org/10.1186/s40862-024-00253-5

Ban, T., & Heng, K. (2023). Improving the quality of Cambodian higher education: Key challenges and suggestions. *Cambodian Journal of Educational Research, 3*(2), 35–61. https://doi.org/10.62037/cjer.2023.03.02.03

Batez, M. (2021). ICT skills of university students from the faculty of sport and physical education during the COVID-19 pandemic. *Sustainability, 13*(4), 1711. https://doi.org/10.3390/su13041711

Bengesai, A. V., Paideya, V., Naidoo, P., & Mkhonza, S. (2022). Student perceptions on

their transition experiences at a South African university offering a first-year experience programme. *Journal of Student Affairs in Africa, 10*(2), 111–127. https://doi.org/10.24085/jsaa.v10i2.4084

Bhatti, M. A., & Alzahrani, S. A. (2024). English language proficiency and students learning outcomes. *Arts Educa, 40*, 177–192. https://artseduca.com/submissions/index.php/ae/article/view/395

Bollen, K. A. (1989). *Structural equations with latent variables*. John Wiley & Sons.

Bujang, M. A., Omar, E. D., Foo, D. H. P., & Hon, Y. K. (2024). Sample size determination for conducting a pilot study to assess reliability of a questionnaire. *Restorative Dentistry & Endodontics, 49*(1), 1–8. https://doi.org/10.5395/rde.2024.49.e3

Chan, A. Y. W., & Sung, C. C. M. (2025). Enhancing students' digital literacy skills through their technology use in a course-based research project: A Hong Kong case study. *Asia Pacific Education Review*. Advance online publication. https://doi.org/10.1007/s12564-025-10038-1

Cheng, C. (2025). Opportunities, Challenges, and Strategies in the Academic Transition to Higher Education After Grade 12: A Literature Review. *Southeast Asian Journal of Global Trends and Issues in Education, 1*(2), 49-69. https://doi.org/10.64420/sajgtie.v1i2.400

Cheng, T. (2025). The impact of professional education programs on career development. *Higher Education Evaluation and Development, 19*(1), 87–100. https://doi.org/10.1108/HEED-10-2024-0046

Chin, P., Sam, R., Serey, M., & Em, S. (2024, March 19). Exploring the benefits and drawbacks of directing undergraduates' self-study pursuits: An in-depth analysis through literature review. *Journal of General Education and Humanities, 3*(2), 117–132. https://doi.org/10.58421/gehu.v3i2.210

Collier, J. E. (2020). *Applied structural equation modeling using AMOS: Basic to advanced techniques*. Routledge.

Crawford, J., Allen, K. A., Sanders, T., Baumeister, R., Parker, P., Saunders, C., & Tice, D. (2023). Sense of belonging in higher education students: an Australian longitudinal study from 2013 to 2019. *Studies in Higher Education, 49*(3), 395–409. https://doi.org/10.1080/03075079.2023.2238006

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods* (5th ed.). SAGE. https://spada.uns.ac.id/pluginfile.php/510378/mod_resource/content/1/creswell.pdf.

Dahal, A., & Bhat, N. (2023). Self-directed learning, its implementation, and challenges: A review. *Nepal Journal of Health Sciences, 3*(1), 102–115. https://doi.org/10.3126/njhs.v3i1.63277

Daineko, L. V., Goncharova, N. V., Larionova, V. A., Ovchinnikova, V. A., & Daineko, L. V. (2020). Fostering professional competencies of students with the new approaches in higher education. *European Proceedings of Social and Behavioral Sciences, 98*, 231–239. https://doi.org/10.15405/epsbs.2020.12.03.24

Devi, B., Lepcha, N., & Basnet, S. (2022). Application of correlational research design in nursing and medical research. *Journal of Xi'an Shiyou University, Natural Sciences Edition, 65*(11), 60–69. https://doi.org/10.17605/OSF.IO/YRZ68

Deng, Y., Cherian, J., Khan, N. U. N., Kumari, K., Sial, M. S., Comite, U., Gavurova, B., & Popp, J. (2022). Family and academic stress and their impact on students' depression level and academic performance. *Frontiers in Psychiatry, 13*, 869337. https://doi.org/10.3389/fpsyt.2022.869337

Dodeen, H., & Nassar, Y. (2022). Factorial equivalence and validation of three versions of the Body Shape Questionnaire. *The Open Psychology Journal, 15*(1), 1–8. https://doi.org/10.2174/18743501-v15-e2206150

Dooley, J., Forbes, V., Green, A., Misurya, P., Card, P., Thomas, F., Watkins, E., & Lawrence, L. (2025). Institutional compassion in student transition to university: Findings from the Nurture-U Compassionate Campus Project. *Education Sciences, 15*(4), 455. https://doi.org/10.3390/educsci15040455

Doménech-Betoret, F., Abellán-Roselló, L., & Gómez-Artiga, A. (2017). Self-efficacy, satisfaction, and academic achievement: The mediator role of students' expectancy-value beliefs. *Frontiers in Psychology, 8*, 1193. https://doi.org/10.3389/fpsyg.2017.01193

Eggers, J. H., Oostdam , R., & Voogt, J. (2021). Self-regulation strategies in blended learning environments in higher education: A systematic review. *Australasian Journal of Educational Technology, 37*(6), 175–192. https://doi.org/10.14742/ajet.6453

ElSayad, G. (2024). Drivers of undergraduate students' learning perceptions in the blended learning environment: The mediation role of metacognitive self-regulation. *Education and Information Technologies, 29*(12), 15737–15760. https://doi.org/10.1007/s10639-024-12466-9

Engel, K. S., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*(2), 23–74.

Fadhil, M. F., Septiana, E., Sawitri, O., Abdillah, R., Syahfutra, W., & Nurafrezah, N. (2025). The role of English proficiency in supporting academic achievement and career opportunities of university students. *Widya Accarya, 16*(1), 36–41. https://doi.org/10.46650/wa.16.1.1645.36-41

Faloye, S. T., & Ajayi, N. (2022). Understanding the impact of the digital divide on

South African students in higher educational institutions. *African Journal of Science, Technology, Innovation and Development, 14*(7), 1734–1744. https://doi.org/10.1080/20421338.2021.1983118

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Garner, J., & Chappell Moots, S. (2018). Measuring well-being as students transition between schools: The validation of the Quality of Transition Instrument. *The Journal of At-Risk Issues, 21*(2), 1–12. https://eric.ed.gov/?id=EJ1199050

Geng, H., & Wei, H. (2023). The relationship between self-discipline and academic achievement of Chinese undergraduate students in the e-learning environment. *Journal of Higher Education Theory & Practice, 23*(14), 112–121. https://doi.org/10.33423/jhetp.v23i14

Gharaibeh, B., Al-Smadi, A. M., & Boyle, D. (2017). Psychometric properties and characteristics of the Diabetes Self-Management Scale. *International Journal of Nursing Sciences, 4(*3), 252–259. https://doi.org/10.1016/j.ijnss.2017.04.001

Gobena, G. A. (2024). Effects of academic stress on students' academic achievements and its implications for their future lives. *Anatolian Journal of Education, 9*(1), 113–130. https://doi.org/10.29333/aje.2024.918a

Gogu, C. V., & Kumar, J. (2021). Social connectedness and online design learning experience in the Indian context. *Design and Technology Education: An International Journal, 26*(3), 1–16.

Gökteke, Z., & Ocak, G. (2024). The concept of self-regulation and its place and importance in educational sciences. *European Journal of Education Studies, 11*(1), 159–169. https://doi.org/10.46827/ejes.v11i1.5160

Gómez-Poyato, M. J., Eito-Mateo, A., Mira-Tamayo, D. C., & Matías-Solanilla, A. (2022). Digital skills, ICTs and students' needs: A case study in social work degree, University of Zaragoza (Aragón-Spain). *Education Sciences, 12*(7), 1–18. https://doi.org/10.3390/educsci12070443

Golzar, J., Noor, S., & Tajik, O. (2022). Convenience sampling. *International Journal of Education & Language Studies, 1*(2), 72–77. https://doi.org/10.22034/ijels.2022.162981

Greco, A., Annovazzi, C., Palena, N., Camussi, E., Rossi, G., & Steca, P. (2022). Self-efficacy beliefs of university students: Examining factor validity and measurement invariance of the new Academic Self-Efficacy Scale. *Frontiers in Psychology, 12*, 498824. https://doi.org/10.3389/fpsyg.2021.498824

Griffiths, T.-L., Dickinson, J., & Day, C. J. (2021). Exploring the relationship between extracurricular activities and student self-efficacy within university. *Journal of Further and Higher Education, 45*(9), 1294–1309.

https://doi.org/10.1080/0309877X.2021.1951687

Guvendir, M. A., & Ozkan, Y. O. (2022). Item removal strategies conducted in exploratory factor analysis: A comparative study. *International Journal of Assessment Tools in Education, 9*(1), 165–180. https://doi.org/10.21449/ijate.827950

Hako, A. N., Shikongo, T. P., & Bozkurt, A. (2025). Psychological adjustment challenges among first-year university students: Crucial link between psychological health and academic success in higher education. *International Journal of Studies in Psychology, 5*(1), 1–8. https://doi.org/10.38140/ijspsy.v5i1.1542

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis (7th ed.)*. Pearson Education. https://www.drnishikantjha.com/papersCollection/Multivariate%20Data%20Analysis.pdf

Hair, J. F., Jr., Babin, B. J., Money, A. H., & Samouel, P. (2003). *Essentials of business research methods.* John Wiley & Sons.

Heng, K. (2023). *Cambodia's aspirations to become a knowledge-based society: Perspectives of Cambodian university students* (CDRI Working Paper Series No. 138). CDRI. https://doi.org/10.64202/wp.138.202305

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

Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health, 31*(2), 180–191. https://doi.org/10.1002/nur.20247

Hitka, M., Štarchoň, P., Lorincová, S., & Caha, Z. (2021). Education as a key in career building. *Journal of Business Economics and Management, 22*(4), 1065–1083. https://doi.org/10.3846/jbem.2021.15399

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Hun, S. (2025). Scholarship schemes in Cambodian higher education: Unpacking why lower-income students are lagging behind. *Higher Education Policy, 38*(4), 733–754. https://doi.org/10.1057/s41307-024-00369-w

Hutcheson, G., & Sofroniou, N. (1999). *The multivariate social scientist: Introductory statistics using generalized linear models*. Sage Publications. https://doi.org/10.4135/9780857028075

Ifenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics to support study

success in higher education: A systematic review. *Educational Technology Research and Development, 68*(4), 1961–1990. https://doi.org/10.1007/s11423-020-09788-z

Ishaq, K., Azan, N., Zin, M., Rosdi, F., Abid, A., & Ijaz, M. (2020). The impact of ICT on students' academic performance in public private sector universities of Pakistan. *International Journal of Innovative Technology and Exploring Engineering, 9*(3), 1117–1121. https://doi.org/10.35940/ijitee.C8093.019320

Jajere, A. U., & Alice, R. O. (2025). Nexus between English language proficiency and educational attainment: A review. *International Journal of English Language & Communication Studies, 10*(1), 100–115. https://doi.org/10.56201/ijelcs.vol.10.no1.2025.pg88.115

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *British Journal of Applied Science & Technology, 7*(4), 396–403. https://doi.org/10.9734/BJAST/2015/14975

Kadwa, M. S., & Alshenqeeti, H. (2020). The impact of students' proficiency in English on science courses in a foundation year program. *International Journal of Linguistics, Literature and Translation, 3*(11), 55–67. https://doi.org/10.32996/ijllt.2020.3.11.5

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31–36. https://doi.org/10.1007/BF02291575

Kiak, A. G. X., Folamauk, J. E. D., & Ervatamia, R. (2024). The influence of environment on grade 12 students' emotions during career preparation after graduation. *International Conference of Humanities and Social Science (ICHSS)*, 449–453. https://programdoktorpbiuns.org/index.php/proceedings/article/view/390

Kashif, M. F., & Shahid, R. (2021). Students' Self-Regulation in Online Learning and its Effect on their Academic Achievement. *Global Educational Studies Review, 6*(3), 11-20. http://dx.doi.org/10.31703/gesr.2021(VI-III).02

Khalid, M., Ali, H., & Hussain, B. (2024). Examining the perceived self-control and self-management skills of university students: A sectoral and disciplinary analysis. *Review of Applied Management and Social Science (RAMSS), 7*(4), 223–234. https://doi.org/10.47067/ramss.v7i4.374

Kibona, B. (2024). Higher education and employability in Tanzania: Students' account. *Journal of International Development, 36*(1), 254–267. https://doi.org/10.1002/jid.3820

Kline, P. (1994). *An easy guide to factor analysis*. Routledge. https://doi.org/10.4324/9781315788135

Kline, R. B. (2005). *Principles and practice of structural equation modeling (2nd ed.)*. Guilford Press.

Konaszewski, K., Kolemba, M., & Niesiobędzka, M. (2021). Resilience, sense of coherence, and self-efficacy as predictors of stress coping style among university students. *Current Psychology, 40*(8), 4052–4062. https://doi.org/10.1007/s12144-019-00363-1

Kryshko, O., Fleischer, J., Waldeyer, J., Wirth, J., & Leutner, D. (2020). Do motivational regulation strategies contribute to university students' academic success? *Learning and Individual Differences, 82,* Article 101912. https://doi.org/10.1016/j.lindif.2020.101912

Kumar, M. D. (2023). A study on importance of Microsoft Excel data analysis statistical tools in research works. *Journal of Management & Educational Research Innovation, 1*(3), 25–33. https://doi.org/10.5281/zenodo.10449150

Lan, B., Sam, R., Keo, V., & Rouet, W. (2024). Factors Influencing Academic Adjustment and Learning Outcomes in Higher Education Institutions in Battambang: A Conceptual Framework. *European Journal of Theoretical and Applied Sciences, 2*(5), 9-30. https://doi.org/10.59324/ejtas.2024.2(5).02

Lei, J., Calley, S., Brosnan, M., Ashwin, C., & Russell, A. (2020). Evaluation of a transition to university programme for students with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 50*(7), 2397–2411. https://doi.org/10.1007/s10803-018-3776-6

Lei, F., & Lee, E. (2021). Cross-cultural modification strategies for instruments measuring health beliefs about cancer screening: Systematic review. *JMIR Cancer, 7*(4), e28393. https://doi.org/10.2196/28393

Lokpo, C., Deku, J. K., Donkor, B. M., & Kumah, M. S. (2023). Impact of Access to and use of ICT in School on Students' Perceived Performance. *Journal of Education and Teaching Methods, 2*(3), 15–28. https://doi.org/10.58425/jetm.v2i3.191

Makarova, O., Kovardakova, M., & Shabanova, A. (2022, February). Professional competence as an essential characteristic of a university student's personality. In *IX International Scientific and Practical Conference "Current Problems of Social and Labour Relations" (ISPC-CPSLR 2021)* (Vol. 646, pp. 264–272). Atlantis Press. https://doi.org/10.2991/assehr.k.220208.047

Meng, Q., & Zhang, Q. (2023). The influence of academic self-efficacy on university students' academic performance: The mediating effect of academic engagement. *Sustainability, 15*(7), 5767. https://doi.org/10.3390/su15075767

Mokhampanyane, M. (2024). Adjustment dynamics of first-year students to university life at a rural university in South Africa. *Education, 5*(7), 1238–1249. https://doi.org/10.38159/ehass.20245714

Moeurn, C. (2025). The current student services in higher education: Key

challenges and solution priorities. Journal of Education Research, 6(4), 912–934. https://doi.org/10.37985/jer.v6i4.2951

Moeurn, C., Sam, C., & Mok, S. (2024). The challenges of the first-year student in higher education institutions in Cambodia. *Social Science and Humanities Journal, 8*(12), 6069–6101. https://doi.org/10.18535/sshj.v8i12.1527

Mbambo, G. P., & du Plessis, E. C. (2025). Evaluating technical vocational education and training college students' digital skills versus throughput rate. *Discover Education, 4*(6), Article 6. https://doi.org/10.1007/s44217-025-00396-8

Ministry of Education, Youth and Sport. (2024). *Higher education reform: Building a quality higher education system that develops human resources with excellent knowledge, skills, and moral values in order to work and live within the era of globalization and knowledge-based society*. Phnom Penh.

Moore, A., Nguyen, A., Rivas, S., Bany-Mohammed, A., Majeika, J., & Martinez, L. (2021). A qualitative examination of the impacts of financial stress on college students' well-being: Insights from a large, private institution. *SAGE Open Medicine, 9*, 20503121211018122. https://doi.org/10.1177/20503121211018122

Mulaudzi, I. C. (2023). Challenges faced by first-year university students: Navigating the transition to higher education. *Journal of Education and Human Development, 12*(2), 79–87. https://doi.org/10.15640/jehd.v12n2a8

Murzina, O., Lisnevska, A., Masytska, T., Melnyk, I., Levchuk, T., & Sokolova, V. (2021). The educational environment for improving students' self-study: Best European practices. *Laplage em Revista (International), 7*(Extra E), 144–162. https://doi.org/10.24115/S2446-622020217Extra-E1170p.144-162

Mushimiyimana, J. B., Bazimaziki, G., & Tuyishime, D. (2022). ICT integration in educational curriculum in higher education: Challenges and opportunities in the University of Rwanda-College of Education. *International Journal of Humanities and Education Development (IJHED), 4*(2), 118–137. https://doi.org/10.22161/jhed.4.2.16

Mweene, D. L., Mwanza, N., & Mwale, G. (2024). Students' adjustment to university life: Evidence from lived experiences. *International Journal of Research and Innovation in Social Science (IJRISS), 8*(10), 1394–1406. https://dx.doi.org/10.47772/IJRISS.2024.8100119

Naeem, W., Jamal, S., & Khan, S. A. (2022). Students' English language proficiency and their academic motivation. *Journal of Languages, Culture and Civilization, 4*(4), 423–431. https://doi.org/10.47067/jlcc.v4i4.144

Nguyen, N. B., Nguyen, H. B., Pham, X. H. T., Nguyen, N. N., & Truong, N. Y. N. (2021). Investigating difficulties of self-study in reading skills of English language students of the high-quality training program at Can Tho University.

International Journal of Science and Management Studies (IJSMS), 4(5), 72–80. https://doi.org/10.51386/25815946/ijsms v4i5p107

Nguyen, T. N., & Bui, T. T. (2023). The reality of self-studying among English-majored students at a public university in Vietnam. *European Journal of English Language Teaching, 8*(5), 92–106. https://doi.org/10.46827/ejel.v8i5.5094

Nonglait, F. L., & Myrthong, E. B. (2021). Rural students' transition into higher education in Meghalaya: Challenges and coping strategies. *The Qualitative Report, 26*(5), 1663–1677. https://doi.org/10.46743/2160-3715/2021.4759

Norazlan, N., Yusuf, S., & Al-Majdhoub, F. M. H. (2020). The financial problems and academic performance among public university students in Malaysia. *The Asian Journal of Professional & Business Studies, 1*(2), 1–6. https://doi.org/10.61688/ajpbs.v1i2.52

Norng, S. (2022). Factors influencing mobile banking adoption in Cambodia: The structuring of TAM, DIT, and trust with TPB. *Asian Journal of Business Research, 12*(3), 21–42. https://doi.org/10.14707/ajbr.220133

Nyutu, E. N., Cobern, W. W., & Pleasants, B. A-S. (2021). Correlational study of student perceptions of their undergraduate laboratory environment with respect to gender and major. *International Journal of Education in Mathematics, Science, and Technology (IJEMST), 9*(1), 83–102. https://doi.org/10.46328/ijemst.1182

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity, 41*(5), 673–690. https://doi.org/10.1007/s11135-006-9018-6

Oguguo, B. C., Okeke, A. O., Dave-Ugwu, P. O., Ocheni, C. A., Ugorji, C. O., Nwoji, I. H. N., & Ike, I. C. (2020). Assessment of ICT skills relevant for effective learning possessed by undergraduate students at University of Nigeria. *International Journal of Higher Education, 9*(4), 206–215. https://doi.org/10.5430/ijhe.v9n4p206

Ozili, P. K. (2023). The acceptable R-square in empirical modelling for social science research. In *Social research methodology and publishing results: A guide to non-native English speakers* (pp. 134–143). IGI Global. https://doi.org/10.4018/978-1-6684-6859-3.ch009

Pérez-Jorge, D., Boutaba-Alehyan, M., González-Contreras, A. I., & Pérez-Pérez, I. (2025). Examining the effects of academic stress on student well-being in higher education. *Humanities and Social Sciences Communications, 12*(1), 1–13. https://doi.org/10.1057/s41599-025-04698-y

Pertiwi, I., & Siti, R. R. (2022). Digital literacy in EFL learning: University students'

perspectives. *JEES (Journal of English Educators Society), 7*(2), 197–204. https://doi.org/10.21070/jees.v7i2.1670

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Putri, L., Rezani, M. R., & Hermina, D. (2025). Correlational research design. *Jurnal Riset Multidisiplin Edukasi, 2*(6), 306–317. https://doi.org/10.71282/jurmie.v2i6.456

Qasim, F., Kiazai, A., & Suleman, S. (2023). A study to explore the impacts of financial obstacles in pursuing higher education by university students of Quetta. *Journal of Contemporary Trends and Issues in Education, 3*(1), 150–172. https://doi.org/10.55628/jctie.v3i1.125

O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity, 41*(5), 673–690. https://doi.org/10.1007/s11135-006-9018-6

Oguguo, B. C. E., Okeke, A. O., Dave-Ugwu, P. O., Ocheni, C. A., Ugorji, C. O., Nwoji, I. H. N., & Ike, I. C. (2020). Assessment of ICT skills relevant for effective learning possessed by undergraduate students at University of Nigeria. *International Journal of Higher Education, 9*(4), 206–215. https://doi.org/10.5430/ijhe.v9n4p206

Ozgur, C., Kleckner, M., & Li, Y. (2015). Selection of statistical software for solving big data problems: A guide for businesses, students, and universities. *SAGE Open, 5*(2), 1–10. https://doi.org/10.1177/2158244015584379

Räisänen, M., Postareff, L., Mattsson, M., & Lindblom-Ylänne, S. (2020). Study-related exhaustion: First-year students' use of self-regulation of learning and peer learning and perceived value of peer support. *Active Learning in Higher Education, 21*(3), 173–188. https://doi.org/10.1177/1469787418798517

Richard, M. O., & Toffoli, R. (2009). Language influence in responses to questionnaires by bilingual respondents: A test of the Whorfian hypothesis. *Journal of Business Research, 62*(10), 987–994. https://doi.org/10.1016/j.jbusres.2008.10.016

Rogan, S., Taeymans, J., Zuber, S., & Zinzen, E. (2021). Impact of guided self-study on learning success in undergraduate physiotherapy students in Switzerland: A feasibility study of a higher education intervention. *BMC Medical Education, 21*(1), Article 362. https://doi.org/10.1186/s12909-021-02794-6

Sadia, B., Memon, S., & Pathan, H. (2021). Investigating the relationship between English language proficiency and academic performance of engineering students in Mehran University Jamshoro, Pakistan. *Pakistan Journal of Humanities and Social Sciences, 9*(3), 515–525. https://doi.org/10.52131/pjhss.2021.0903.0156

Sarker, B. K., Sarker, D. K., Rani Shaha, S., Saha, D., & Sarker, S. (2024). Why apply SPSS, SmartPLS, and AMOS: An essential quantitative data analysis tool for business and social science research investigations. *International Journal of Research and Innovation in Social Science, 8*(9), 2688–2699. https://doi.org/10.47772/IJRISS.2024.8090224

Sahoo, A. K., & Kharwar, P. S. (2021). Academic adjustment in later adolescence: Challenges and possible coping strategies. *National Journal of Education, 19*(2), 46–55. https://www.researchgate.net/publication/371001066_Academic_Adjustment_in_Later_Adolescence_Challenges_and_Possible_Coping_Strategies

Scholtz, S. E. (2021). Sacrifice is a step beyond convenience: A review of convenience sampling in psychological research in Africa. *SA Journal of Industrial Psychology, 47*(1), Article 1837. https://doi.org/10.4102/sajip.v47i0.1837

Sharmin, J. A., & Tirno, R. R. (2022). Impact of financial, social, and political issues on students' academic performance: An empirical study on public and private universities in Bangladesh. *BAUST Journal, 1*(2), 1–9. https://www.researchgate.net/publication/379376277

Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of Applied Mathematics and Statistics, 8*(2), 39–42. https://doi.org/10.12691/ajams-8-2-1

Siegel, A. F., & Wagner, M. R. (2016). Correlation and regression: Measuring and predicting relationships. In *Practical business statistics* (pp. 299–354). Academic Press. https://doi.org/10.1016/B978-0-12-820025-4.00011-7

Sim, J., & Lewis, M. (2012). The size of a pilot study for a clinical trial should be calculated in relation to considerations of precision and efficiency. *Journal of Clinical Epidemiology, 65*(3), 301–308. https://doi.org/10.1016/j.jclinepi.2011.07.011

Sin, C., Sophat, P., & Touch, V. (2024). Determinants of service logistic innovation and its capability in Cambodia using the structural equation model. *SRAWUNG (Journal of Social Sciences and Humanities), 3*(1), 58–73. https://doi.org/10.2139/ssrn.4838625

Sovanak, L., Vouchsieng, L., & Navy, M. (2017). The challenges of higher education for rural students in urban universities in Cambodia. *UC Working Paper Series*, 94–106. https://uc.edu.kh/userfiles/image/2017/Working%20Paper%20Series%20Volum%201%20Issue%201.pdf

Slater, P., & Hasson, F. (2025). Quantitative research designs, hierarchy of evidence and validity. *Journal of Psychiatric and Mental Health Nursing, 32*(3), 656–660.

https://doi.org/10.1111/jpm.13135

Stantcheva, S. (2023). How to run surveys: A guide to creating your own identifying variation and revealing the invisible. *Annual Review of Economics, 15*(1), 205–234. https://doi.org/10.1146/annurev-economics-091622-010157

Sudirman, A. M., Junaid, R., & Gon, W. (2022). A survey study of students' motivation in English language learning. *BATARA DIDI: English Language Journal, 1*(1), 38–48. https://doi.org/10.56209/badi.v1i1.27

Sumarauw, J., Wawolumaja, J. E., Puspitasari, M. A., Taha, R. K., & Gunadi, W. (2024). The intention to use digital payment in the UMKM sector in Manado City. *Journal of World Science, 3*(2), 246–257. https://doi.org/10.58344/jws.v3i2.551

Suyansah, Q., & Gabda, D. (2020). An analysis of the effect of English proficiency towards students' academic performance in University of Malaysia Sabah. *Universal Journal of Educational Research, 8*(3B), 83–88. https://doi.org/10.13189/ujer.2020.081510

Taj, S., Tabassum, R., & Bibi, S. (2024). Impact of stress on the academic performance of university students. *Research Journal for Societal Issues, 6*(2), 314–325. https://doi.org/10.56976/rjsi.v6i2.232

Teare, M. D., Dimairo, M., Shephard, N., Hayman, A., Whitehead, A., Walters, S. J., … Browne, R. H. (2014). Sample size requirements to estimate key design parameters from external pilot randomized controlled trials: A simulation study. *Trials, 15*(1), 1–13. https://doi.org/10.1186/1745-6215-15-264

Tessler, M., Palmer, M., Farah, T. E., & Ibrahim, B. (2019). *The evaluation and application of survey research in the Arab world*. Routledge.

Tomak, B., & Seferoğlu, G. (2021). Self-regulated learning strategies of learners of English in a Turkish state university to improve their language proficiency. *Advances in Language and Literary Studies, 12*(3), 22–27. https://doi.org/10.7575/aiac.alls.v.12n.3.p.22

Tran, N. B., Tran, L. C., Nguyen, Q. T. T., et al. (2026). University adaptation among first-year medical students: Development and psychometric validation of the medical student adaptation questionnaire in Vietnam. *BMC Medical Education, 26*, 243. https://doi.org/10.1186/s12909-026-08592-2

Trigueros, R., Padilla, A. M., Aguilar-Parra, J. M., Rocamora, P., Morales-Gázquez, M. J., & López-Liria, R. (2020). The influence of emotional intelligence on resilience, test anxiety, academic stress and the Mediterranean diet: A study with university students. *International Journal of Environmental Research and Public Health, 17*(6), 2071. https://doi.org/10.3390/ijerph17062071

Tsai, T. I., Luck, L., Jefferies, D., & Wilkes, L. (2025). Challenges in adapting a survey: Ensuring cross-cultural equivalence. *Nurse Researcher, 33*(4), 28–32.

https://doi.org/10.7748/nr.2018.e1581

Uakarn, C., Chaokromthong, K., & Sintao, N. (2021). Sample size estimation using Yamane and Cochran and Krejcie and Morgan and Green formulas and Cohen statistical power analysis by G*Power and comparisons. *APHEIT International Journal of Interdisciplinary Social Sciences and Technology, 10*(2), 76–86. https://so04.tci-thaijo.org/index.php/ATI/article/view/254253

Un, N., & Ngoy, Y. (2024). Factors influencing users' satisfaction and continued usage intention of mobile apps among food and beverage SMEs in Phnom Penh. *American Research Journal of Humanities & Social Science (ARJHSS), 7*(1), 7–37.

Ungureanu, E. (2025). First-year students' knowledge understandings during the transition from high school to university. *Journal of Pedagogy, 2025*(1), 115–136. https://doi.org/10.26755/RevPed/2025.1/115

Vital, L. M. (2021). Higher education and career development experiences of emerging adults: A focus on university students and graduates in Haiti. *African Journal of Career Development, 3*(1), 1–14. https://doi.org/10.4102/ajcd.v3i1.30

Whitehead, A. L., Julious, S. A., Cooper, C. L., & Campbell, M. J. (2016). Estimating the sample size for a pilot randomised trial to minimise the overall trial sample size for the external pilot and main trial for a continuous outcome variable. *Statistical Methods in Medical Research, 25*(3), 1057–1073. https://doi.org/10.1177/0962280215588241

Young, D. S. (2017). *Handbook of regression methods (1st ed., pp. 109–136)*. CRC Press. https://doi.org/10.1201/9781315154701

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology, 81*(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329

Zhai, Z. (2025). Self-efficacy's influence on college students' academic performance. *Lecture Notes in Education Psychology and Public Media, 92*(1), 59–63. https://doi.org/10.54254/2753-7048/2025.22788

Zhao, W., & Lertlit, S. (2023). The enhancements of self-directed learning on tertiary level students' English reading skills: A Thai private university context. *LEARN Journal: Language Education and Acquisition Research Network, 16*(2), 588–602. https://so04.tci-thaijo.org/index.php/LEARN/index