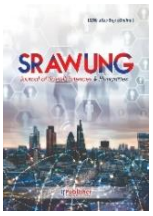

ISSN 2827-8151 (Online)
SRAWUNG: Journal of Social Sciences and Humanities
https://journal.jfpublisher.com/index.php/jssh
Vol. 5, Issue 1, (2026)
doi.org/10.56943/jssh.v5i1.917

Beyond Motivation: Multifactorial Determinants of Student Achievement in Cambodian Higher Education

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ABSTRACT

This study investigates factors contributing to academic achievement among undergraduate students in five higher education institutions in Phnom Penh, Cambodia. Employing a sequential explanatory mixed-methods design, the research collected quantitative data from 399 students through structured surveys and qualitative insights through semi-structured interviews with students, lecturers, and administrators. Multiple regression analyses revealed that personal factors explained 53.9 percent of variance in academic achievement, with motivation emerging as the strongest predictor ($\beta = 0.312$, $p < 0.001$), followed by time management ($\beta = 0.281$, $p = 0.001$) and self-efficacy ($\beta = 0.255$, $p = 0.002$). School climate and social factors accounted for 48.9 percent of variance, with teacher-student relationships ($\beta = 0.286$, $p < 0.001$) and peer support ($\beta = 0.234$, $p = 0.002$) demonstrating significant influence. Economic factors explained 46.4 percent of variance, with family income ($\beta = 0.322$, $p < 0.001$) and access to learning resources ($\beta = 0.286$, $p < 0.001$) constituting primary predictors. Environmental and ecosystem factors, particularly technology and internet access ($\beta = 0.297$, $p < 0.001$), accounted for 42.7 percent of variance. Students in private universities demonstrated moderately higher achievement than public university students ($p = 0.014$), while no significant gender differences emerged ($p = 0.407$). The findings extend existing theoretical frameworks by integrating contemporary factors including digital learning, technology integration, and psychosocial well-being. Recommended strategies encompass enhanced scholarships, strengthened lecturer-student relationships, expanded digital infrastructure, increased student participation in decision-making, and multi-stakeholder collaboration aligned with Cambodia's Vision 2050 and national education priorities.

Keywords: *Academic Achievement, Cambodia, Higher Education, Mixed Methods, Student Success*

INTRODUCTION

Education serves as a fundamental driver of national development, particularly in advancing human capital formation, fostering innovation, and sustaining economic growth (Paais, 2022; World Bank, 2023). Within the context of higher education, academic achievement functions as a critical indicator of both institutional effectiveness and student success (Felten & Lambert, 2020; Tight, 2020). Academic achievement reflects the extent to which students fulfill intended learning outcomes, a process influenced by an intricate interplay of personal, social, institutional, and environmental factors (Summak & Kalender, 2025). In Cambodia, enhancing academic performance at the undergraduate level has emerged as a national priority, explicitly articulated in the Pentagonal Strategy Phase I (2023–2028), which emphasizes the development of a quality education system capable of supporting a knowledge-based economy (RGC, 2023).

Over the past two decades, Cambodia's higher education system has undergone substantial expansion. However, persistent concerns regarding suboptimal student performance, elevated dropout rates, and insufficient alignment between university programs and labor market demands continue to challenge the sector (MoEYS, 2019). Despite increased access to higher education, numerous universities in Phnom Penh continue to face difficulties related to teaching quality, student engagement, and institutional capacity (Corrado et al., 2022). These ongoing challenges underscore the necessity for comprehensive investigation into the determinants of academic achievement among Cambodian university students. Cambodia's higher education landscape emerged relatively recently among Asian developing nations (C & Ford, 2004). Following Cambodia's transition from a socialist, centralized system to a capitalist, free-market economy in the early 1990s, attention to higher education as a mechanism for developing a skilled workforce intensified. Subsequent years witnessed significant transformations in Cambodia's higher education sector, characterized by both quantitative and qualitative expansion (Sok & Bunry, 2024). Despite notable progress in enrollment, demonstrated by the increase from approximately 10,000 students in 1997 to 240,000 in 2012, questions regarding educational quality have persisted. Student achievement has remained a central concern in national policy discourse, prompting the government to prioritize quality enhancement over mere quantitative expansion to prevent inefficient allocation of resources toward inadequate human capital development (MoEYS, 2005; Verver et al., 2024).

The global landscape is experiencing rapid transformation driven by the Fourth Industrial Revolution, characterized by advances in artificial intelligence, big data analytics, and automation (Schwab, 2017). These technological developments are fundamentally reshaping industries, economies, and educational systems worldwide. The integration of emerging technologies into various sectors has created both new opportunities and challenges for higher education institutions.

Consequently, demand for 21st-century competencies such as critical thinking, creativity, problem-solving, and digital literacy has intensified, rendering these skills essential for success in an increasingly competitive global economy (Ratten & Jones, 2021; Razzouk & Shute, 2012). This paradigm shift necessitates that higher education institutions adapt their pedagogical approaches and institutional practices to prepare students adequately for evolving workforce demands.

Previous research examining factors influencing academic achievement has predominantly focused on developed educational contexts, with limited attention to developing nations in Southeast Asia. International studies have identified multiple determinants of student success, including motivation, self-regulated learning strategies, institutional support systems, and socioeconomic factors (Credé & Kuncel, 2008; Richardson et al., 2012). More recent scholarship has expanded this framework to incorporate technological integration, learning environment quality, and psychosocial well-being as significant predictors of academic outcomes (Aristovnik et al., 2020; Händel et al., 2022). However, these studies have primarily examined Western educational settings, raising questions about their applicability to the Cambodian context, where cultural, economic, and institutional factors may operate differently.

Within the Cambodian context, existing research on higher education quality has predominantly employed descriptive approaches to examine teaching practices and institutional limitations. Chen et al. (2007) conducted a descriptive survey revealing that certain behavioral aspects of teaching and learning, such as limited student-teacher interaction and consultation, influenced educational quality in Cambodian universities. Nevertheless, their study did not provide robust empirical evidence regarding the specific relationships between particular teaching and learning characteristics and student academic achievement. Earlier investigations have disproportionately concentrated on teacher characteristics, such as subject knowledge and teaching experience, and isolated aspects of pedagogical processes, while the behavioral dimensions of teaching and learning in higher education have received insufficient attention (Chheng, 2024; Chiv et al., 2025; Oleksiyenko & Ros, 2019). Furthermore, these studies primarily focused on basic education rather than the higher education sector, creating a significant knowledge gap regarding university-level teaching and learning quality and its correlation with student achievement.

Despite governmental initiatives to improve teaching and learning quality as a central tenet of national policy, substantial disconnection persists between policy formulation and implementation (MoEYS, 2005). The Accreditation Committee of Cambodia (ACC), established in 2003 as the national accreditation agency, has played a significant role in developing institutional assessments and disseminating quality assurance policies (Sok & Bunry, 2024). Although representing a milestone in quality enhancement efforts, the ACC's initiatives have focused predominantly on institutional accreditation rather than comprehensive examination of teaching

and learning quality or its relationship with student achievement. Consequently, empirical research employing rigorous methodologies to assess effective teaching and learning practices and their connections to academic outcomes remains notably scarce in Cambodia. The absence of systematic, evidence-based research examining specific teaching and learning characteristics as predictive indicators of academic achievement among undergraduate students represents a critical gap in the literature.

To achieve sustainable economic development and enhanced global competitiveness, the Royal Government of Cambodia has established multiple strategic frameworks, including the Rectangular Strategy for Growth, Employment, Equity and Efficiency Phase IV, Cambodia's Vision 2030/2050, the National Strategic Development Plan 2019-2023, the Industrial Development Policy 2015-2050, the National Employment Policy 2015-2025, Cambodia's Science, Technology and Innovation Roadmap 2030, and the Cambodia Digital Economy and Society Policy Framework 2021-2035. These comprehensive policy instruments aim to transform Cambodia's economy and society in alignment with long-term developmental aspirations. However, limited research has been conducted examining how leadership in higher education institutions contributes to educational quality and student academic achievement within this evolving policy landscape.

This study addresses the identified gaps by examining factors influencing academic achievement among bachelor's degree students across five universities in Phnom Penh: BELTEI International University, National University of Management, National Institute of Entrepreneurship and Innovation, Phnom Penh International University, and the University of Cambodia. Employing a mixed-methods sequential explanatory design, this research investigates both quantitative relationships and qualitative dimensions of factors affecting student achievement. The study extends previous scholarship by integrating contemporary factors such as digital learning, technology integration, feedback culture, and psychosocial well-being alongside traditional predictors including lecturer quality, self-motivation, family support, and time management. Given the scarcity of empirical research in this domain, this investigation contributes essential knowledge for informing practice and policy. The findings offer critical insights into effective university teaching and learning practices in Cambodia and their relationships with student achievement, holding practical implications for policymakers, university administrators, and faculty members in similar developmental and educational contexts. This research seeks to address three fundamental questions: What are the major factors affecting students' academic achievement in bachelor's degree programs in Phnom Penh, Cambodia? What are the current institutional practices related to students' academic achievement in these programs? What strategies can most effectively promote students' academic achievement in Cambodian higher education? By answering these questions, this study aims to identify major

determinants of student achievement, explore existing institutional practices, and propose evidence-based strategies for improvement that align with Cambodia's national development priorities and the demands of the Fourth Industrial Revolution. The study examines four primary hypotheses regarding relationships between academic achievement and contributing factors:

1. H_1: There is a significant relationship between academic achievement and students' personal factors.
2. H_2: There is a significant relationship between academic achievement and family/students' economic factors.
3. H_3: There is a significant relationship between academic achievement and environmental and ecosystem factors.
4. H_4: There is a significant relationship between academic achievement and school climate social and cultural factors.

LITERATURE REVIEW

The Fourth Industrial Revolution, Artificial Intelligence, and 21st-Century Skills in Global Higher Education

The Fourth Industrial Revolution has fundamentally transformed global economies and industries through advances in artificial intelligence, big data analytics, robotics, and the Internet of Things (Schwab, 2017). These technological developments have precipitated profound shifts in employment patterns, rendering certain occupations obsolete while simultaneously creating opportunities in fields requiring higher-order cognitive and digital competencies. Consequently, critical thinking, creativity, collaboration, and digital literacy have emerged as essential 21st-century competencies (Xu et al., 2018). Higher education institutions have been positioned at the forefront of this transformation, bearing responsibility for equipping students with the knowledge and competencies necessary to navigate the complexities of the digital economy (Firmansyah & Humaidi, 2022). Academic achievement in higher education has become instrumental in developing a workforce capable of adapting to Industry 4.0 demands and enhancing global competitiveness (Hussin, 2018). Artificial intelligence, in particular, has dramatically altered educational landscapes by providing innovative approaches for students to engage with content while simultaneously necessitating the acquisition of new competencies for employment in AI-driven sectors (L. Chen et al., 2020; Popenici & Kerr, 2017).

In the contemporary globalized context, academic achievement in higher education extends beyond individual accomplishment to constitute a crucial element in shaping the future workforce that will drive economic growth in technologically advanced societies. Academic performance represents a fundamental component of both national and international competitiveness, as students who excel in higher education demonstrate greater capacity to address challenges posed by technological disruption (Marginson, 2010). The Royal

Government of Cambodia has prioritized addressing challenges of limited access to higher education, insufficient quality and relevance of programs, and inadequate institutional capacity to deliver educational services as essential strategies for enhancing human resource quality to foster economic development and strengthen competitiveness.

Regional Integration in ASEAN: One Community, One Destiny

The Association of Southeast Asian Nations has pursued regional integration under the principle of "one community, one destiny." Established in 2015, the ASEAN Economic Community aims to construct a highly competitive single market and production base facilitating free movement of goods, services, skilled labor, capital, and investment among member states (ASEAN, 2015). This integration necessitates a competitive, innovative workforce capable of prospering in an increasingly interconnected and knowledge-driven economy (Pandey & Pandey, 2022).

ASEAN member states have prioritized education, particularly higher education, as a mechanism for producing graduates possessing competencies required for international engagement and regional development. Educational institutions must align with regional labor market demands, emphasizing intercultural competence, multilingualism, and innovative capabilities (Chiv et al., 2025). Academic achievement in higher education assumes critical importance as it supports both individual success and broader regional objectives of sustainable development and economic integration. The ASEAN vision of regional integration and shared prosperity depends upon robust higher education systems that enhance academic standards and produce globally competitive graduates (Kheir, 2021).

National Policy Framework in Cambodia

The Cambodian government has recognized human capital development as fundamental to sustained economic progress. The Pentagonal Strategy Phase I articulates Cambodia's long-term development vision of achieving a high-income and resilient economy by 2050 (RGC, 2023). This vision emphasizes an efficient, competitive, inclusive, and sustainable economy supported by a highly productive workforce. Higher education plays a pivotal role in this strategy by developing the human capital necessary to drive economic advancement. Between 2000 and 2018, Cambodia experienced rapid economic growth, with gross domestic product expanding at an average annual rate of 7.0 percent. This growth contributed to substantial poverty reduction, with poverty rates declining from 47.8 percent in 2008 to 18.9 percent in 2012. Nevertheless, despite this progress, 71 percent of the population, particularly in rural areas, continues to subsist on less than three United States dollars per day (Eng & Lim, 2024; Phoumin & Kimura, 2019).

Rapid economic growth and diversification have generated increased demand for skilled labor. However, the education system has not adequately adapted to

these structural transformations, resulting in widening skills gaps (Vong, 2025). The gross enrollment rate for upper secondary education remains low, increasing only from 26.9 percent in 2018 to 30.1 percent in 2021 (MoEYS, 2021). Many student's complete upper secondary education with insufficient content knowledge, cognitive competencies, technical skills, and workplace readiness to meet employer expectations (Durdyev et al., 2021).

Theoretical Framework

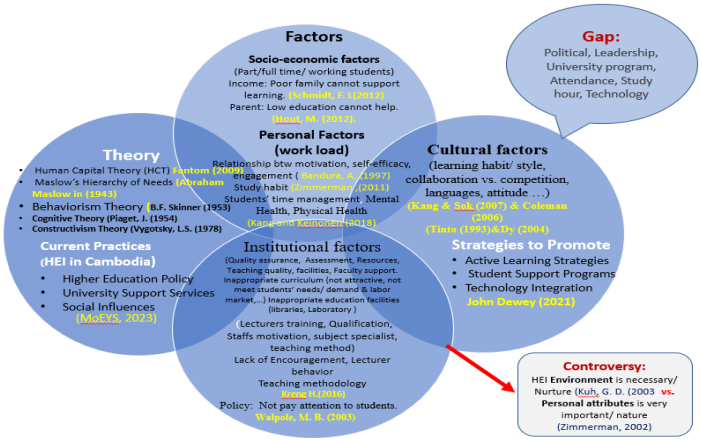

Figure 1 Literature Map
Source: Author's Analysis (2025)

The theoretical foundation of this study draws upon four seminal frameworks that collectively explain the multidimensional nature of academic achievement in higher education. First, Tinto's Student Integration Model proposes that academic and social integration within institutional contexts constitutes a decisive factor for student persistence and success (Tinto, 2012). This model emphasizes the importance of students' connections with the academic environment and social communities within universities. Second, Astin's Input-Environment-Outcome Model demonstrates how student characteristics, or inputs, interact with institutional environments to produce learning outcomes (Astin, 1997). This framework acknowledges that academic achievement results from complex interactions between individual student attributes and institutional characteristics.

Third, Bandura's Social Cognitive Theory underscores self-efficacy, motivation, and goal-setting as fundamental determinants of academic behavior (Bandura, 1986). This theoretical perspective emphasizes the role of individual agency and cognitive processes in shaping academic performance. Fourth, Bronfenbrenner's Ecological Systems Theory situates student achievement within nested systems ranging from microsystems to macrosystems, establishing connections among family, peer, and societal factors (Bronfenbrenner, 1981). This ecological perspective recognizes that student achievement is influenced by multiple contextual layers, from immediate interpersonal relationships to broader cultural and societal forces. These established theoretical frameworks justify the

multidimensional approach adopted in this research, which integrates personal, family and economic, environmental and technological, and institutional influences as contributing factors to academic achievement.

Conceptual Framework

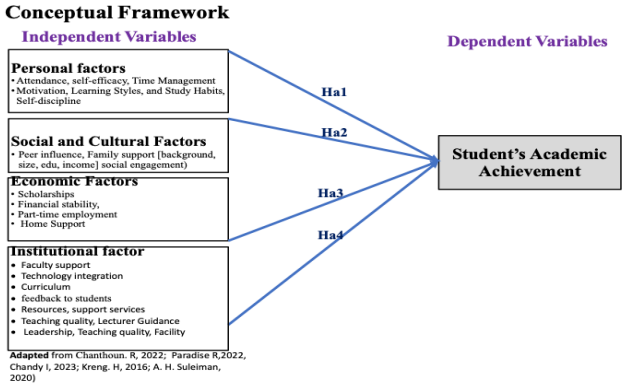

Figure 2 Conceptual Framework
Source: Author's Analysis (2025)

Building upon the theoretical foundations previously discussed, this study develops a comprehensive conceptual framework that examines relationships between multiple factors and academic achievement among undergraduate students in Cambodian higher education institutions. The framework identifies four primary categories of contributing factors: personal factors, family and economic factors, environmental and ecosystem factors, and school climate, social, and cultural factors. Personal factors encompass student motivation, self-efficacy, time management capabilities, and learning strategies. Family and economic factors include family support, socioeconomic status, and resource availability. Environmental and ecosystem factors comprise technology integration, learning environment quality, and digital literacy. School climate, social, and cultural factors incorporate lecturer quality, institutional support systems, peer relationships, and organizational culture. This conceptual framework posits that these factors interact dynamically to influence students' academic achievement, measured through grade point average, course completion rates, and learning outcome attainment. The framework guides the empirical investigation by identifying specific variables for measurement and hypothesized relationships for testing.

RESEARCH METHODOLOGY

This study employed a Sequential Explanatory Mixed-Methods Research Design, which integrates both quantitative and qualitative approaches to obtain a more comprehensive understanding of factors influencing students' academic achievement. A sequential explanatory mixed-methods design was employed,

beginning with a quantitative phase followed by a qualitative phase (Creswell & Poth, 2024). Quantitative phase: A survey measured four independent variable domains and academic achievement. Qualitative phase: Semi-structured interviews with high-performing students, lecturers, and administrators provided deeper insights into quantitative findings (Creswell & Creswell, 2023). This design was chosen to quantify relationships among variables and then explain underlying reasons through qualitative perspectives. To achieve the objectives of the study, a mixed research designs of Quantitative, Qualitative and correlational study) were employed in this study.

First, the quantitative is used followed by the qualitative ones. The Quantitative goal is to gather numerical data to test hypotheses and make predictions about a population while the qualitative one aims at understanding human behavior and explore the meaning behind that behavior and to cross-check the purpose. Descriptive research concerns with conditions of relationships that exist; practices that prevail; beliefs, processes that are going on; effects that are being felt; or trends that are developing. Descriptive statistics to compare the experiences of Bachelor of Education (BED) students and other courses (Non-BED students) and identify the factors that influence gender inequality in HEIs in Cambodia. A survey was used to collect quantitative data, a survey was conducted. A cohort of students was recruited for the survey, with the aim of achieving a level of precision with a maximum 6% standard error (Yamane, 1967). In addition, a random sampling approach was applied to select a smaller cohort for face-to-face interviews using a structured questionnaire. Multiple Regression study examines the positive relationship between two or more variables to determine whether they are related and, if so, how they are related. It can provide critical insights into how variables interact.

RESULTS AND DISCUSSION

Overview of Key Factors Influencing Academic Achievement

The quantitative and qualitative analyses identified four principal factors that significantly influence students' academic achievement in higher education institutions across Phnom Penh. Self-motivation emerged as the most influential factor (M = 4.10, SD = 0.844), followed closely by lecturer guidance (M = 4.08, SD = 0.739) and technology integration through internet and digital access (M = 4.08, SD = 0.738). Family support, encompassing both emotional and financial dimensions, also demonstrated substantial influence (M = 4.03, SD = 0.876). Additional factors including time management (M = 3.95, SD = 0.869), punctual class attendance (M = 3.91, SD = 0.833), quality of university learning environments (M = 3.92, SD = 0.826), peer support and collaborative learning (M = 3.88, SD = 0.817), and high-quality teaching materials (M = 3.83, SD = 0.791) were identified as contributing elements. All factors demonstrated strong reliability

coefficients (r > 0.859), indicating internal consistency of the measurement instruments. These findings suggest that academic achievement results from a complex interplay of personal attributes, institutional support systems, technological resources, and socio-economic factors, aligning with established theoretical frameworks while incorporating contemporary dimensions such as digital learning and psychosocial well-being.

Table 1 Descriptive Statistics of Factors Influencing Academic Achievement

Statement	Mean	SD	R
Personal (strong self-motivation)	4.10	0.844	r> 0.868
Social (Family supports emotionally and financially)	4.03	0.876	r> 0.870
Time management	3.95	0.869	r> 0.866
Attending Classes on time	3.91	0.833	r> 0.872
Receiving sufficient or advice academic guidance from lecturers.	4.08	0.739	r> 0.861
Have access to the internet and digital resources	4.08	0.738	r>0.869
The university learning environment (library, classrooms)	3.92	0.826	r>0.859
Peer support and group work	3.88	0.817	r>0.865
High-quality teaching materials	3.83	0.791	r>0.863

Source: Author's Analysis (2025)

Note. All reliability coefficients (r) exceed 0.85, indicating strong internal consistency.

The descriptive statistics presented in Table 1 reveal that students perceive self-motivation as the most critical factor contributing to their academic achievement, with a mean score of 4.10 out of 5.00. This finding underscores the centrality of personal effort, self-regulation, and goal-setting behaviors in sustaining academic success. Equally important, lecturer guidance and digital resource access both obtained mean scores of 4.08, suggesting that effective mentorship, constructive feedback, and technological infrastructure constitute essential components of the contemporary higher education learning ecosystem. Family support, with a mean of 4.03, demonstrates the continued relevance of socio-economic and emotional resources in facilitating student achievement. The relatively high standard deviations across all factors, ranging from 0.738 to 0.876, indicate considerable variability in student experiences and perceptions, suggesting that individual circumstances and institutional contexts may differentially affect how these factors operate. The strong reliability coefficients across all measured constructs provide confidence in the validity of the survey instrument and the consistency of student responses.

Current Institutional Practices Supporting Academic Achievement

Analysis of institutional practices revealed four major approaches currently employed by higher education institutions in Phnom Penh to support students' academic achievement. Universities regularly organize workshops and professional development programs (M = 3.99), providing students with opportunities to enhance their academic and professional competencies. Modern and well-maintained facilities (M = 3.97), including classrooms, libraries, and laboratories, create conducive environments for effective learning. Regular assessments of student performance (M = 3.85) ensure continuous monitoring of academic progress and facilitate timely provision of constructive feedback to enhance learning quality. Well-organized class schedules and manageable course loads (M = 3.88) contribute to reduced stress levels and improved time management among students. These findings indicate that higher education institutions in Phnom Penh have made significant progress in strengthening institutional support systems, particularly since 2021, aligning with strategic priorities articulated in the Pentagonal Strategy Phase I (2023–2028). Effective practices observed across the five participating universities include student-centered pedagogical approaches, provision of modern teaching resources, and implementation of digital learning initiatives. However, gaps persist in areas such as individualized academic support, accessibility of counseling services, and resource equity between private and public institutions. Nonetheless, institutional commitment to continuous quality improvement and human capital development is evident across all participating universities, suggesting a shared recognition of the importance of systematic support for student success.

Recommended Strategies for Promoting Academic Achievement

Respondents identified five principal strategies that could most effectively promote students' academic achievement. The highest-rated strategy involved increased student participation in educational decision-making processes (M = 4.10, SD = 0.653), reflecting students' desire for greater agency and voice in shaping their educational experiences. Provision of scholarships and financial support received strong endorsement (M = 4.08, SD = 0.765), highlighting the persistent importance of economic accessibility in higher education. Enhanced communication between students and faculty (M = 4.06, SD = 0.726) and expanded career and academic guidance services (M = 4.07, SD = 0.672) were identified as critical institutional improvements. Finally, increasing access to digital learning tools (M = 4.00, SD = 0.736) was recognized as essential for contemporary higher education. These findings suggest that promoting academic success requires implementation of a holistic, ecosystem-based model that integrates personal, social, economic, and institutional domains. Universities must transition from reactive support mechanisms to proactive development programs, including academic coaching, peer mentoring, and structured career preparation initiatives. Technology-enhanced learning emerges as fundamental to sustainability in post-

pandemic educational contexts. Effective collaboration among the Ministry of Education, Youth and Sport, higher education institutions, and private sector stakeholders will be essential to ensure equitable access and foster continuous innovation. The proposed strategies align with Cambodia's Vision 2050 and the Education Strategic Plan (2024–2030), which emphasize inclusivity, digital literacy, and global competitiveness as foundational principles for educational development.

Comparative Analysis: Gender and Institutional Type

Independent samples t-tests were conducted to examine potential differences in academic achievement based on gender and university type. Results are presented in Table 2.

Table 2 Independent Samples t-Test Results for Gender and University Type

Variable	Group 1 (M ± SD)	Group 2 (M ± SD)	t-value	p-value	Decision	Interpretation
Gender	Male = 4.07 ± 0.58	Female = 4.12 ± 0.61	t = -0.83	p = 0.407	Fail to Reject H_0	No significant gender difference in academic achievement
University Type	Public = 4.01 ± 0.60	Private = 4.16 ± 0.59	t = -2.48	p = 0.014	Reject H_0	Students from private universities reported slightly higher achievement than those from public institutions.

Source: Author's Analysis (2025)

The t-test analysis revealed no statistically significant difference in academic achievement between male (M = 4.07, SD = 0.58) and female (M = 4.12, SD = 0.61) students, t(397) = -0.83, p = 0.407. This finding suggests that gender does not constitute a determining factor in academic achievement among undergraduate students in Phnom Penh higher education institutions, indicating relative gender equity in educational outcomes. However, a statistically significant difference emerged between public (M = 4.01, SD = 0.60) and private (M = 4.16, SD = 0.59) university students, t(397) = -2.48, p = 0.014. Students enrolled in private universities reported moderately higher academic achievement compared to their counterparts in public institutions. This difference, while statistically significant, represents a small effect size, suggesting that institutional type exerts a measurable but modest influence on student outcomes. The finding may reflect differential

resource availability, class sizes, institutional support systems, or student selection effects between public and private higher education institutions in Cambodia.

Correlation Analysis Between Academic Achievement and Contributing Factors

Pearson correlation analyses were conducted to evaluate linear relationships between academic achievement and four core factor domains: personal factors, economic factors, environmental and ecosystem factors, and school climate, social, and cultural factors. Results are presented in Table 3.

Table 3 Pearson Correlation Analysis Between Academic Achievement and Contributing Factors

Variables Correlated	r - Value	Sig. (p)	Interpretation
AA↔ Personal F.	0.734	0.000	Motivation, time management, self-efficacy.
AA↔ Economic F.	0.681	0.000	Financial stability and family income.
AA ↔ En. & Eco. F	0.653	0.000	Digital tools and conducive environments.
AA ↔ School CS & Cul. F.)	0.699	0.000	Peer support and lecturer relationships.

Source: Author's Analysis (2025)

Note. AA = Academic Achievement. All correlations significant at $p < 0.001$.

The correlation analysis demonstrated strong positive relationships between academic achievement and all four factor domains. Personal factors exhibited the strongest correlation with academic achievement ($r = 0.734$, $p < 0.001$), indicating that individual attributes such as motivation, time management, and self-efficacy constitute primary determinants of student success. School climate, social, and cultural factors demonstrated the second strongest correlation ($r = 0.699$, $p < 0.001$), underscoring the importance of peer support networks and positive lecturer-student relationships. Economic factors showed a strong positive correlation ($r = 0.681$, $p < 0.001$), confirming that financial stability and family socioeconomic status significantly influence academic outcomes. Environmental and ecosystem factors, including digital tools and conducive learning environments, also demonstrated a strong correlation ($r = 0.653$, $p < 0.001$). These findings collectively suggest that academic achievement is influenced by multiple interconnected factors operating across individual, social, economic, and institutional domains, supporting the adoption of a comprehensive, multidimensional approach to understanding and promoting student success.

Hypothesis Testing Through Multiple Regression Analysis

Multiple regression analyses were conducted to test the four hypotheses regarding relationships between academic achievement and specific factor categories. Results are presented in Table 4.

Table 4 Multiple Regression Analysis Results for Hypothesis Testing

Hypothesis	Regression Results	Decision
Ha1. AA & personal factors.	$R = 0.734$, $R^2 = 0.539$, $p = 0.000$ β_1=(Motivation) = 0.312, p = 0.000 β_2=(Time Management) = 0.281, p = 0.001 β_3 (Study Habits) = 0.216, p = 0.003 β_4 (Self-Efficacy) = 0.255, p = 0.002	Accepted
	$R = 0.681$, $R^2 = 0.464$F, $p = 0.000$ β_1 (Family Income) = 0.322, p = 0.000 β_2 (Parents' Education) = 0.205, p = 0.001 β_3 (Financial Support) = 0.176, p = 0.004 β_4 (Part-Time Work) = -0.153, p = 0.007 β_5 (Access to Learning Resources) = 0.286, p = 0.000	Accepted
Ha2: AA & economic factors.	$R = 0.653$, $R^2 = 0.427$, $p = 0.000$ β_1 (Learning Environment) = 0.264, p = 0.001 β_2 (Technology & Internet Access) = 0.297, p = 0.000 β_3 (Classroom Facilities) = 0.185, p = 0.006 β_4 (Digital Tools Usage) = 0.211, p = 0.004	Accepted
Ha3: AA & envir & ecosystem factors. Ha4: AA & sch.. climate (social & cultural factors).	$R = 0.699$, $R^2 = 0.489$, $p = 0.000$ β_1 (Peer Support) = 0.234, p = 0.002 β_2 (Teacher-Student Relationship) = 0.286, p = 0.000 β_3 (Leadership Support) = 0.219, p = 0.003 β_4 (Cultural Engagement) = 0.205, p = 0.005	Accepted

Source: Author's Analysis (2025)

Note. AA = Academic Achievement. All regression models statistically significant at $p < 0.001$.

The multiple regression analyses provided support for all four hypotheses. Personal factors collectively explained 53.9 percent of variance in academic achievement ($R^2 = 0.539$, $p < 0.001$), with motivation emerging as the strongest predictor ($\beta = 0.312$, $p < 0.001$). Economic factors explained 46.4 percent of variance ($R^2 = 0.464$, $p < 0.001$), with family income constituting the strongest predictor ($\beta = 0.322$, $p < 0.001$). Notably, part-time work demonstrated a negative relationship with academic achievement ($\beta = -0.153$, $p = 0.007$), suggesting that employment obligations may detract from academic engagement. Environmental and ecosystem factors explained 42.7 percent of variance ($R^2 = 0.427$, $p < 0.001$), with technology and internet access as the strongest predictor ($\beta = 0.297$, $p < 0.001$). School climate, social, and cultural factors explained 48.9 percent of variance (R^2

= 0.489, $p < 0.001$), with teacher-student relationships emerging as the strongest predictor ($\beta = 0.286$, $p < 0.001$).

The findings demonstrate that academic achievement in Cambodian higher education is influenced by multiple interconnected factors. Motivation, lecturer guidance, digital access, and family support emerge as the strongest determinants of student success. Current institutional practices provide moderate support through workshops, modern facilities, regular assessments, and organized scheduling, though gaps persist in individualized support and resource equity between institutions. The most effective strategies combine skills development, enhanced institutional engagement through student participation in decision-making, and strengthened financial and infrastructural support. These findings suggest that effective promotion of academic achievement requires comprehensive, multi-level interventions addressing individual, institutional, and systemic factors simultaneously.

The findings demonstrate substantial alignment with established theoretical frameworks while extending them to incorporate contemporary factors relevant to 21st-century higher education. The strong influence of self-motivation ($\beta = 0.312$) and self-efficacy ($\beta = 0.255$) corroborates Bandura's Social Cognitive Theory (1986) and aligns with Deci and Ryan's Self-Determination Theory, emphasizing intrinsic motivation as a fundamental driver of academic performance (Deci & Ryan, 2000). The significant role of family support and economic factors ($R^2 = 0.464$) aligns with Astin's Input-Environment-Outcome Model (1993) and Bronfenbrenner's Ecological Systems Theory, confirming persistent socioeconomic influences on educational attainment (Bronfenbrenner, 1981; Reardon, 2011; Sirin, 2005). The negative relationship between part-time work and academic achievement ($\beta = -0.153$) suggests that employment obligations may interfere with academic engagement in the Cambodian context, holding significance for financial aid policy development (Darolia, 2014). The strong influence of lecturer guidance ($M = 4.08$) and teacher-student relationships ($\beta = 0.286$) aligns with Tinto's Student Integration Model and contemporary research emphasizing effective mentorship and positive faculty-student interactions (Felten & Lambert, 2020; Hagenauer & Volet, 2014; Tight, 2020; Tinto, 2012, 2017).

This study extends previous research on Cambodian higher education by integrating contemporary factors that received limited attention in earlier investigations. The strong influence of technology integration and internet access ($\beta = 0.297$) represents a significant extension beyond traditional models, reflecting the transformative impact of digital technologies particularly accelerated by the COVID-19 pandemic (Aristovnik et al., 2020; Händel et al., 2022). The findings both support and extend Chen et al. (2007) earlier work identifying limited student-teacher interaction as affecting educational quality, while providing empirical evidence of the specific magnitude of this relationship through rigorous quantitative methods. This research extends beyond previous descriptive studies by few

researchers by adopting a comprehensive framework incorporating personal, economic, environmental, and institutional factors, thereby providing a holistic understanding of academic achievement determinants (Chheng, 2024; Chiv et al., 2025; Oleksiyenko & Ros, 2019). The integration of 21st-century competencies and digital literacy into the analytical framework represents theoretical advancement acknowledging changing skill demands of the global knowledge economy and Fourth Industrial Revolution (Ratten & Jones, 2021; Schwab, 2017).

The finding that private university students report moderately higher achievement than public university students ($p = 0.014$) reflects resource disparities in Cambodian higher education, potentially attributable to differential investment in facilities, technological infrastructure, and support services (Marginson, 2016; Sok & Bunry, 2024). However, the absence of gender differences ($p = 0.407$) represents positive progress toward gender equity in academic outcomes. Student endorsement of increased participation in decision-making ($M = 4.10$), scholarships and financial support ($M = 4.08$), and enhanced faculty communication ($M = 4.06$) aligns with student-centered pedagogical approaches and contemporary best practices (Bovill et al., 2016; Tinto, 2012, 2017). These findings suggest that promoting academic achievement requires comprehensive interventions addressing individual motivation, institutional support, technological infrastructure, and socioeconomic accessibility. The proposed strategies align with Cambodia's Pentagonal Strategy Phase I (2023–2028), Vision 2050, and Education Strategic Plan (2024–2030), supporting national priorities of educational quality enhancement, digital transformation, and global competitiveness while requiring sustained collaboration among the Ministry of Education, Youth and Sport, higher education institutions, and private sector partners.

CONCLUSION

This study investigated factors contributing to academic achievement among undergraduate students in five higher education institutions in Phnom Penh, Cambodia, employing a sequential explanatory mixed-methods design with quantitative data from 399 respondents and qualitative insights from interviews with students, lecturers, and administrators. The findings demonstrate that academic achievement results from complex interactions among personal, familial, institutional, and environmental factors. Personal factors, particularly self-motivation, emerged as the strongest predictor of academic achievement, explaining 53.9 percent of variance, followed by school climate and social factors (48.9 percent), economic factors (46.4 percent), and environmental and ecosystem factors (42.7 percent). Within these domains, motivation ($\beta = 0.312$), family income ($\beta = 0.322$), technology and internet access ($\beta = 0.297$), and teacher-student relationships ($\beta = 0.286$) constituted the most influential individual predictors. These findings extend previous research in Cambodian higher education by integrating contemporary factors such as digital learning, technology integration,

and psychosocial well-being alongside traditional determinants, thereby providing a comprehensive framework for understanding academic achievement in the context of the Fourth Industrial Revolution and ASEAN regional integration.

The study contributes both theoretical and practical implications for higher education policy and practice in Cambodia. Theoretically, it validates established frameworks including Tinto's Student Integration Model, Astin's Input-Environment-Outcome Model, Bandura's Social Cognitive Theory, and Bronfenbrenner's Ecological Systems Theory while demonstrating their applicability to developing nation contexts and extending them to incorporate 21st-century competencies and digital learning environments. Practically, the findings suggest that promoting academic achievement requires comprehensive, multi-level interventions addressing individual motivation and self-regulation, institutional support and pedagogical quality, technological infrastructure and digital literacy, and socioeconomic accessibility through financial assistance. Recommended strategies include expanding scholarship programs to reduce reliance on part-time employment, enhancing lecturer-student relationships through mentorship initiatives, investing in digital infrastructure and technology integration, increasing student participation in educational decision-making, and strengthening collaboration among the Ministry of Education, Youth and Sport, higher education institutions, and private sector partners. These recommendations align with Cambodia's Pentagonal Strategy Phase I (2023–2028), Vision 2050, and Education Strategic Plan (2024–2030), supporting national priorities of educational quality enhancement, digital transformation, and global competitiveness. Future research should examine longitudinal trajectories of academic achievement, investigate differential effects across academic disciplines, and explore the sustainability of technology-enhanced learning interventions in post-pandemic educational contexts.

REFERENCES

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 Pandemic on Life of Higher Education Students: A Global Perspective. *Sustainability*, *12*(20), 8438. https://doi.org/10.3390/su12208438

ASEAN. (2015). *ASEAN 2025: FORGING AHEAD TOGETHER*.

Astin, A. W. (1997). What matters in college?: Four Critical Years Revisited. In *Liberal Education* (1st Edition, Issue 4). Jossey-Bass.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.

Bovill, C., Cook-Sather, A., Felten, P., Millard, L., & Moore-Cherry, N. (2016). Addressing potential challenges in co-creating learning and teaching: overcoming resistance, navigating institutional norms and ensuring inclusivity in student–staff partnerships. *Higher Education*, *71*(2), 195–208. https://doi.org/10.1007/s10734-015-9896-4

Bronfenbrenner, U. (1981). *The Ecology of Human Development*. Harvard University Press. https://doi.org/10.2307/j.ctv26071r6

C, P., & Ford, D. (2004). Cambodian Higher Education: Mixed Visions. In *Asian Universities: Historical Perspectives and Contemporary Challenges*.

Chen, C., Sok, P., & Sok, K. (2007). Benchmarking potential factors leading to education quality. *Quality Assurance in Education*, *15*(2), 128–148. https://doi.org/10.1108/09684880710748901

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, *8*, 75264–75278. https://doi.org/10.1109/ACCESS.2020.2988510

Chheng, D. L. (2024). QUALITY ENHANCEMENT OF HIGHER EDUCATION IN CAMBODIA. *Journal of Social Sciences and Humanities*, *3*(3), 83–102. https://doi.org/10.56943/jssh.v3i3.609

Chiv, S., Hong, K., Meak, C., Sam, R., Tieng, M., Yoeng, H., & Serey, M. (2025). Enhancing research on academic research capacity in Cambodian higher education institutions. *Discover Education*, *4*(1), 283. https://doi.org/10.1007/s44217-025-00723-z

Corrado, R., Than, S., & In, V. (2022). Cambodia's Digital Transformation: Not Only an Urban Matter. *AVI POLICY BRIEF* , *2*.

Credé, M., & Kuncel, N. R. (2008). Study Habits, Skills, and Attitudes: The Third Pillar Supporting Collegiate Academic Performance. *Perspectives on Psychological Science*, *3*(6), 425–453. https://doi.org/10.1111/j.1745-6924.2008.00089.x

Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (Sixth). SAGE Publication, Inc.

Creswell, J. W., & Poth, C. N. (2024). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications Ltd. https://uk.sagepub.com/en-gb/eur/qualitative-inquiry-and-research-design/book266033#main-content

Darolia, R. (2014). Working (and studying) day and night: Heterogeneous effects of working on the academic performance of full-time and part-time students. *Economics of Education Review*, *38*, 38–50. https://doi.org/10.1016/j.econedurev.2013.10.004

Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Durdyev, S., Mbachu, J., Thurnell, D., Zhao, L., & Hosseini, M. R. (2021). BIM Adoption in the Cambodian Construction Industry: Key Drivers and Barriers. *ISPRS International Journal of Geo-Information*, *10*(4), 215. https://doi.org/10.3390/ijgi10040215

Eng, H. E. P. D. R., & Lim, S. (2024). The Economic Development and Level of Poverty in Cambodia. *Educational Administration: Theory and Practice*. https://doi.org/10.53555/kuey.v30i6.5806

Felten, P., & Lambert, L. M. (2020). *Relationship-rich education : how human connections drive success in college*. Johns Hopkins University Press.

Firmansyah, E., & Humaidi, M. N. (2022). PENERAPAN MEDIA PEMBELAJARAN BERBASIS TEKNOLOGI DALAM MENGHADAPI TURBULENSI PENDIDIKAN YANG BERKEMAJUAN. *Research and Development Journal of Education*, *8*(2), 660. https://doi.org/10.30998/rdje.v8i2.13541

Hagenauer, G., & Volet, S. E. (2014). Teacher–student relationship at university: an important yet under-researched field. *Oxford Review of Education*, *40*(3), 370–388. https://doi.org/10.1080/03054985.2014.921613

Händel, M., Stephan, M., Gläser-Zikuda, M., Kopp, B., Bedenlier, S., & Ziegler, A. (2022). Digital readiness and its effects on higher education students' socio-emotional perceptions in the context of the COVID-19 pandemic. *Journal of Research on Technology in Education*, *54*(2), 267–280. https://doi.org/10.1080/15391523.2020.1846147

Hussin, A. A. (2018). Education 4.0 Made Simple: Ideas For Teaching. *International Journal of Education and Literacy Studies*, *6*(3), 92. https://doi.org/10.7575/aiac.ijels.v.6n.3p.92

Kheir, Z. (2021). *Higher Education in Southeast Asia and Beyond: 10th Commemorative Issue*. The Head Foundation.

Marginson, S. (2010). Higher Education in the Global Knowledge Economy. *Procedia - Social and Behavioral Sciences*, *2*(5), 6962–6980. https://doi.org/10.1016/j.sbspro.2010.05.049

Marginson, S. (2016). The worldwide trend to high participation higher education: dynamics of social stratification in inclusive systems. *Higher Education*, *72*(4), 413–434. https://doi.org/10.1007/s10734-016-0016-x

MoEYS. (2005). *Education Strategic Plan 2006-2010*.

MoEYS. (2019). *Education Strategic Plan 2019-2023*.

MoEYS. (2021). *Public Education Statistics and Indicators 2020-2021*. Open Development Cambodia.

Oleksiyenko, A., & Ros, V. (2019). Cambodian lecturers' pursuit of academic excellence: expectations vs. reality. *Asia Pacific Journal of Education*, *39*(2), 222–236. https://doi.org/10.1080/02188791.2019.1621797

Paais, M. (2022). The Influence of Facilities and Motivation on Employee Productivity at Kairatu Sub-District Office. *Journal of Multidisciplinary Research*, 21–31. https://doi.org/10.56943/jmr.v1i4.204

Pandey, U. C., & Pandey, V. (2022). Higher Education and Regional Integration in South-East Asia. In *Research Anthology on Measuring and Achieving Sustainable Development Goals* (pp. 1219–1235). IGI Global. https://doi.org/10.4018/978-1-6684-3885-5.ch063

Phoumin, H., & Kimura, F. (2019). Cambodia's energy poverty and its effects on social wellbeing: Empirical evidence and policy implications. *Energy Policy*, *132*, 283–289. https://doi.org/10.1016/j.enpol.2019.05.032

Popenici, S. A. D., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, *12*(1), 22. https://doi.org/10.1186/s41039-017-0062-8

Ratten, V., & Jones, P. (2021). Entrepreneurship and management education: Exploring trends and gaps. *The International Journal of Management Education*, *19*(1), 100431. https://doi.org/10.1016/j.ijme.2020.100431

Razzouk, R., & Shute, V. (2012). What Is Design Thinking and Why Is It Important? *Review of Educational Research*, *82*(3), 330–348. https://doi.org/10.3102/0034654312457429

Reardon, S. F. (2011). The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations. In *Whither*

Opportunity? Rising Inequality, Schools, and Children's Life Chances. Russell Sage Foundation.

RGC. (2023). *Pentagonal Strategy-Phase 1*. The Royal Government of Cambodia.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, *138*(2), 353–387. https://doi.org/10.1037/a0026838

Schwab, K. (2017). The Fourth Industrial Revolution. In *Journal of International Consumer Marketing* (Issue 3). Crown Currency.

Sirin, S. R. (2005). Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research. *Review of Educational Research*, *75*(3), 417–453. https://doi.org/10.3102/00346543075003417

Sok, S., & Bunry, R. (2024). *Higher Education in Cambodia* (pp. 5–18). https://doi.org/10.1108/S1479-367920240000049002

Summak, M. S., & Kalender, B. (2025). Unveiling Disaster-Induced Social Justice Failures Through the Widening Digital Divide Among Primary School Students: A Capability Approach Perspective. *SAGE Open*, *15*(3). https://doi.org/10.1177/21582440251369583

Tight, M. (2020). Student retention and engagement in higher education. *Journal of Further and Higher Education*, *44*(5), 689–704. https://doi.org/10.1080/0309877X.2019.1576860

Tinto, V. (2012). *Leaving college : rethinking the causes and cures of student attrition*. University of Chicago Press.

Tinto, V. (2017). Through the Eyes of Students. *Journal of College Student Retention: Research, Theory & Practice*, *19*(3), 254–269. https://doi.org/10.1177/1521025115621917

Verver, M., Dahles, H., & Danilov, C. (2024). The politics of economic development in Cambodia: Making Cakes without Flour? *Southeast Asian Studies*, *13*(3). https://doi.org/10.20495/seas.13.3_487

Vong, M. (2025). The Dynamics of Pro-Government Labour Mobilisation in Cambodia. *Journal of Contemporary Asia*, *55*(4), 561–577. https://doi.org/10.1080/00472336.2024.2383476

World Bank. (2023). World Development Report 2023: Migrants, Refugees, and Societies. In *World Development Report 2023: Migrants, Refugees, and Societies*. https://doi.org/10.1596/978-1-4648-1964-3

Xu, M., David, J. M., & Kim, S. H. (2018). The Fourth Industrial Revolution: Opportunities and Challenges. *International Journal of Financial Research*, *9*(2), 90. https://doi.org/10.5430/ijfr.v9n2p90