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Multigroup analysis of Islamic Higher Education and General Higher Education in Indonesia: the influence of family socioeconomic background, possibility of success, and self-efficacy on student academic performance with resilience as a mediator

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ABSTRACT

Universities aim to enhance students' acquisition of useful knowledge and skills, crucial for their future success. This correlational study investigates the relationships between family socioeconomic status, perceived probability of success, self-efficacy, and academic performance among Indonesian students in Islamic Higher Education (IHE) and General Higher Education (GHE). It further explores the mediating role of resilience in these relationships. Using Partial Least Squares Structural Equation Modeling (PLS-SEM) and Multigroup Analysis (MGA), data from 424 students (311 from IHE and 113 from GHE) were analyzed. Findings reveal that parental education and family economic status do not significantly predict resilience or academic performance in either group. However, self-efficacy significantly predicts resilience in both groups. Additionally, perceived probability of success positively predicts academic performance in both educational settings. Resilience significantly mediates and enhances academic performance, particularly among GHE students. The study emphasizes the importance of psychological factors like self-efficacy and resilience in supporting students' academic outcomes. Practical implications include developing specific programs or workshops to enhance university students' self-efficacy and resilience, such as stress management training, goal-setting sessions, and peer mentoring activities. Future studies should incorporate broader psychological and social variables across diverse student populations.

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Academic performance; perceived probability of success; resilience; self-efficacy; socioeconomic status

SUBJECTS
Educational Psychology; Higher Education; Sociology of Education

1. Introduction

Higher education institutions (HE) in Indonesia primarily fall into two distinct categories: Islamic Higher Education (IHE), which integrates religious values into its curriculum, and General Higher Education (GHE), which emphasizes secular and global academic standards (Asnawi & Setyaningsih, 2020; Juhaidi et al., 2024). While GHE institutions generally attract greater public interest due to perceived academic competitiveness, IHE plays an essential role in promoting religious moderation and advancing global Islamic studies (Abdullah, 2017; Muhlisin et al., 2023). Given these distinctive features, it is crucial to explore whether specific psychological and socioeconomic factors differently affect student academic performance within these two educational contexts.

Extensive research has highlighted factors such as family socioeconomic status, perceived probability of success, self-efficacy, and resilience as critical determinants of academic performance (Matteucci & Soncini, 2021; Sirin, 2005; Urhahne & Wijnia, 2023). Family socioeconomic status significantly influences educational outcomes, with students from higher socioeconomic backgrounds generally having better access to educational resources, emotional support, and conducive learning environments (Devi et al.,

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2022; Khalid et al., 2022; Munir et al., 2023). Moreover, socioeconomic background is statistically associated with perceived probability of success and self-efficacy. Students from low-income families tend to hold lower expectations of success (Juhaidi et al., 2024; Yuxiao & Chao, 2017), and socioeconomic status has been found to affect self-efficacy (Ward & Kim, 2023; Yerdelen-Damar & Peşman, 2013). Learners from economically disadvantaged backgrounds also face more significant educational challenges (Chien Thang & Thi Nguyet Trang, 2024), which may further lower their confidence and expectations for academic success. These challenges may further erode their confidence and diminish their expectations for success, ultimately exerting a negative impact on their academic performance.

Furthermore, perceived probability of success serves as a strong motivational factor that drives students to persevere in the face of academic challenges (Acosta-Gonzaga, 2023; Schunk & Mullen, 2012). Self-efficacy has consistently been identified as a robust predictor of academic achievement, influencing persistence, resilience, and strategic learning behaviors (Abdolrezapour et al., 2023; Komarraju & Nadler, 2013). In addition, resilience—defined as the capacity to adapt successfully to stress and adversity—plays a vital role not only as a direct contributor to academic success but also as a mediator between psychological and contextual factors (Li et al., 2024; Martin & Marsh, 2006; Mastrokoukou et al., 2024). Previous studies have demonstrated that resilience can mediate the impact of socioeconomic status and psychological constructs on educational outcomes, underlining its importance in the context of educational psychology (Aliyev et al., 2021; Cassidy, 2015; Zhang et al., 2024). This underscores the essential role of resilience in student success and the need to further investigate its interaction with other variables in educational settings.

To complement the strong empirical foundation of this study, the theoretical rationale is grounded in Expectancy-Value Theory (Eccles & Wigfield, 2002), which posits that individuals' motivation to engage in a task is shaped by their expectations for success and the subjective value they place on that task. In this framework, students' perceived probability of success (expectancy) and the importance they attach to academic achievement (value) are key determinants of their engagement and performance. Socioeconomic status can influence these motivational beliefs by shaping students' prior experiences, access to support, and exposure to success models. Furthermore, self-efficacy plays a central role in expectancy beliefs, while resilience contributes to students' sustained motivation despite adversity. By applying this theory, the study provides a coherent conceptual foundation to explain how contextual and psychological factors interact to shape students' academic outcomes.

However, there is limited empirical investigation that systematically examines these relationships within the dual higher education system in Indonesia. Specifically, little is known about how these predictors and mediators may operate differently between IHE and GHE. Addressing this gap, the current study formulates two research questions:

RQ1: How do family socioeconomic status, perceived probability of success, and self-efficacy influence academic performance differently among students in Islamic Higher Education (IHE) and General Higher Education (GHE)?

Based on empirical evidence highlighting significant relationships between these predictors and academic outcomes (Matteucci & Soncini, 2021; Sirin, 2005; Urhahne & Wijnia, 2023), we propose the following hypotheses:

H1: Family socioeconomic status positively influences academic performance differently among students in IHE compared to GHE.

H2: Perceived probability of success positively influences academic performance differently among students in IHE compared to GHE.

H3: Self-efficacy positively influences academic performance differently among students in IHE compared to GHE.

RQ2: Does resilience mediate the relationship between the predictors and academic performance differently across students from IHE and GHE?

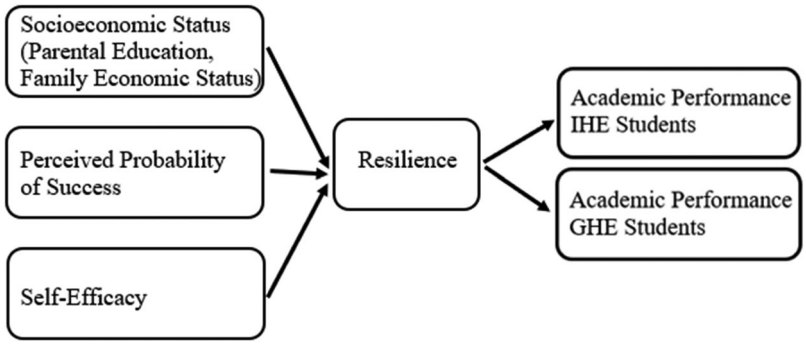


Figure 1. Conceptual model.

Considering the established mediating role of resilience (Cassidy, 2015; Mastrokoukou et al., 2024), we propose the following hypotheses:

H4: Resilience mediates the relationship between family socioeconomic status and academic performance differently among students in IHE compared to GHE.

H5: Resilience mediates the relationship between perceived probability of success and academic performance differently among students in IHE compared to GHE.

H6: Resilience mediates the relationship between self-efficacy and academic performance differently among students in IHE compared to GHE.

To further investigate these research questions, a more detailed set of hypotheses is presented in the Hypothesis Development section (Section 3), where the theoretical rationale and expected relationships are systematically elaborated.

To enhance clarity, Figure 1 illustrates the conceptual model that outlines the hypothesized structural relationships among the key variables.

2. Literature review

2.1. Socioeconomic status of the family

The socio-economic background of a family has a substantial impact on academic achievement (Dudaitė, 2016; Suna, 2020; F. Zhang et al., 2020;Ali et al., 2023). Students from affluent families typically have greater access to a range of educational resources, including books, technology, tutoring, and a supportive learning environment (Devi et al., 2022; Diemer & Rasheed Ali, 2009; Hu, 2024; Khalid et al., 2022; Munir et al., 2023; Razzaq et al., 2024; Rifat & Bithi, 2023; Sirin, 2005; Thomson, 2018). Conversely, children hailing from low socioeconomic circumstances frequently encounter numerous barriers that impede their academic achievement (Buckingham et al., 2013; OECD, 2020; Reardon et al., 2013).

The socioeconomic background of an individual can be determined by examining their family's income and the level of education attained by their parents (Bradley & Corwyn, 2002; Davis-Kean, 2005; Isaacs & Magnuson, 2011; Rodríguez-Hernández et al., 2020; von Stumm et al., 2022; Wen et al., 2020). Parental education is shown by the educational attainment of both the father and mother. In the Indonesian setting, family income is shown by the magnitude of tuition fees or individual tuition costs. As the parents' income increases, so does the amount they are required to pay for tuition fees.

The research was carried out within the academic setting of universities and schools. The impacts of different types of schooling in the Indonesian environment have not been compared. Hence, this study aims to investigate the disparities in the impacts of socio-economic status on GHE and IHE in Indonesia.

2.2. Possibility of success

In the context of educational motivation theory, the word 'possibility of success' refers to an individual's personal view regarding their likelihood of achieving success in a particular task or completing their

studies (Daniel & Watermann, 2018; Erikson & Jonsson, 1996). According to Eccles and Wigfield (2002), this belief has a significant impact on the selection of activities, the amount of work exerted, and the personal determination to achieve academic goals. Research has found that students who possess a strong belief in their ability to succeed tend to exhibit higher levels of motivation to learn, put in more effort, and employ more effective learning strategies. Consequently, these students see improvements in their academic performance (Acosta-Gonzaga, 2023; Hayat et al., 2020). Nevertheless, as stated by Flake et al. (2015), students who perceive significant costs, such as exerting a lot of effort or facing the possibility of failing, may decrease their efforts while having high expectations of achieving success.

These studies primarily examine the impact of achievement on motivation and academic performance. The direct and indirect impacts of the prospect of success on academic achievement have not been well investigated. Regarding methodology, there has been no comparison made between the two forms of education in Indonesia.

Recent research has begun to explore the intersection between students' perceived probability of success and their metacognitive abilities. Metacognition, defined as 'thinking about one's own thinking'. includes the regulation of learning through planning, monitoring, and evaluation (Flavell, 1979; Schraw & Dennison, 1994). The belief in the likelihood of academic success (possibility of success) plays a critical role in this regulatory process. Specifically, students who perceive a higher probability of success are more likely to engage in metacognitive strategies, such as goal setting, time management, and adaptive help-seeking (Hayat et al., 2020; Zimmerman, 2002). These strategies in turn reinforce motivation and academic performance. Research by Hayat et al. (2020) supports this view, showing that perceived academic self-efficacy and expectancy beliefs are significantly associated with the use of metacognitive learning strategies. Furthermore, the expectancy component of the Expectancy-Value Theory—reflected in the 'possibility of success' construct—directly influences students' engagement in reflective learning behaviors, which are foundational to metacognitive functioning (Eccles & Wigfield, 2002; Flake et al., 2015).

Thus, in this study, the variable 'possibility of success' is positioned not only as a motivational belief but also as a cognitive-motivational driver that facilitates metacognitive engagement, contributing indirectly to academic performance through enhanced self-regulation and learning awareness.

2.3. Self-efficacy

Self-efficacy is linked to an individual's subjective assessment of their own capabilities. Self-efficacy is a pivotal factor in shaping individuals' cognition, emotions, and behavior (Bandura, 1997; Cassidy, 2015; Schunk & DiBenedetto, 2022). Individuals who possess elevated levels of self-efficacy are more inclined to approach obstacles with a constructive mindset and exhibit unwavering determination in attaining their objectives, hence leading to enhanced academic success.

Research has substantiated the impact of self-efficacy on academic performance in many settings (Alhadabi & Karpinski, 2020; Hayat et al., 2020; Khan, 2013; Klassen & Tze, 2014; Musa, 2020; Zysberg & Schwabsky, 2021). Self-efficacy is a crucial factor that drives motivation in the process of learning (Muljana et al., 2023; Zimmerman, 2000). Individuals who possess a strong belief in their own abilities, known as high self-efficacy, are more likely to employ effective learning strategies, establish ambitious objectives, and demonstrate increased perseverance when confronted with scholastic challenges (Bembenutty, 2011; Kitsantas et al., 2011; Komarraju & Nadler, 2013). This demonstrates that self-efficacy has a direct impact on academic achievement by enhancing motivation and effort in studying.

Despite being conducted in different circumstances, these studies have not examined the comparative impact of self-efficacy on academic achievement between GHE and IHE. In addition, the researchers have not observed the indirect impact of self-efficacy on resilience among students in the fields of GHE and IHE. Thus, this study will close the methodological and population gap.

2.4. Resilience

Resilience is the ability to adapt successfully in the face of stress and adversity kesulitan (Chadwick, 2014; Cheshire et al., 2015; Horn & Feder, 2018; Masten, 2018; VanMeter & Cicchetti, 2020;

Wu et al., 2013). Resilience has the potential to impact performance in the field of education (Hong et al., 2020; Li et al., 2024; Martin & Marsh, 2006). According to Mastrokoukou et al. (2024), resilience has the potential to decrease psychological discomfort and enhance emotional regulation, leading to improved academic performance.

In addition to directly impacting academic performance, resilience also serves as a mediator for various factors including family socio-economic background (Erdem & Kaya, 2023; Michael & Kyriakides, 2023), the possibility of success (Jiang et al., 2018; Wigfield & Eccles, 2020), self-efficacy (Aliyev et al., 2021; Baños et al., 2023; Cassidy, 2015; Zhang et al., 2024), and academic performance. Resilience, which refers to the capacity to recover and adjust well in the presence of stress and challenges, can serve as a mediator in the connection between these elements and academic performance (Li et al., 2024).

Resilience enables students to surmount hurdles, sustain motivation, and remain concentrated on academic objectives in spite of encountering many challenges. Therefore, comprehending the function of resilience as a mediator can offer a more profound understanding of how factors such as family socio-economic background, possibility of success, and self-efficacy impact academic performance, particularly among GHE and IHE students in Indonesia.

2.5. Comparative characteristics of Islamic Higher Education (IHE) and General Higher Education (GHE)

Higher education institutions aim to equip students with essential knowledge and skills beneficial for their future success. This correlational study examines the relationship between family socioeconomic status, perceived probability of success, self-efficacy, and academic performance among students from Islamic Higher Education (IHE) and General Higher Education (GHE) institutions in Indonesia. The theoretical and empirical rationale for comparing these two types of higher education institutions stems from their distinct educational goals, value systems, curricular structures, and instructional approaches.

IHE institutions uniquely integrate general knowledge with Islamic religious values. Their primary objective is to produce graduates who are academically competent, possess strong religious character, and apply Islamic principles in daily life (Abdullah, 2017; Kraince, 2007). The IHE curriculum explicitly includes courses in Islamic studies, Islamic character education, and the integration of religious values into general courses (Muhlisin et al., 2023). Despite the focus on science-related subjects, Islamic morals, worship practices, and Islamic studies remain central themes and objectives in the learning process.

In contrast, GHE institutions focus predominantly on general academic disciplines without explicitly integrating religious elements into their curriculum. The main goal of GHE is to produce graduates with general academic and professional competencies who are well-prepared for the global and secular job market (Asnawi & Setyaningsih, 2020; Juhaidi et al., 2024). GHE emphasizes developing technical and scientific skills aligned with global employment market demands.

Furthermore, the learning modes between Islamic Higher Education (IHE) and General Higher Education (GHE) differ considerably. IHE institutions place greater emphasis on Islamic studies, even when teaching science-related disciplines. Islamic values and religious practices are consistently integrated into the curriculum. In contrast, GHE institutions do not place a particular focus on Islamic morals or religious observances in their teaching approach. Consequently, IHE is often closely associated with Islamic identity, regardless of the academic discipline being pursued. Both IHE and GHE employ face-to-face and online learning modalities. However, GHE institutions have been pioneers in implementing online learning. Universitas Terbuka, one of the GHE institutions, stands out as the only university in Indonesia that delivers its academic programs entirely through online learning.

While both educational systems maintain comparable academic standards and employ similar formal teaching methods, they differ significantly in their educational orientation, overarching goals, and the extent to which religious values are integrated—particularly in Islamic Higher Education (IHE). These fundamental differences may result in distinct learning outcomes and psychological impacts for students in IHE compared to those in General Higher Education (GHE). A comparative overview of these two educational types is presented in Table 1.

Table 1. Comparison between GHE dan IHE.

	GHE	IHE
Structure	Ministry of Higher Education, Science, and Technology	Ministry of Religious Affairs
Cost	Generally higher compared to IHE	Relatively low
Mode of delivery	Face-to-face, online, and blended learning	Face-to-face, online, and blended learning
Fields of study	STEM (Science, Technology, Engineering, Mathematics), Social Sciences and Humanities	STEM, Social Sciences and Humanities, and Islamic Studies; strongly associated with Islamic studies, while STEM fields are less emphasized
Objectives	Knowledge and skills development	Knowledge, skills, religious practice (ibadah), and Islamic moral development
Assesment	Formative and summative assessments	Formative and summative assessments, as well as behavioral, ethical, and religious (ibadah) evaluations

Note: Authors' own elaboration.

3. Hypothesis development

This section elaborates on the research questions by specifying detailed hypotheses to test each proposed relationship comprehensively. Based on a thorough review of the existing literature, we formulated a set of hypotheses to be tested in this study. These hypotheses reflect the relationships among socioeconomic background, possibility of success, self-efficacy, resilience, and academic performance in the context of Islamic and General Higher Education institutions in Indonesia.

H1	Father's education positively influences resilience in students of both Islamic Higher Education (IHE) and General Higher Education (GHE).
H2	Father's education positively influences academic performance in students of both IHE and GHE.
H3	Mother's education positively influences resilience in students of both IHE and GHE.
H4	Mother's education positively influences academic performance in students of both IHE and GHE.
H5	Family economic status positively influences resilience in students of both IHE and GHE.
H6	Family economic status positively influences academic performance in students of both IHE and GHE.
H7	Perceived probability of success positively influences resilience in students of both IHE and GHE.
H8	Perceived probability of success positively influences academic performance in students of both IHE and GHE.
H9	Self-efficacy positively influences resilience in students of both IHE and GHE.
H10	Self-efficacy positively influences academic performance in students of both IHE and GHE.
H11	Resilience positively influences academic performance in students of both IHE and GHE.
H12	Resilience mediates the relationship between father's education and academic performance in students of both IHE and GHE.
H13	Resilience mediates the relationship between mother's education and academic performance in students of both IHE and GHE.
H14	Resilience mediates the relationship between family economic status and academic performance in students of both IHE and GHE.
H15	Resilience mediates the relationship between perceived probability of success and academic performance in students of both IHE and GHE.
H16	Resilience mediates the relationship between self-efficacy and academic performance in students of both IHE and GHE.

4. Method

4.1. Participant

This study involved a total of 424 undergraduate students from Indonesia, consisting of 311 students from Islamic Higher Education (IHE) institutions and 113 from General Higher Education (GHE) institutions. The sampling was conducted using non-probability purposive sampling combined with snowball sampling techniques due to practical limitations during data collection (Stratton, 2021).

Participation was voluntary, and informed consent was obtained online. Participants were eligible if they had completed at least one semester of study and were actively enrolled in an IHE or GHE institution during the academic year 2023/2024. To ensure sufficient statistical power, an a priori power analysis was conducted using G*Power 3.1, which indicated that a minimum of 88 participants would be sufficient to detect a medium effect size ($f^2 = 0.15$) with $\alpha = 0.05$ and 0.85 power. Thus, our sample size meets the requirements for multigroup structural equation modeling (Hair et al., 2021). In other words, the sample in this study exceeded the minimum sample size determined by the power analysis.

The questionnaire was distributed online to participants via WhatsApp, either directly to students or through their lecturers. Participation was voluntary, and only those who agreed to take part completed the survey. The collected data were processed using Microsoft Excel to facilitate import into SmartPLS for further analysis.

4.2. Measurement

The instrument used in this study comprised two sections. The first section contained questions related to demographic and socio-economic background, including gender, age, institutional type (Islamic Higher Education [IHE] or General Higher Education [GHE]), parental education level, and family economic status (proxied by self-reported tuition amount).

The second section included indicators measuring psychological constructs. The perceived probability of success (5 items) was adapted from Daniel and Watermann (2018), to assess beliefs regarding the likelihood of academic success. The construct of self-efficacy (5 items) was adapted from Sherer et al. (1982), focusing on academic capabilities. Resilience (6 items) was measured using the Academic Resilience Scale (Cassidy, 2016), with items selected based on factor loadings from a pilot study. Academic performance (4 items) was measured using indicators based on GPA and goal attainment.

All items were scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scale reliability, convergent validity, and discriminant validity were assessed in accordance with PLS-SEM guidelines.

4.3. Statistical rationale

The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) with Multigroup Analysis (MGA) for several reasons. First, PLS-SEM is well-suited for predictive and exploratory modeling, especially when the primary goal is theory development and prediction of key target constructs (Hair et al., 2021). This method is also appropriate when the research model is complex, involves multiple relationships, and does not assume multivariate normality, which is common in social science data (Sarstedt et al., 2021). Given that our model examines the direct and indirect relationships among socioeconomic status, perceived probability of success, self-efficacy, resilience, and academic performance across two different educational settings (IHE and GHE), PLS-SEM was deemed the most appropriate.

To ensure robustness of the parameter estimates, we employed the bootstrapping resampling procedure with 15.000 resamples. Bootstrapping is preferred in PLS-SEM to test the significance of path coefficients because it does not rely on distributional assumptions and provides confidence intervals and p-values for hypothesis testing (Hair et al., 2021). This is particularly relevant when sample sizes, as in this study, are moderate ($n = 424$) but divided into smaller subgroups (IHE and GHE), which can limit statistical power under traditional parametric assumptions.

Furthermore, the use of Multigroup Analysis (MGA) was essential to compare whether structural path coefficients differ significantly between students from Islamic Higher Education and General Higher Education. Before conducting multigroup analysis (MGA), we assessed measurement invariance using the three-step MICOM procedure. Establishing at least partial (compositional) invariance is required to validly compare path coefficients across groups.

4.4. Face validity and pilot testing

Given that students enrolled in different educational systems (IHE and GHE) may interpret scale items differently, we conducted a pilot study to assess the face validity of all measures used. The importance of face validity as a preliminary but crucial step in scale construction has been emphasized by Allen et al. (2023). Thus, before the main data collection, we recruited a sample of 30 students, comprising 15 IHE and 15 GHE students, who were not part of the final study, to review and complete the full questionnaire.

During this pilot phase, students were asked to comment on the clarity, relevance, and comprehensibility of each item. Minor revisions were made to the wording of several items to improve clarity and cultural appropriateness, particularly for terms that might carry different connotations in religious versus general academic contexts. The feedback confirmed that the constructs were understandable and relevant to both groups, indicating satisfactory face validity. This step was crucial in ensuring that the instrument would be interpreted consistently across both educational contexts and minimizing measurement bias.

The refined version of the questionnaire was subsequently used in the main data collection phase.

4.5. Measurement invariance and multigroup comparability (MICOM)

To address potential common method bias, both procedural and statistical remedies were employed. Anonymity was ensured, and scale items were counterbalanced where applicable. Moreover, full collinearity VIFs were computed, and all constructs showed VIF values below 3.3, indicating no severe multicollinearity or bias from common method variance (Kock, 2015).

Before comparing path coefficients across Islamic Higher Education (IHE; $n = 311$) and General Higher Education (GHE; $n = 113$), we assessed measurement invariance using the three-step MICOM procedure. First, configural invariance was ensured by applying identical measurement specifications, indicator sets, data screening rules, and PLS algorithm/bootstrapping settings to both groups. Second, compositional invariance was tested via a permutation procedure with 5,000 runs, examining whether the correlation between composite scores across groups equals 1.00. Results indicated compositional invariance for all constructs (e.g. [Resilience: $c = 0.99$, $p = 0.36$; Self-efficacy: $c = 1.00$, $p = 0.41$; Possibility of Success: $c = 0.99$, $p = 0.28$; Academic Performance: $c = 0.98$, $p = 0.19$]). Third, equality of composite means and variances was examined; as is common in PLS-SEM, some constructs showed differences in means/variances.

Given that partial measurement invariance (i.e. compositional invariance) was established, multigroup analysis (MGA) is appropriate for comparing structural paths between IHE and GHE.

5. Result

5.1. Realibility, convergent, and discriminant validity

The outer model calculation confirms the construct's validity (outer loading > 0.7). We delete indicators that do not meet the requirements. To measure construct reliability, we use Cronbach's alpha and composite reliability. The results show that all constructs are reliable ($\alpha > 0.7$; CR > 0.7). Besides that. We confirm convergent validity with average variance extracted (AVE). The AVE score shows that the construct has met the requirements for convergent validity (AVE > 0.5). Table 2 below displays the results of the outer model analysis.

Furthermore, the results of the outer model of discriminant validity also fulfill the heterotrait-monotrait ratio (HTMT) requirements. The HTMT value of all constructs is below 0.85 (HTMT ≤ 0.85).

Table 2. Outer model.

	Outer loading	VIF	A	CR	AVE
Possib_Success*					
Ps2	0.847	1.889	0.844	0.886	0.662
Ps3	0.745	1.985			
Ps4	0.778	1.829			
Ps5	0.877	1.771			
Acad_Perform					
AP1	0.724	1.414	0.847	0.898	0.689
AP2	0.878	2.389			
AP3	0.870	2.596			
AP4	0.839	2.221			
Self_Efficacy*					
Sef1	0.832	1.828	0.804	0.864	0.560
Sef3	0.752	1.511			
Sef9	0.723	1.464			
Sef13	0.710	1.514			
Sef15	0.717	1.503			
Resilence*					
Rel3	0.739	1.620	0.861	0.895	0.588
Rel5	0.787	1.786			
Rel6	0.783	1.891			
Rel7	0.755	1.626			
Rel9	0.767	1.970			
Rel10	0.768	1.954			

Note: Outer Loading > 0.7; VIF < 3; a > 0.7; CR > 0.7; AVE > 0.5.
*We removed some indicator numbers due to they didn't meet the outer loading requirements.

Table 3. Discriminant validity.

	AP	IF	FE	ME	PS	Rs	SE
Acad_Perform (AP)							
Eco_Family (EF)	0.073						
Father_Educ (FE)	0.058	0.188					
Mother_Educ (ME)	0.043	0.258	0.700				
Possib_Success (PS)	0.207	0.038	0.079	0.078			
Resilience (Rs)	0.577	0.021	0.047	0.047	0.074		
Self_Efficacy (SE)	0.623	0.011	0.072	0.060	0.136	0.570	

Note: HTMT $\leq$ 0.85.

Table 4. Structural model.

	R-square	R-square adjusted	Model quality
Acad_Perform	0.383	0.375	Moderate
Resilence	0.236	0.227	Weak

Note. R2 < 0.19 very weak; 0.19≤R2 < 0.33 weak; 0.33≤R2 < 0.67 moderate; R2 > 0.67 substantial (Chin, 1998).

Thus, the data has met the requirements for further processing. The results of discriminant validity calculations can be seen in Table 3.

5.2. Structural model

The variables measured in this study have a modest impact of 37.5% on academic performance. In this study, exogenous variables had a 22.7% influence on the endogenous variable resilience. This demonstrates the presence of other external variables that have influence but were not included in the measurement of this investigation. In summary, we determine that the model we provide is suitable. The value of SRMR is 0.060, which is less than 0.1 (SRMR 0.060 < 0.1). Table 4 provides a visual representation of this information (Figure 2).

5.3. Hypotheses testing

Hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with bootstrapping (15,000 resamples). The results are presented by hypothesis in the following part. The findings of the direct effects are reported in Table 5, while the mediation effects are presented in Table 6.

5.3.1. Direct effects

The direct effect analysis examines the relationships between the independent variables (parental education, family economic status, perceived probability of success, and self-efficacy) and the dependent variables (resilience and academic performance). The results summarized in Table 5 show both supported and unsupported hypotheses across GHE and IHE groups.

5.3.2. Mediation effects

The mediation analysis focuses on the role of resilience as an intervening variable in the relationships between socioeconomic and psychological predictors and academic performance. As presented in Table 6, resilience significantly mediates only a few of the hypothesized paths, while most indirect effects are not statistically significant.

6. Discussion and implication

6.1. Discussion

The findings, while consistent with some prior research, also present surprising deviations that demand further theoretical and contextual consideration.

The findings suggest no significant statistical relationship between parental education (father and mother) and the resilience or academic performance of GHE and IHE students. This low statistical effect

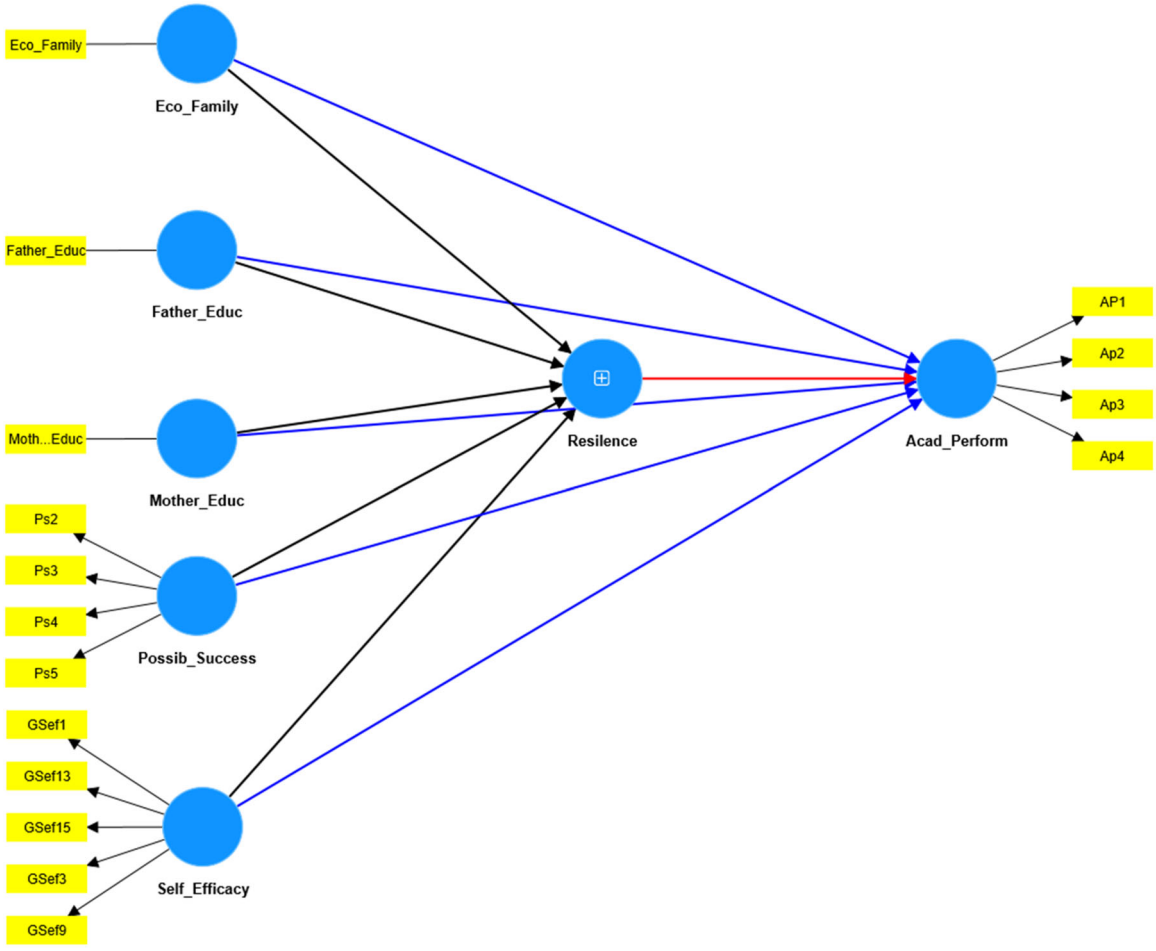


Figure 2. Proposed model.

Table 5. Direct effect test result.

Hypothesis	Path	β (GHE)	p (GHE)	β (IHE)	p (IHE)	Conclusion
H1	Father's education → Resilience	0.064	0.695	0.032	0.602	Rejected
H2	Father's education → Academic Performance	−0.143	0.279	−0.011	0.861	Rejected
H3	Mother's education → Resilience	−0.049	0.767	0.047	0.491	Rejected
H4	Mother's education → Academic Performance	0.027	0.846	0.020	0.732	Rejected
H5	Economic status → Resilience	−0.027	0.781	0.032	0.530	Rejected
H6	Economic status → Academic Performance	−0.095	0.224	−0.076	0.027	Partially Supported
H7	Possibility of Success → Resilience	0.098	0.277	−0.046	0.357	Rejected
H8	Possibility of Success → Academic Performance	0.153	0.046	0.136	0.001	Supported
H9	Self-Efficacy → Resilience	0.418	0.000	0.525	0.000	Supported
H10	Self-Efficacy → Academic Performance	0.193	0.083	0.429	0.000	Partially Supported
H11	Resilience → Academic Performance	0.504	0.000	0.241	0.001	Supported

Table 6. Indirect effect test result.

Hypothesis	Mediating path	β (GHE)	p (GHE)	β (IHE)	p (IHE)	Conclusion
H12	Resilience mediates Father's Education → Academic Performance	0.014	0.804	0.009	0.448	Rejected
H13	Resilience mediates Mother's Education → Academic Performance	0.006	0.919	0.008	0.529	Rejected
H14	Resilience mediates Economic Status → Academic Performance	−0.007	0.840	0.002	0.829	Rejected
H15	Resilience mediates Possibility of Success → Academic Performance	0.018	0.572	−0.009	0.334	Rejected
H16	Resilience mediates Self-Efficacy → Academic Performance	0.068	0.113	0.065	0.018	Partially Supported

confirms the finding that the role of parental education on academic achievement tends to be small (Cheung & Pomerantz, 2011). Even though the role of parents is important, formal parental education is not always directly related to students' academic results (Bhargava et al., 2017; Martinez-Yarza et al., 2024; Wang et al., 2019), the role of parents is often more related to the non-academic aspects of parenting (Spera, 2005; Wilder, 2014), and psychological emotional support plays a more critical role

than the influence of family socio-economic background (Chan et al., 2022; Hassan et al., 2023; MacCann et al., 2020; Rodríguez-Hernández et al., 2020).

Furthermore, family economic factors demonstrated varying associations across models. No significant relationship was found between economic status and resilience in either GHE or IHE, nor with academic performance in GHE. However, a significant association was observed between economic status and academic performance in IHE. This suggests that among IHE students, while economic status may not be linked to resilience, it tends to be associated with differences in academic performance, potentially due to variations in access to educational resources. These findings support research results that conclude that family economic status is often associated with greater access to educational opportunities that can improve academic outcomes (Annesha & Anwar, 2016; Chan et al., 2022; Finch & Finch, 2022; Zhang et al., 2020). This finding is interesting in the context of higher education in Indonesia: family economic factors do not consistently influence student resilience, both in GHE and IHE, but they significantly influence the academic performance of IHE students. This suggests that although resilience may be more dependent on internal factors and the social environment, access to better educational resources—often related to family economic status—can provide an advantage in terms of academic achievement in faith-based environments (Horwitz, 2021).

This study also reveals that the possibility of success is statistically significantly associated with academic performance among students in both GHE and IHE contexts. This is consistent with previous research showing that individuals' beliefs about their likelihood of success play an important role in determining their level of effort and persistence (Bandura, 1997). However, the finding that the possibility of success does not affect resilience may require further explanation. According to the Self-Determination Motivation Theory (Deci & Ryan, 2000), belief in success can increase resilience through increased autonomy and competence. Therefore, to fully understand the complexity of this relationship in the context of Indonesian students, further research may be necessary.

Notably, the non-significant paths between possibility of success and resilience challenge assumptions from Self-Determination Theory. This might reflect unique cultural norms among Indonesian students, where resilience is more relational or faith-driven than expectancy-driven.

However, our findings indicate a significant association between self-efficacy and both resilience and academic performance among IHE students, whereas this relationship was not significant for GHE students. This suggests that perceptions of one's own abilities may have a stronger relevance for students in IHE contexts. Research by Chemers et al. (2001) supports these findings, indicating that self-efficacy contributes to academic outcomes through its influence on motivation and learning strategies.

In GHE and IHE students, resilience only significantly mediated the relationship between self-efficacy and academic performance, not the relationship between parental education, family economic conditions, and the possibility of success. The study also found that there was no significant difference between GHE and IHE except for the effect of resilience on academic performance. This finding is quite surprising because studies have concluded that GHE and IHE have different characters (Fakhruddin, 2021). IHE focuses more on Islamist studies (Abdullah, 2017). IHE was established for graduates of madrasas and Islamic boarding schools (Kraince, 2007). GHE and IHE differ in terms of the structure of the field of science, education costs, and management (Juhaidi, 2024).

Considering the socio-cultural contexts, these findings may reflect that students in IHE are more likely to internalize resilience and self-efficacy through religious-based teachings and community-oriented learning styles, which are less emphasized in GHE. The different educational philosophies, learning environments, and institutional values between IHE and GHE might explain why certain psychological constructs function differently. The collective and religious orientation in IHE may enhance the role of self-efficacy and resilience, while GHE students, who operate in a more individualistic and competitive atmosphere, may prioritize other factors affecting academic performance. These socio-cultural influences should be carefully considered when interpreting the generalizability of the findings to other contexts or higher education systems outside Indonesia.

In religious educational settings such as IHE, prior research has shown that spiritual values can amplify the internalization of motivational constructs like self-efficacy, fostering grit and adaptive coping mechanisms (Horwitz, 2021).

This discussion highlights the importance of considering various contextual, psychological, and cultural factors in understanding student academic performance. This study adds a new dimension to the literature by identifying the different roles of these variables in the context of students in Indonesia. Additionally, differentiating between students at GHEs and IHEs provides deeper insight into the specific dynamics at each type of institution, which can help in designing more effective and targeted educational policies and interventions.

In addition, the non-significant relationships found in this study, particularly regarding parental education and family economic status, may suggest that psychological factors such as self-efficacy and resilience play a more central role than structural factors in influencing academic performance within the Indonesian higher education context. This finding might reflect the collectivist and religious cultural values embedded in Indonesian society, where students' academic development is often supported more by internal motivation and community-based support rather than solely by structural family background. In such cultural settings, parental education and family economic conditions may play indirect roles, while psychological resilience and self-beliefs become more salient predictors of academic success. This underscores the importance of recognizing the cultural specificity when interpreting these results, as similar patterns may not be observed in societies with different cultural orientations.

Furthermore, differences between IHE and GHE students emerged as crucial yet nuanced. Students in IHE are typically embedded in learning environments that emphasize religious values and community orientation, which may strengthen their self-efficacy and resilience. In contrast, GHE students operate within environments that emphasize individual performance and academic competition. These institutional and cultural differences likely influence how resilience and self-efficacy are formed and translated into academic performance. IHE students may internalize resilience through religious teachings and collective practices, while GHE students may develop resilience through personal achievement and competition. Recognizing these distinctions is essential for designing effective interventions and policies tailored to the specific needs of students within each educational system.

6.2. Theoretical implication

This study advances the field by integrating cultural and institutional dimensions into the established expectancy-value and self-efficacy frameworks, providing a novel multigroup comparison between faith-based and secular higher education systems in Indonesia. Such differentiation remains rare in the literature and offers nuanced insights into how educational context shapes psychological predictors of performance.

This study offers significant theoretical insights into the significance of emotional support, the possibility of success, self-efficacy, and interpersonal relationships in promoting student resilience and academic performance. This emotional support facilitates the development of students psychological resilience necessary to confront academic challenges. The study highlights that these elements not only contribute to enhancing resilience, but also directly influence academic performance, particularly for students engaged in GHE. In this particular setting, resilience is not only regarded as a significant attribute, but also as an essential component that impacts students' academic achievement.

Furthermore, this research shows that resilience has a significant impact on the academic performance of GHE students, requiring greater effort compared to college students. This shows that in the GHE environment, students are required to have high resilience abilities to achieve the expected academic achievements. In contrast, in the IHE context, resilience remains important, but its role in academic achievement is relatively less dominant. As a result, this research confirms that learning at GHE requires a more intensive approach to supporting the development of student resilience to ensure they are able to achieve optimal academic results.

6.3. Practical implication

This research confirms that belief in the possibility of success and self-efficacy are the main factors that support student academic performance, especially at IHE. Therefore, intervention approaches for IHE students need to be tailored to their specific needs, different from those of GHE students, considering differences in emotional support, interpersonal relationships, and strengthening self-efficacy. Educational

institutions are encouraged to strengthen programs that support the emotional environment and foster positive relationships between students and teaching staff, which have been proven to increase student motivation and ability to face academic challenges.

These findings also indicate that students at IHE need a more intensive self-efficacy development program, including training and inspiration from successful alumni, to increase their belief in the possibility of success. In addition, developing resilience is a main focus, supported by practical programs that emphasize coping skills, stress management, goal-setting, and peer mentoring to strengthen students' self-efficacy and help them manage academic pressure effectively. Active participation of parents and the community remains important, although the educational background of parents is not always significant. Meanwhile, inclusive education policies must take into account Indonesia's socioeconomic context in order to reduce social disparities. Educational institutions must also ensure that sufficient resources are available to support increased student resilience and academic performance, which will ultimately contribute to the development of quality and globally competitive human resources.

Policy-makers may consider differentiated interventions. In GHE, strategies could focus on academic resilience through competition-readiness, while IHE students may benefit from identity-anchored mentoring that integrates faith-based affirmations of personal efficacy

6.4. Limitation and future study

There are several limitations to this research. First, the sample was limited to students from specific IHE and GHE institutions in Indonesia. Therefore, caution is warranted when generalizing these findings to the broader student population or to students from different countries. Further, the research employed a cross-sectional design and relied solely on quantitative data, which may not fully capture the complex and distinctive characteristics between IHE dan GHE. Moreover, Indonesia's dual higher education system embodies distinctive cultural, religious, and institutional characteristics that may influence how students perceive resilience, self-efficacy, and academic performance.

Second, the study did not include more comprehensive psychosocial variables, which may limit its theoretical contributions to national higher education policy. This study did not fully examine important contextual variables such as students' psychological well-being, academic stress, social support, and religious commitment. The absence of these factors may limit the comprehensiveness of the model.

Third, the use of a cross-sectional design restricts the ability to draw causal conclusions. Future research is recommended to adopt longitudinal designs to capture dynamic changes in resilience, self-efficacy, and academic performance over time.

Furthermore, future studies are encouraged to further investigate the distinctive characteristics between IHE and GHE through qualitative methods or longitudinal designs. Employing a mixed-method approach that combines quantitative and qualitative data could provide deeper insights into the mechanisms through which resilience and self-efficacy influence academic success in diverse cultural and educational settings. Intervention studies are also encouraged to assess the effectiveness of programs aimed at fostering resilience and self-efficacy among students.

Such approaches may uncover deeper contextual insights that are not easily captured through cross-sectional quantitative data. Additionally, future research should consider incorporating more comprehensive psychosocial variables into the analytical model to enhance its explanatory power and to provide stronger, more policy-relevant theoretical contributions to the development of national higher education systems.

The cross-system comparison between GHE and IHE also contributes to educational policy by highlighting the cultural mediation of psychological constructs, emphasizing the need for culturally-responsive academic support models.

7. Conclusion

The results showed that overall, socio-economic background, especially parental education, had no significant influence on resilience or academic performance in both groups of students (GHE and IHE). This suggests that parents' formal education is not a strong predictor of students' academic performance in this context. However, we found that family economic factors significantly negatively impact academic

performance in IHE students, but not in GHE students. This suggests that limited access to educational resources may affect the academic performance of IHE students from low economic backgrounds.

Furthermore, the perception of the possibility of success had a significant influence on academic performance in both groups, but had no effect on resilience. This confirms that an individual's belief in the possibility of success plays an important role in motivation and academic outcomes. The study also found that self-efficacy had a significant effect on resilience and academic performance in IHE students, but the effect was not significant in GHE students. IHE students found resilience to act as a partial mediator between self-efficacy and academic performance, while GHE students showed no mediation.

Overall, this study makes an important contribution to understanding the dynamics of academic performance in the context of higher education in Indonesia, particularly in distinguishing the characteristics and factors that affect students in GHE and IHE. These findings have practical implications, including the need to develop more targeted intervention programs to improve self-efficacy and resilience, particularly for IHE students, in order to support their academic achievement.

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Credit authorship contribution statement

Hidayat Ma'ruf: Writing – review & editing, Writing – original draft, Validation, Software, Resources, Methodology, Formal analysis, Conceptualization.

Ahmad Juhaidi: Validation, Data curation, Software, Visualization.

Institutional review board statement

The Ethical Committee of the Islamic Education Guidance and Counseling Study Program, Faculty of Tarbiyah and Teacher Training, Antasari State Islamic University, Banjarmasin, Indonesia, has granted approval for this study on March 20, 2024 (Ref. No. 185/Un.14/II.2.p/03/2024).

Transparency

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The original data necessary for reproducing the aforementioned discoveries are accessible as additional material in this document and will be supplied upon demand.

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