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Do Study Skills Matter More than Gender? The Impact of Academic Self-Efficacy on Students Academic Performance

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Abstract
Student learning skills improve academic success. However, gender differences and internal psychological factors play an important role in academic performance. This study aims to analyze the influence of gender and academic self-efficacy on academic performance with study program selection as a mediating variable at a private university in East Java. This study uses a quantitative approach with a cross-sectional survey design on 157 respondents selected through stratified random sampling based on gender and study programs in Management and Accounting. The data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results show that academic self-efficacy has a positive and significant effect on academic performance, while gender does not have a direct significant effect on academic performance, but it does affect study program selection. These findings indicate that internal psychological factors of students, particularly academic self-efficacy, play a more dominant role in explaining variations in academic performance than demographic factors or study program differences.

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1. Introduction

Higher education is a fundamental right of every Indonesian citizen as enshrined in the 1945 Constitution of the Republic of Indonesia. Every citizen has the right to education and to benefit from the knowledge and technology, arts, and culture that they learn (Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, 1945). Education and achievement in higher education are inseparable. Student achievement can be demonstrated by good academic performance with attention to study skills. Learning strategies or methods are believed to be effective in improving academic performance (Laili & Andrianto, 2023; Crede & Kuncel, 2008). The development and strengthening of students' learning skills by integrating 21st-century skills and new teaching methods is one of the most important needs and roles in the higher education curriculum (Didarloo & Khalkhali, 2014; Firman et al., 2024; Birru, 2024). Academic performance in this study was measured using the average grade or GPA or grade point average. GPA is the most commonly used indicator to represent the accumulation of students' academic achievements (York et al., 2015). The difference in GPA between males and females shows varied results, making it an interesting topic for research.

In addition to learning skills, students' internal psychological factors also play an important role in determining academic success, one of which is academic self-efficacy. Self-efficacy greatly influences academic performance. Self-efficacy is a key component that refers to an individual's assessment of their own ability to organize and carry out the actions necessary to achieve the desired performance (Bandura in Honicke & Broadbent, 2016). Academic self-efficacy can be defined as an individual's belief in their ability to perform certain tasks or achieve certain goals, and it greatly influences all aspects of human activity, including cognitive regulation, motivation, affective processes, and individual choices (Bandura in Zhang, 2025). Academic self-efficacy refers to students' belief in their ability to perform the actions necessary to complete academic tasks effectively. The concept of self-efficacy is rooted in Bandura's Social Cognitive Theory, which states that an individual's belief in their abilities often determines behavior and learning outcomes more than objective abilities alone (Honicke et al., 2023).

Various empirical studies show that academic self-efficacy has a positive and significant effect on academic performance, including GPA, academic achievement, and student perseverance in learning mahasiswa (Honicke et al., 2023; Honicke & Broadbent, 2016; Zhang, 2025). Honicke & Broadbent (2016) state that self-efficacy and academic performance influence each other, and that academic performance can be improved by building self-efficacy. These findings are reinforced by the statement that self-efficacy has a significant effect on academic performance, emphasizing that academic self-efficacy works through learning behaviors such as self-regulation, time management, motivation, and perseverance, which influence and predict academic performance (Brashi, 2022; Isah et al., 2021; Musa, 2020).

On the other hand, in the context of higher education, differences in academic performance between male and female students have been a frequently researched topic, but the results of these studies remain varied. Current research discusses learning strategies and skills in developed countries (Didarloo & Khalkhali, 2014). A study conducted by Zhao, et al. (2023) at three universities in the United States states that students' self-management skills have a positive influence on academic achievement. Differences in academic performance are not only based on differences in measurement parameters, but also differences based on gender. Several previous academic studies have observed real differences in academic performance based on gender (Griffin et al., 2012; Gaisey et al., 2024; Galos et al., 2024; Salimin et al., 2024; Saxena et al., 2024).

Previous studies by Griffin, et al. (2012) state that women are more conducive and superior in academic performance than men in terms of anxiety, information processing, motivation, self-testing, technical support, and time management. Fazal, et al. (2012) found in their study that women outperform men in terms of academic achievement, and women prefer to use their learning skills more than men. These findings are reinforced by a study conducted by Salimin, et al. (2024), which found that women outperform men in all fields of study. In addition, women tend to excel in literacy while men often excel in numeracy (Pugu & Aslan, 2025). However, different study results reveal

that activities and culture reinforce gender differences in academic performance (Silva & Shinkoda, 2024). These differences in academic performance are thought to be influenced by various factors, one of which is the field of study or study program chosen (Afrianda et al., 2024; Alfonso et al., 2022; Wrigley-Asante et al., 2023). Although the relationship between gender and academic performance has been extensively studied, very few studies have considered study program selection as a mediating variable at the university level in Indonesia. Therefore, this study needs to be conducted to fill the gap in the influence of gender and academic self-efficacy on academic performance through the selection of study programs as a mediating variable at a private university in East Java, focusing on Management and Accounting study programs.

The results of a study by Wrigley-Asante et al. (2023) reveal significant differences in student academic performance based on gender in Science, Technology, Engineering, and Mathematics (STEM) programs. Another study by Vries et al. (2024) states that differences in academic performance between men and women do not only depend on intrinsic abilities but are also influenced by the fit between individual preferences and characteristics and the chosen study program environment. It can be concluded that gender affects academic performance through study program selection. This is reinforced by a study conducted by Laksono & Patriot (2024) that social norms and gender stereotypes influence study program selection, which implicitly mediates the influence between gender and academic performance in STEM.

Meanwhile, the results of the meta-analysis by Voyer & Voyer (2014) reveal that the effect of gender on academic performance is relatively small. Differences in curriculum characteristics and learning demands in Management and Accounting study programs can affect students of different genders in adapting and achieving. Based on a review of the literature, a research gap can be identified in that although the influence of gender on academic performance has been widely studied, very few studies have considered study program choice as a mediating variable, particularly comparisons between management and accounting study programs within the same faculty.

1.1. Literature Review

1.1.1. Academic Performance

Academic performance is a form of academic achievement, the attainment of learning objectives, and the acquisition of skills and competencies as aspects of academic success. Academic performance can be defined as the level of student learning achievement that can be measured through formal indicators such as Grade Point Average. GPA is the most commonly used indicator in presenting the accumulation of students' academic performance (Griffin et al., 2012; York et al., 2015). GPA is an objective quantitative measure for comparing achievements among students. Studies show that GPA is influenced by learning skills, namely time management, motivation, and demographic factors such as gender (Crede & Kuncel, 2008). Similar results were also revealed by Griffin et al., (2012); Hassanbeigi et al., (2011), who found that learning habits and skills (time management, motivation, self-testing, concentration, reading and note-taking) are positively correlated with GPA/IPK. The latest research results from Patzak et al., (2025) show that time management and mentoring interventions have a significant effect on GPA, academic goals, and learning skills. Academic performance reflects individual learning outcomes and is seen as an early indicator of future job performance. In HR management strategies, good academic performance is used to identify high-potential talent and serves as a basis for organizations in planning strategic HR development programs.

1.1.2. Gender

Gender is understood as a social construct of roles, expectations, and stereotypes of men and women, not merely biological differences, which can shape study choices and learning styles, ultimately affecting academic performance (Wrigley-Asante et al., 2023). Meta-analysis studies show that, on average, women have slightly higher academic performance (as indicated by report card grades or GPA) than men in almost all subjects and levels of education (Voyer & Voyer, 2014). Other research has found that men are more likely to choose and remain in STEM programs, while women

are more dominant in the social sciences, health, and education, each of which has a different learning culture and assessment system (Bowman et al., 2022).

1.1.3. Academic Self-Efficacy

Academic self-efficacy is an individual's belief in their own ability to organize, carry out, and complete academic tasks in order to achieve specific learning goals. The concept of academic self-efficacy is rooted in Albert Bandura's Social Cognitive (Honicke et al., 2023; Honicke & Broadbent, 2016). This concept is closely related to psychological capital (PsyCap) in HR strategies, which plays an important role in shaping motivation, commitment, and performance. Research results show that PsyCap plays an important role in determining academic outcomes, such as academic performance, learning engagement, adjustment, lower stress, and intrinsic motivation of students (Li et al., 2023). Academic self-efficacy is related to PsyCap, which consists of hope, efficacy, resilience, and optimism, which have been proven to contribute to motivation, commitment, and academic performance (Basith et al., 2020).

1.2. Hypothesis Development

1.2.1. Gender and Academic Performance

There are inconsistencies in the findings related to differences in academic performance based on gender. Griffin et al., (2012) stated that there are differences in GPA between males and females. Gender affects GPA through learning skills. Studies indicate that women excel in academic achievement, learning skills, anxiety, and time management (Fazal et al., 2012; Griffin et al., 2012; Salimin et al., 2024). However, the results of a study by Pugu & Aslan (2025) reveal that men have an advantage in numeracy, while women excel in literacy. A study by Yau et al., (2025) shows that men have higher academic buoyancy (the ability to overcome challenges and setbacks in academic life), even though women often have higher final grades. Furthermore, Laksono & Patriot (2024) in their study reviewed that gender, social norms and structural barriers, as well as different study program choices between men and women, affect academic performance.
H1: Gender has a positive effect on academic performance.

1.2.2. Academic Self-Efficacy and Academic Performance

Academic self-efficacy has a positive effect on academic performance. Academic self-efficacy influences each other. Students who have high confidence in their academic abilities will tend to show better academic performance than students with low academic self-efficacy (Honicke & Broadbent, 2016; Zimmerman, 2000).
H2: Academic self-efficacy has a positive effect on academic performance.

1.2.3. Gender and Study Program Selection

Study Program selection is influenced by individual and social factors, including gender, social norms, and expectations of academic success. Individuals choose a field of study not only because of their academic abilities, but also because of their expectations of success and the perceived value of the chosen field. In addition, social factors such as gender stereotypes, social or family expectations, and cultural norms contribute to shaping expectations for success and the value of study programs, thereby influencing study program selection decisions studi (Eccles & Wigfield, 2002). Empirically, the selection of study programs in higher education is greatly influenced by gender. Studies show that women are underrepresented in STEM programs and are more likely to choose social, health, and education fields. Meanwhile, men are relatively more likely to choose and remain in STEM programs (Mann & DiPrete, 2013).
H3: Gender has a Positive Effect on Study Program

1.2.4. Academic Self-Efficacy and Study Program Selection

Referring to Social Cognitive Career Theory (SCCT), academic self-efficacy influences interest, outcome expectations, and study program selection goals (major choice goals). The results of the study show that self-efficacy in certain fields (such as STEM) directs a person's interests and goals

to choose and avoid certain study programs, including STEM study programs (Amnah & Rauf, 2024).
H4: Academic Self-Efficacy has a positive Effect on Study Program

1.2.5. Study Program Selection on Academic Performance

Study programs have different characteristics, curricula, academic cultures, and assessment systems. This is one of the reasons why the average GPA between study programs is not the same. The results of the study show that the average GPA in STEM study programs tends to be lower than in non-STEM majors, while education and humanities fields are often reported to have higher GPAs. Vries et al. (2024) state that differences in academic performance are also influenced by the fit between individual preferences and characteristics and the chosen study program environment.
H5: Study Program has a Positive Effect on Academic Performance

1.2.6. Gender and Academic Performance through Study Program Selection

Several literature studies mention that, in general, women have higher academic achievements (as indicated by report cards or GPAs) than men. However, the magnitude and direction of this gap greatly depend on study program selection, assessment system, and academic culture. Study results indicate that women excel in academic achievement, learning skills, and aspects of anxiety and time management (Fazal et al., 2012; Griffin et al., 2012; Salimin et al., 2024). However, academic performance success also needs to consider the fit between individual preferences and characteristics and the chosen study program environment (Vries et al., 2024).
H6: Gender has a Positive Effect on Academic Performance through Study Program

1.2.7. Academic Self-Efficacy on Academic Performance through Study Program Selection

Honicke & Broadbent (2016) state that academic self-efficacy and academic performance influence each other. Empirical studies show that self-efficacy has a significant effect on academic performance, confirming that academic self-efficacy works through learning behaviors such as self-regulation, time management, motivation, and perseverance, which influence and predict academic performance (Brashi, 2022; Isah et al., 2021; Musa, 2020). The compatibility between academic self-efficacy and the chosen study program will strengthen the chances of good academic performance, so that the choice of study program becomes an important pathway that connects self-efficacy with academic performance.
H7: Academic Self-Efficacy has a Positive Effect on Academic Performance through Study Program

2. Method

This study is quantitative research, with an analytical survey using a cross-sectional design, where the independent and dependent variables in this study were identified at the same time. The population in this study consisted of 257 undergraduate students at a private university in East Java, Indonesia. Due to considerations of time and resource efficiency, the sample size was determined using the Slovin formula with a 5% margin of error, resulting in 157 students. The sampling technique used stratified random sampling, with samples taken randomly based on the students' gender and choice of study program (Sekaran, 2016).

The independent variables in this study are gender and academic self-efficacy. Meanwhile, the dependent variable is academic performance through the choice of study program as a mediating variable. Data collection was carried out by distributing a set of questions or questionnaires via Google Forms. The questionnaire in this study was in the form of statements, which included demographic data, namely: gender, age, study program, and GPA. The measurement of academic performance refers to a learning skills questionnaire consisting of eight domains, adapted from The Study Skill Assessment Questionnaire (SSAQ), namely time management and procrastination, concentration and memory, study taking and not-taking, test strategies and test anxiety, ability to process and analyze information, motivation and attitude, reading and selecting main ideas, and writing (Hassanbeigi et al., 2011;UHCL, 2021). Meanwhile, the measurement of the self-efficacy academic adaptation variable was adapted and modified from the academic self-efficacy scale by

Hemade et al. (2025) with the main indicators being: confidence in mastering the material, confidence in completing academic tasks, resilience in facing difficulties, self-confidence in academic evaluation, and the ability to manage the learning process. The measurement instrument uses a 4 (four) Likert scale, namely "1: never", "2: sometimes", "3: usually", and "4: always". The collected data is then analyzed using SEM-PLS (Abdillah & Hartono, 2015).

3. Results and Discussion

Respondent demographic data is shown in Table 1.

Table 1. Description of Respondents

Characteristics		Frequency	Percentages (%)
Gender	Male	60	38.2
	Female	97	61.8
Age (years old)	18-20	20	12.7
	21-23	114	72.6
	>24	23	14.6
Study Program	Undergraduate Management Study Program	87	55.4
	Undergraduate Accoounting Study Program	70	44.6

Based on Table 1 above, female respondents dominated the gender characteristics with 97 respondents (61.8%), while male respondents numbered 60 (38.2%). This shows that female respondents participated more in this study than male respondents. Furthermore, when viewed by age group, most respondents were in the 21-23 age range, namely 114 people (72.6%). This was followed by respondents in the age range above 24 years old, totaling 23 people (14.6%), while respondents in the age range of 18-20 years old were the smallest age group, totaling 20 people (12.7%). The age group distribution shows that the respondents were dominated by students of productive age and commonly found at the undergraduate level. When viewed based on study program, respondents from the Bachelor of Management study program were more numerous, numbering 87 people (55.4%), while respondents from the Bachelor of Accounting study program numbered 70 people (44.6%). This composition shows that the respondents were relatively balanced, although Bachelor of Management students had a slightly larger proportion than Bachelor of Accounting students. Overall, the demographic distribution of respondents shows that this study is dominated by female respondents and those from the Bachelor of Management study program, reflecting the general characteristics of undergraduate students.

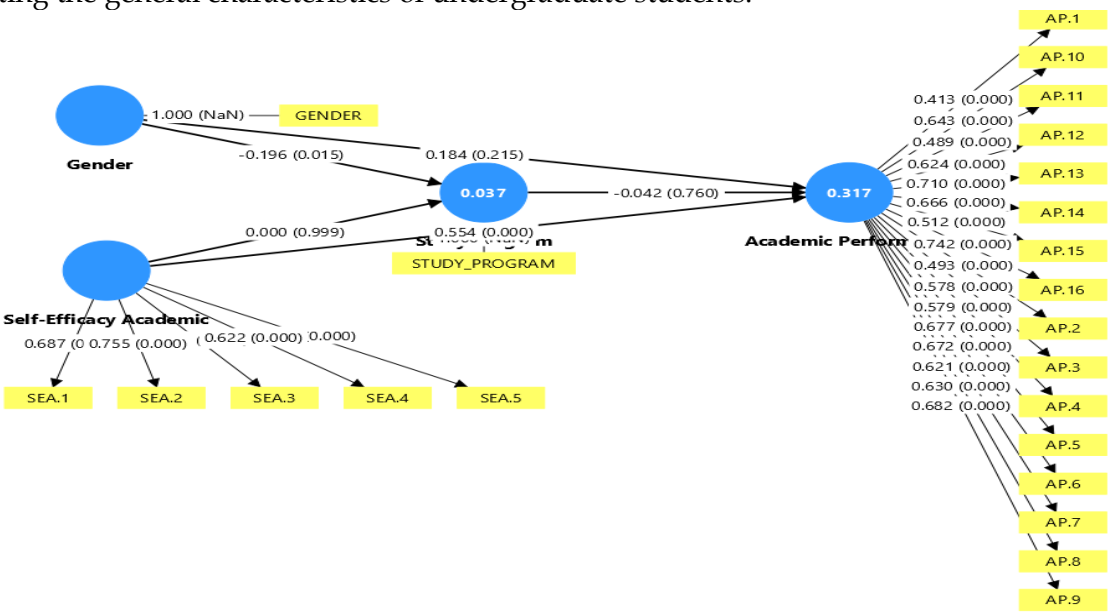

Figure 1. Path Coefficient Test Results

Table 2. Direct Hypothesis Testing

Keterangan	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Gender -> Academic Performance	0.184	0.184	0.148	1.239	0.215
Self-Efficacy Academic -> Academic Performance	0.554	0.572	0.050	11.111	0.000
Gender -> Study Program	-0.196	-0.197	0.081	2.426	0.015
Self-Efficacy Academic -> Study Program	0.000	0.000	0.041	0.001	0.999
Study Program -> Academic Performance	-0.042	-0.039	0.139	0.305	0.760

3.1. Gender and Academic Performance

Referring to the table above, with a path coefficient value of 0.184 and a P-value of 0.215, it can be interpreted that gender does not have a significant effect on academic performance. This shows that gender differences do not directly affect students' academic performance. The results of this study are in line with the research by Voyer & Voyer (2014) that the difference in GPA between male and female students is relatively small at the college level. Conceptually, students face a relatively equal curriculum, grading system, and academic demands, so that gender differences in biological and social terms tend to weaken (Vries et al., 2024). These findings reinforce the view that academic performance is determined more by psychological factors and learning strategies than by demographic characteristics. Academic performance is determined more by learning strategies and skills than by gender demographic characteristics themselves (Crede & Kuncel, 2008; Griffin et al., 2012).

3.2. Academic Self-Efficacy on Academic Performance

The analysis results show a path coefficient of 0.554 and a p-value of 0.000, indicating that Academic Self-Efficacy has a significant positive effect on Academic Performance. This means that the higher a student's confidence in their academic abilities, the higher their academic performance. This finding is consistent with Bandura's Social Cognitive Theory (SCT), which states that self-efficacy influences an individual's behavior, effort, persistence, and resilience in facing academic challenges. These results align with previous research that students with high self-efficacy tend to have better self-regulation, motivation, and learning strategies, resulting in higher academic performance (GPA) (Honicke et al., 2023; Honicke & Broadbent, 2016; Musa, 2020; Zimmerman, 2000). Therefore, academic self-efficacy can be positioned as a primary determinant of student academic performance.

3.3. Gender on Study Programs

Based on the table above, the path coefficient is -0.196 and the p-value is 0.015, indicating that gender has a significant negative effect on study program selection. A negative coefficient value indicates differences in gender preferences in selecting specific study programs. This finding supports the study by Eccles & Wigfield (2002) that social norms, gender stereotypes, and expectations of academic success influence study program selection decisions. This finding is further supported by the study by Laksono & Patriot (2024) that social norms and gender stereotypes influence study program choice, implicitly mediating the influence between gender and academic performance in STEM. In the context of this study, female students tended to choose non-STEM study programs such as Management and Accounting, which are socially perceived as more appropriate to certain gender characteristics and roles. This suggests that study program selection is still influenced by the social construct of gender.

3.4. Academic Self-Efficacy and Study Program Selection

Test results showed that academic self-efficacy had no significant effect on study program selection, as indicated by a path coefficient of 0.000 and a P-value of 0.999. This indicates that students' academic beliefs were unrelated to study program choice or characteristics. This finding suggests that students' decisions in choosing a study program are not based on self-confidence and self-regulation of academic ability, but rather are influenced by external factors such as job prospects, the influence of friends and family, the image of the study program, and social norms. These results align with a study by Alfonso et al. (2022) that found that the choice of major or study program is often based on social expectations and utilitarian values, rather than on self-evaluation of abilities. This means that self-efficacy plays a greater role in the implementation phase of learning than in the initial decision-making phase.

3.5. Study Program on Academic Performance

The test results showed that study program selection had no significant effect on academic performance, with a path coefficient of -0.042 and a p-value of 0.760. This means that student academic performance is not determined by the study program chosen, but rather by other factors. This finding suggests that differences in student academic performance are not determined by the type of study program chosen, but rather by individual characteristics such as self-efficacy, motivation, strategies, and study skills. These results support previous research by Vries et al. (2024) that the fit between an individual and the learning environment is a greater determinant of academic success than the image of the study program itself. This means that students who are able to adapt and manage their learning process well will still demonstrate optimal academic performance, regardless of their chosen study program.

Table 3. Indirect Hypothesis Testing

Information	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Gender -> Academic Performance	0.008	0.007	0.030	0.279	0.780
Self-Efficacy Academic -> Academic Performance	0.000	0.000	0.006	0.000	1.000

3.6. The Indirect Effect of Gender on Academic Performance

The test results show a value of 0.008 in the original sample, indicating a very small and positive effect. However, the T-statistic of 0.279, well below the critical threshold of 1.96, and the P-value of 0.780 (>0.05), indicate an indirect effect (statistically insignificant). Therefore, it can be concluded that gender has no indirect effect on academic performance through the mediating variable (study program). This indicates that gender differences are not strong enough to indirectly explain variations in academic performance.

3.7. The Indirect Effect of Academic Self-Efficacy on Academic Performance

The test results show a value of 0.000 in the original sample, with a T-statistic of 0.000 and a P-value of 1.000, indicating no indirect effect at all from academic self-efficacy on academic performance through the mediating variable (study program). Statistically, the test value shows that a mediation path is not formed, so that academic self-efficacy is not able to influence academic performance indirectly.

4. Conclusion

The results of the indirect effect test indicate that study program selection does not mediate the influence between gender and academic self-efficacy on academic performance. The absence of this mediation pathway indicates that the primary influence on academic performance lies in the direct pathway, specifically through academic self-efficacy. This finding confirms that student academic

success is more determined by individual internal factors (academic self-efficacy) than structural factors such as study program. It can be concluded that academic self-efficacy is the main psychological factor influencing academic performance, thus the importance of strengthening academic self-efficacy as a primary strategy in improving student academic performance. Future research is recommended to include academic motivation or academic resilience variables as mediators or moderators and expand the context of study programs across disciplines (STEM and non-STEM) for greater comprehensiveness.

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