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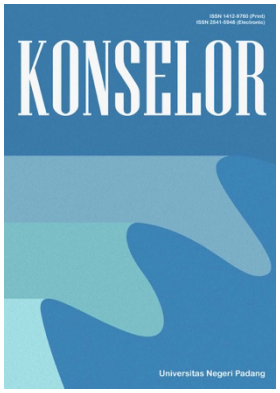

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Integrating Social Support, Digital Competence, and Academic Self-Efficacy to Predict Academic Stress Among University Students: A PLS-SEM Analysis

Muhammad Al Fikhri, Zadrian Ardi♦, & Ade Herdian Putra

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Abstract: Academic stress is one of the main problems faced by university students, especially in the context of increasingly digitised learning. This study aims to analyse the roles of social support and digital competence in academic stress, and to test the function of academic self-efficacy as a mediating and moderating variable in this relationship. This study uses a quantitative, survey-based approach, involving 888 students as respondents. Data were collected using a Likert-scale questionnaire and analysed using Partial Least Squares-based Structural Equation Modelling (PLS-SEM). The results show that social support significantly affects digital competence and academic self-efficacy. Digital competence and academic self-efficacy also have significant effects on academic stress, but in opposite directions. Mediation analysis revealed that social support has multiple indirect mechanisms for academic stress via digital competence and academic self-efficacy. In addition, the moderation results showed that academic self-efficacy can alter the strength of the relationship between social support and digital competence in relation to academic stress. These findings confirm that student academic stress is influenced by the complex interaction between social, psychological, and digital factors. This study contributes to the development of a conceptual model of academic stress and provides practical implications for strengthening guidance and counselling services in higher education.

Key Words: Academic stress; Social support; Digital competence; Academic self-efficacy; PLS-SEM; Higher education.

INTRODUCTION

Higher education institutions are strategic environments that not only provide knowledge but also shape students' adaptability, independent learning, and psychological resilience in the face of various academic pressures. Under ideal conditions, students are able to manage academic demands, make good use of educational technology, and obtain adequate social support from family, peers, and educational institutions (S. He et al., 2023; Hyseni Duraku et al., 2023; Manca & Delfino, 2021; Zhou & Yu, 2021). These three factors form an important foundation for creating a healthy, adaptive, and productive learning process (Chaudhry et al., 2024; Darling-Hammond et al., 2020; de Oliveira Durso et al., 2021; Khasawneh, 2024).

However, the actual situation shows a gap between expectations and reality. Academic stress has become a serious challenge in higher education (Arbulú Pérez Vargas et al., 2024; Aristovnik et al., 2020; Chandra, 2021; Travis et al., 2020). Academic stress is a psychological response that arises when

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students feel unable to cope with heavy, ongoing learning demands (Cao et al., 2021; De la Fuente et al., 2021; Deng et al., 2022; Lavoie-Tremblay et al., 2022). This phenomenon occurs not only in Indonesia, but also in various other countries. In the United States, academic stress has been linked to a decline in mental health, showing a correlation of -0.722 (Eden et al., 2020). In Africa, based on previous research, students often experience academic stress during the initial transition period in college, marked by difficulties adapting to a more complex learning system (Ajani & Gamede, 2020). Meanwhile, in the Middle East, academic stress was reported to correlate with sleep disorders (−0.364) and unhealthy lifestyles (0.220) (AlHamlan et al., 2025). This phenomenon intensified during the COVID-19 pandemic when online learning was implemented on a massive scale worldwide, requiring higher technological adaptation skills (Adedoyin & Soykan, 2023; Najjar et al., 2025; Shrestha et al., 2022; Son et al., 2020).

A similar situation was also found in Indonesia. Research shows that academic stress among Indonesian students is high. Research Murdhiono et al., (2021) reveals that 73 per cent of students experience moderate academic stress, indicating that Indonesian students' academic stress is relatively high. A study by Hendra et al., (2025) explains that Indonesian students are very vulnerable to academic stress due to strong academic expectations. This pressure arises from the burden of coursework, academic expectations, a strict evaluation system, and the demands of adapting to rapidly developing learning technologies (Alias & Abdul Razak, 2023; Hensley et al., 2022; Oliveira et al., 2021; Ross et al., 2024). This shows that academic stress is not only an individual problem, but a complex issue in higher education with interrelated causes that need to be addressed through an evidence-based scientific approach.

Academic stress is a psychological, cognitive, and physiological response to perceived academic pressure that exceeds an individual's capacity to cope (De la Fuente et al., 2018; Maqsood et al., 2024; Yuhuan et al., 2022). This phenomenon often occurs among students in a transitional phase of development towards adulthood, who face academic, social, and emotional demands simultaneously (Clabaugh et al., 2021; Dvořáková et al., 2019; Leipold et al., 2019). Previous studies have shown that academic stress has a broad impact on students' psychological conditions, ranging from decreased motivation to learn, difficulty concentrating, emotional exhaustion, to the emergence of symptoms of anxiety and depression (Misra & McKean, 2000). In addition, academic stress has also been shown to interfere with academic performance, reduce engagement in lectures, and hinder long-term career development (Sholes et al., 2023; Zhang et al., 2024).

Various studies show that academic stress is influenced by psychological, technological, and social factors. One key factor is social support. Social support includes emotional, informational, and instrumental support provided by the surrounding environment, including family, peers, and educational institutions (Zimet et al., 1988). Social support can boost self-confidence, provide a sense of social connectedness, and strengthen an individual's resilience to academic pressure (Kakada et al., 2019; Pushkarev et al., 2020; Voisin et al., 2023). In the context of digital learning, social support also helps students adapt to changes in learning patterns and reduces feelings of isolation that often exacerbate academic stress (Elumalai et al., 2021; Huang & Zhang, 2022; Rashid et al., 2021). A study shows that an increase in perceived social support among college students during online learning is associated with a decrease in academic stress levels, with average academic stress scores falling from 3.66 to 3.52 as perceived social support increased from 4.43 to 4.53 (Malinauskas & Saulius, 2022). This indicates that supportive interactions help students adapt to changing learning patterns and reduce feelings of isolation, which can exacerbate academic stress.

The next factor is digital competence, which is the ability of students to use digital technology to support the learning process (T. He & Li, 2019; Indah et al., 2022; Koyuncuoglu, 2022; Zhao et al., 2021). This competence includes skills in accessing digital learning resources, using online learning platforms, managing information, and communicating effectively through digital media (Ilomäki et al., 2016). Students with high digital competencies are better able to adapt to technology-based learning, thereby reducing academic pressure (Abdel-Al Ibrahim & Hashemifardnia, 2024; Gomez-Poyato et al., 2022; Kumpikaitė-Valiūnienė et al., 2021; Mejías-Acosta et al., 2024; Mirata et al., 2022; Rodrigues et al., 2021).

The third factor is academic self-efficacy, which is students' belief in their ability to organise, manage, and complete academic tasks. Students with high self-efficacy tend to use better learning strategies, manage their time effectively, and do not easily give up under academic pressure (Chemers

et al., 2001). Self-efficacy also serves as a protective factor against academic stress, increasing students' confidence that academic challenges can be overcome (Al-Abyadh & Abdel Azeem, 2022; Greco et al., 2022).

Although these three factors have been studied in various contexts, studies that integrate social support, digital competence, and academic self-efficacy into a single predictive model of academic stress among students in Indonesia are still very limited. In fact, understanding the direct and indirect relationships between these three factors is very important, given that academic stress is a multidimensional phenomenon. Furthermore, there is still little research linking these empirical findings to the development of education technology-based mobile applications for the early detection of academic stress. In fact, the use of digital technology to detect and respond to student stress in real time has the potential to strengthen campus interventions for students' psychosocial problems.

This study aims to analyze the relationship between social support, digital competence, academic self-efficacy, and academic stress among college students. Specifically, this study examines the direct relationship mechanism as well as the mediating and moderating roles among these variables to gain a more comprehensive understanding of the factors that influence students' academic stress. The findings of this study are expected to provide an empirical basis for the development of intervention strategies that support students' academic well-being. The analysis was conducted using Partial Least Square–Structural Equation Modeling (PLS-SEM), which is considered appropriate for testing complex relationships between variables and producing a strong evidence-based model. The results of this study will form the basis for the development of early detection technology for academic stress among students, thereby strengthening counseling and academic guidance services in higher education institutions. Based on this framework, the research hypotheses shown in Figure 1.

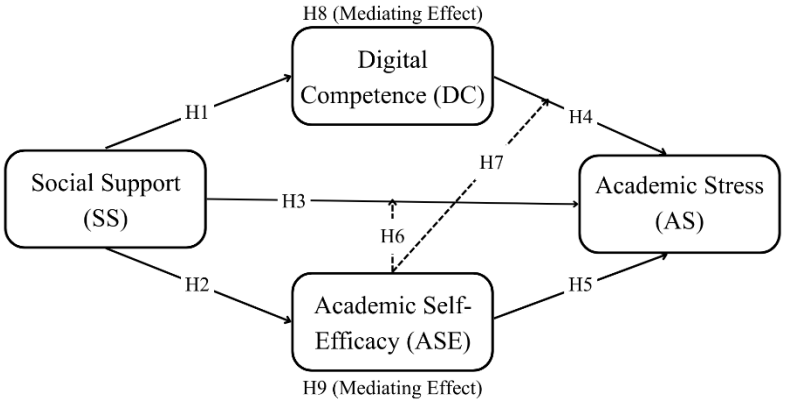

Figure 1. The Hypothesised Model

H1: There is a significant correlation between social support and digital competence.
H2: There is a significant correlation between social support and academic self-efficacy.
H3: There is a significant correlation between social support and academic stress.
H4: There is a significant correlation between digital competence and academic stress.
H5: There is a significant correlation between academic self-efficacy and academic stress.
H6: Academic self-efficacy moderates the correlation between social support and academic stress.
H7: Academic self-efficacy moderates the correlation between digital competence and academic stress.
H8: Digital competence mediates the correlation between social support and academic stress.
H9: Academic self-efficacy mediates the correlation between social support and academic stress.

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METHOD

Research Design

This study uses a quantitative explanatory design to examine the direct, moderating, and mediating relationships among social support, digital competence, academic self-efficacy, and academic stress among college students. An explanatory design was chosen because it is suitable for analysing complex causal relationships and testing theoretical models involving several predictor variables simultaneously. Data analysis was performed using Partial Least Squares–Structural Equation Modelling (PLS-SEM), which allows testing the strength of latent relationships between variables (Hair et al., 2021). This approach was chosen to produce an evidence-based empirical model as the basis for developing educational technology to support early detection of academic stress among students.

Participants

The population in this study consisted of active students from various study programmes at several universities in Indonesia. Students were chosen as the population because this group is in a phase of academic development that is highly vulnerable to learning pressures and changes in the digital learning system. The sample was selected using purposive sampling, with participants defined as active students aged 18–25 years enrolled in online or blended courses. The sample size of 888 students was considered sufficient for testing the structural model using PLS-SEM. The participants in this study were students from various universities in Indonesia. A total of 888 students participated as respondents in this study. The demographics of the research participants can be seen in Table 1.

Table 1. Demographics of Research Participants

		Frequency	Percentage
Gender	Male	377	42.5
	Female	511	57.5
Type of University	State-owned University	534	60.1
	Private University	354	39.9
Age Group	17–19	280	31.5
	20–22	450	50.7
	23 or older	158	17.8
Year of Study	First Year	210	23.6
	Second Year	250	28.2
	Third Year	240	27.0
	Fourth Year or Above	188	21.2
Field of Study	Education and Humanities	240	27.
	Social Sciences and Business	230	25.9
	Science and Engineering	300	33.8
	Health	118	13.3
Cumulative GPA	Less than 2.75	90	10.1
	2.75–3.00	210	23.6
	3.01–3.50	410	46.2
	Above 3.50	178	20
Learning Mode	Offline (in-person)	300	33.8
	Online	120	13.5
	Blended	468	52.7
Employment Status	Not Working	500	56.3
	Part-time	320	36.0
	Full-time	68	7.7
Scholarship Status	Recipient	260	29.3
	Non-recipient	628	70.7

Table 1 presents the distribution of samples by gender, study program, and semester. Most respondents are from different study programs, with more women than men, and the majority are in the middle semester. This layout highlights the varied characteristics of the student participants.

Research Instrument

This research instrument was developed to measure four primary constructs: social support, digital competence, academic self-efficacy, and academic stress. All instruments utilize a five-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The instruments were adapted from international measurement tools that have undergone language and cultural adaptation processes within the Indonesian context. Content validity was assessed by experts in educational psychology and counselling to ensure clarity of meaning and the suitability of the measurement environment for university students.

Table 2. Outline of Research Instrument

Instrument	Variable	Factor/Indicators	Number of items	Reference
Academic Stress Scale	Academic Stress	1. academic workload; 2. time and task pressure; 3. academic expectations; 4. psychological fatigue	5	(Misra & McKean, 2000)
Academic Self Efficacy Scale	Academic Self Efficacy	1. confidence in facing academic tasks; 2. confidence in managing study time; 3. confidence in facing difficulties	5	(Chemers et al., 2001)
Digital Competence Scale	Digital Competence	1. technology literacy; 2. digital communication; 3. digital content creation; 4. digital security	5	(Ilomäki et al., 2016)
Social Support Scale	Social Support	1. emotional support; 2. informational support; 3. instrumental support, and sense of social connectedness	5	(Zimet et al., 1988)

Table 2 presents the constructs, main indicators, and references for each research instrument. The social support instrument was adapted from *The Multidimensional Scale of Perceived Social Support* (Zimet et al., 1988), digital competence from Ilomäki (Ilomäki et al., 2016), academic self-efficacy from Chemers (Chemers et al., 2001), and academic stress from Misra & McKean (Misra & McKean, 2000). These four instruments were used to capture various psychosocial and technological factors that contribute to studens‘t academic stress. To ensure the instrument's reliability and validity before it was used in the main data collection, it was tested with a group of students whose characteristics were similar to those of the research population. This test included examining construct validity and internal reliability to ensure measurement consistency.

Table 3. Research Instrument Trial Result

Instrumentation	Average Loading Factor	Cronbach's Alpha Value (CAV)
Academic Stress Scale	0.968	0.978
Academic Self-Efficacy Scale	0.990	0.990
Digital Competence Scale	0.95	0.965
Social Support Scale	0.964	0.962

Table 3 shows the results of the instrument testing, including the validity and reliability values for each construct. All indicators meet the criteria for a *factor loading greater* than 0.70 and for Cronbach's alpha and composite reliabigreater more than 0.70, indicating good reliability and validity. These results indicate that all items are suitable for use in primary data collection to analyse the relationship between research variables.

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Data Analysis

Data was collected through an online survey of students in Indonesia. Data analysis in this study was conducted using Partial Least Squares–Structural Equation Modelling (PLS-SEM) to examine the direct, mediating, and moderating relationships between the research variables. This method was chosen because it is suitable for analysing models involving latent constructs with complex relationships. The analysis was conducted in two main stages: testing the outer model to ensure the validity and reliability of the constructs, and testing the inner model to evaluate the structural hypotheses. The model's feasibility was evaluated using the SRMR to assess model fit and the R-square to assess the model's explanatory power for the dependent variables.

Table 4. Fit Model Analysis

	Saturated model
SRMR	0.049
d_ULS	0.253
d_G	3.758
Chi-square	9768.187
NFI	0.720

Table 4 presents the evaluation criteria for the model used in this study, including factor loading values, AVE, Cronbach's alpha, composite reliability, SRMR, and R-square. The model is considered to meet the fit criteria if the SRMR is below 0.08. The analysis results show that this research model meets the validity and reliability criteria and exhibits strong explanatory power for student academic stress, so it can proceed to the hypothesis-testing stage.

RESULTS

The first stage of analysing the research results is to visualise the structural model using PLS-SEM. This visualisation provides an overview of the direction of relationships between variables in the model, thereby facilitating the interpretation of direct, mediating, and moderating relationships being tested.

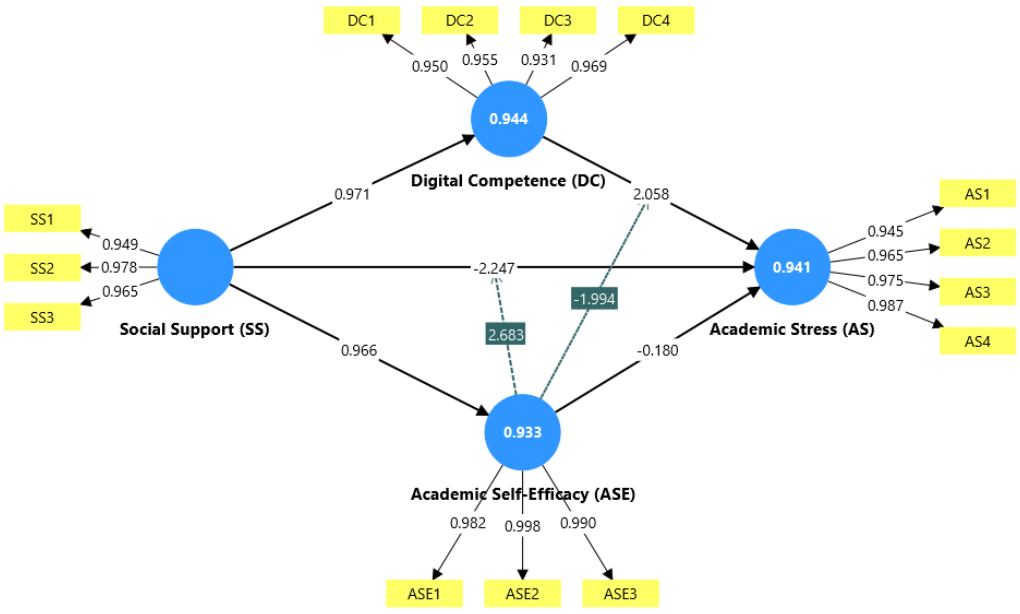

Figure 2. Results of Conceptual Framework Evaluation

Figure 2 shows the relationship between social support, digital competence, academic self-efficacy, and academic stress. The arrows indicate the direction and strength of the relationships between the constructs. This model forms the basis for testing the validity and reliability of the constructs and the strength of the paths between variables in the proposed conceptual framework.

Outer Model

Convergent Validity

The next step is to evaluate the convergent validity of the research construct to ensure that the indicators used adequately represent the construct.

Table 5. Convergent Validity Test Result

	Academic Self-Efficacy (ASE)	Academic Stress (AS)	Digital Competence (DC)	Social Support (SS)
AS1		0.945		
AS2		0.965		
AS3		0.975		
AS4		0.987		
ASE1	0.982			
ASE2	0.998			
ASE3	0.990			
DC1			0.950	
DC2			0.955	
DC3			0.931	
DC4			0.969	
SS1				0.949
SS2				0.978

Table 5 shows that all indicators have loading factor values above 0.70. This finding indicates that each indicator makes a strong contribution to explaining its respective construct, so that the measurement model meets the convergent validity criteria and can proceed to the discriminant validity testing stage.

Discriminant Validity

Discriminant validity aims to ensure that each construct in the model measures distinct concepts. The evaluation was conducted using the Fornell–Larcker criteria by comparing the AVE root and the correlations between constructs (Afthanorhan et al., 2021).

Table 6. Discriminant Validity Test Result (Fornell-Lacker Criteria)

	ASE	AS	DC	SS
Academic Self-Efficacy (ASE)	0.990			
Academic Stress (AS)	-0.812	0.968		
Digital Competence (DC)	0.962	-0.773	0.951	
Social Support (SS)	0.966	-0.840	0.971	0.964

Table 6 shows that the AVE root value of each construct is greater than the correlation between constructs. These results indicate that all constructs exhibit good discriminant validity, so it can be concluded that there is no overlap among constructs in the research model.

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Inner Model

Hypothesis Results

The next step involves testing the nine research hypotheses concerning direct relationships, moderation, and mediation among variables. This testing is conducted by evaluating path coefficients, t-values, and significance levels.

Table 7. Research Hypothesis Test Result

Direct Effect	Original Sample	Sample Average	STDEV	T Statistic	P Values	Hypothesis Result
Social Support (SS) -> Digital Competence (DC)	0.971	0.971	0.002	606,239	0.000	H1 Accepted
Social Support (SS) -> Academic Self-Efficacy (ASE)	0.966	0.966	0.003	385.131	0.000	H2 Accepted
Social Support (SS) -> Academic Stress (AS)	-2.247	-2.245	0.079	28.392	0.000	H3 Accepted
Digital Competence (DC) -> Academic Stress (AS)	2.058	2.057	0.097	21.113	0.000	H4 Accepted
Academic Self-Efficacy (ASE) -> Academic Stress (AS)	-0.180	-0.182	0.054	3.368	0.001	H5 Accepted
Academic Self-Efficacy (ASE) x Digital Competence (DC) -> Academic Stress (AS)	-1.994	-1.990	0.056	35.438	0.000	H6 Accepted
Academic Self-Efficacy (ASE) x Social Support (SS) -> Academic Stress (AS)	2.683	2.677	0.078	34.543	0.000	H7 Accepted
Social Support (SS) -> Digital Competence (DC) -> Academic Stress (AS)	1.999	1.998	0.095	20.949	0.000	H8 Accepted
Social Support (SS) -> Academic Self-Efficacy (ASE) -> Academic Stress (AS)	-0.174	-0.176	0.052	3.349	0.001	H9 Accepted

Table 7 reveals that all research hypotheses were supported. Social support significantly impacts digital competence, academic self-efficacy, and academic stress. Additionally, digital competence and academic self-efficacy also influence academic stress. Furthermore, there are significant moderating and mediating effects of academic self-efficacy and digital competence on the relationship between social support and academic stress, highlighting the importance of psychological and technological factors in this research model.

R-Square

R-squared analysis measures how well the predictor variables in the model explain the dependent variable. A high R^2 value indicates the model's ability to explain variation in academic stress.

Table 8. R-Square

	R-square	Adjusted R-square
Academic Self-Efficacy (ASE)	0.933	0.933
Academic Stress (AS)	0.941	0.940
Digital Competence (DC)	0.944	0.944

Table 8 shows that the R-squared values for academic stress, digital competence, and academic self-efficacy were 0.941, 0.944, and 0.933, respectively. These values indicate that the model has very strong explanatory power. This suggests that a combination of social, psychological, and technological factors plays a significant role in predicting academic stress among university students.

DISCUSSION

The results of this study provide a comprehensive overview of the mechanisms underlying the relationship between social support, digital competence, academic self-efficacy, and academic stress among college students. Findings from the structural model show that the three predictor variables have significant direct, moderating, and mediating relationships with academic stress. These results reinforce the view that academic stress does not arise in isolation but rather results from interactions among social, technological, and psychological factors within the higher education environment.

The first notable finding is the influence of social support on academic stress. The results in Table 7 show a significant negative correlation, indicating that the higher the social support students feel, the lower their academic stress levels. This finding is consistent with previous studies that confirm the protective role of social support against academic pressure (Zimet et al., 1988). Support from family, peers, and the campus environment helps students develop more adaptive coping mechanisms and increases their sense of social connectedness. Students who feel emotionally and practically supported tend to have a lighter perception of academic burden and more stable learning motivation. Social support can also serve as a psychological shield when students face high academic demands, thereby significantly reducing academic stress.

The second finding is the effect of academic self-efficacy on academic stress, which also shows a negative and significant relationship. This indicates that students with high self-efficacy will experience lower stress than those with low self-efficacy. These results are in line with the research Chemers et al., (2001), which shows that self-efficacy is an important protective factor against academic pressure. Students who believe in their ability to manage their study load will be better able to manage their time, use effective learning strategies, and face exams or assignments calmly. Conversely, students with low self-efficacy are more prone to uncertainty, anxiety, and mental fatigue, which then triggers an increase in academic stress.

Conversely, the third finding is that digital competence shows a significant positive effect on academic stress. While digital competence improves students' ability to engage with technology-based learning, higher competence can also increase exposure to complex digital tasks, performance expectations, and demands for continuous connectivity. These findings suggest that digital competence functions as a double-edged resource, simultaneously enabling learning while intensifying academic pressure through increased academic and technological demands.

The results of the study also show that social support significantly influences digital competence and academic self-efficacy. These findings indicate that social support plays an important role in strengthening students' psychological and technological factors. A supportive social environment creates conducive learning conditions, encouraging students to be more confident in developing digital skills and strengthening their self-confidence in their academic abilities. These results are consistent with research showing that social support is a factor in adapting to new learning environments and Educational technology (Li et al., 2018). Thus, the role of social support not only directly reduces stress, but also works through mechanisms of increasing psychological and technological resources.

The findings of this study indicate that social support not only directly affects academic stress but also does so indirectly through digital competence and academic self-efficacy. Based on the results in Table 7, social support indirectly affects academic stress through digital competence ($\beta = 1.999$; $p < 0.001$). This indicates that social support can improve students' digital competence, which in turn is associated with increased academic stress. These findings indicate that student involvement in technology-based academic activities can increase perceived academic demands. Conversely, social support also indirectly affects academic stress through academic self-efficacy ($\beta = -0.174$; $p = 0.001$). This means that stronger social support can increase students' confidence in their academic abilities, thereby helping them manage academic demands more effectively and ultimately reducing their academic stress. These two mediation paths show that social support can affect academic stress through different mechanisms, potentially increasing and decreasing it.

In addition to the mediation analysis, this study also found that academic self-efficacy moderates the relationship between digital competence, social support, and academic stress. The analysis results show that academic self-efficacy weakens the positive effect of digital competence on academic stress

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(β = -1.994; $p < 0.001$). This indicates that students with high levels of academic self-efficacy tend to be better able to manage the demands of using technology in learning, thereby better controlling the academic pressure that arises. Conversely, academic self-efficacy strengthens the relationship between social support and academic stress (β = 2.683; $p < 0.001$). These findings indicate that students with high self-efficacy tend to utilise social support more intensively to increase their academic engagement, which, under certain conditions, can heighten perceptions of academic demands and trigger increased academic stress. These results confirm that academic self-efficacy plays not only a protective role but also one that can alter the strength of the relationship among social support, digital competence, and academic stress.

The next findings are shown in Table 8: very high R-square values for academic stress (0.941), digital competence (0.944), and academic self-efficacy (0.933). These values indicate that the three predictor variables have a strong explanatory power for student academic stress. These figures are well above the minimum threshold of 0.50, which is often used as an indicator of a model with good explanatory power (Hair et al., 2019). These findings indicate that the combination of social support, digital competence, and self-efficacy is not merely an additional factor but a key determinant of the dynamics of academic stress among Indonesian students.

These research findings have implications for higher education policy. Educational institutions need to strengthen social support systems for students through academic guidance, mentoring, and counselling programs. In addition, digital literacy must be an integral part of the higher education curriculum so that students have sufficient technological competence to face the challenges of modern learning. The development of training programs that focus on increasing academic self-efficacy is also highly relevant in this context, as self-efficacy has been shown to be a strong protective factor against academic stress.

Thus, the results of this study confirm that students' academic stress cannot be explained solely by academic pressure but also by the dynamic interaction among social, technological, and psychological factors. Social support, digital competence, and academic self-efficacy work as a unified mechanism that influences students' perceptions and responses to learning pressure. Integrating these findings into technology-based academic and psychosocial service systems is a strategic step toward creating a more adaptive and supportive learning environment for university students in Indonesia.

CONCLUSION

In summary, student academic stress is a complex phenomenon shaped by the interplay of social support, digital skills, and academic self-confidence. Social support influences students' learning resources by boosting digital competence and self-efficacy, though its direct impact on stress is nonlinear. When technology demands outweigh students' self-regulation abilities, higher digital competence may lead to increased pressure. Conversely, academic self-efficacy acts as a vital psychological factor that helps students adapt to academic challenges and moderates the effects of social support and digital skills on stress. These insights highlight the need for a comprehensive intervention strategy that not only enhances external support and digital skills but also nurtures academic self-efficacy to reduce stress risk in higher education. While the study offers valuable insights into how social support, digital competence, self-efficacy, and stress are related among students, it has limitations. Its cross-sectional design captures only a snapshot of these relationships and does not explore how they evolve over time. Future research should adopt a longitudinal approach for a deeper understanding of how student stress develops.

REFERENCES

Abdel-Al Ibrahim, K. A., & Hashemifardnia, A. (2024). Bold techno competence in language learning: a study on the effects of efficacy of workshops in decreasing technostress and boosting academic enjoyment, autonomy, and language achievement. *Asian-Pacific Journal of Second and Foreign Language Education*, *9*(1), 33.

Adedoyin, O. B., & Soykan, E. (2023). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, *31*(2), 863–875.

Afthanorhan, A., Ghazali, P. L., & Rashid, N. (2021). Discriminant Validity: A Comparison of CBSEM and Consistent PLS using Fornell & Larcker and HTMT Approaches. *Journal of Physics: Conference Series*, *1874*(1), 012085. https://doi.org/10.1088/1742-6596/1874/1/012085

Ajani, O. A., & Gamede, B. T. (2020). Challenges of high school learners' transition into universities: a case of a South African rural university. *Gender and Behaviour*, *18*(2), 15803–15812.

Al-Abyadh, M. H. A., & Abdel Azeem, H. A. H. (2022). Academic achievement: Influences of university students' self-management and perceived self-efficacy. *Journal of Intelligence*, *10*(3), 55.

AlHamlan, A. W., AlDhafiri, D. A., AlHajri, N. A., AlHouli, A. H., AlHubaidah, S. M., AlJassar, A. M., AlMutairi, N. N., AlRabiah, A. S., Al-Sultan, A. T., & Qasem, W. (2025). The impact of academic stress on the lifestyle of university students in Kuwait. *BMC Public Health*, *25*(1), 2338.

Alias, N. F., & Abdul Razak, R. (2023). Meeting the demands of higher education: Examining teaching and learning practices and academic challenges. *Asian Journal of University Education (AJUE)*, *19*(4), 796–811.

Arbulú Pérez Vargas, C. G., Moreno Muro, J. P., Pérez Delgado, J. W., Espino Carrasco, D. K., Fernández Cueva, A., & Acosta-Enriquez, B. G. (2024). Mediating role of digital skills and mobile self-efficacy in the stress and academic engagement of Peruvian university students in postpandemic virtual environments. *BMC Psychology*, *12*(1), 481.

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.

Cao, C., Zhu, C., & Meng, Q. (2021). Chinese international students' coping strategies, social support resources in response to academic stressors: Does heritage culture or host context matter? *Current Psychology*, *40*(1), 242–252.

Chandra, Y. (2021). Online education during COVID-19: perception of academic stress and emotional intelligence coping strategies among college students. *Asian Education and Development Studies*, *10*(2), 229–238.

Chaudhry, S., Tandon, A., Shinde, S., & Bhattacharya, A. (2024). Student psychological well-being in higher education: The role of internal team environment, institutional, friends and family support and academic engagement. *Plos One*, *19*(1), e0297508.

Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, *93*(1), 55.

Clabaugh, A., Duque, J. F., & Fields, L. J. (2021). Academic stress and emotional well-being in United States college students following onset of the COVID-19 pandemic. *Frontiers in Psychology*, *12*, 628787.

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140.

De la Fuente, J., Martínez-Vicente, J. M., Peralta-Sánchez, F. J., González-Torres, M. C., Artuch, R., & Garzón-Umerenkova, A. (2018). Satisfaction with the self-assessment of University students through e-Coping with academic stress Utility TM. *Frontiers in Psychology*, *9*, 1932.

De la Fuente, J., Pachón-Basallo, M., Santos, F. H., Peralta-Sánchez, F. J., González-Torres, M. C., Artuch-Garde, R., Paoloni, P. V, & Gaetha, M. L. (2021). How has the COVID-19 crisis affected the academic stress of university students? The role of teachers and students. *Frontiers in Psychology*, *12*, 626340.

de Oliveira Durso, S., Afonso, L. E., & Beltman, S. (2021). Resilience in higher education: A conceptual model and its empirical analysis. *Education Policy Analysis Archives*, *29*(August-December), 156.

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

Dvořáková, K., Greenberg, M. T., & Roeser, R. W. (2019). On the role of mindfulness and compassion skills in students' coping, well-being, and development across the transition to college: A

conceptual analysis. *Stress and Health*, *35*(2), 146–156.
Eden, A. L., Johnson, B. K., Reinecke, L., & Grady, S. M. (2020). Media for coping during COVID-19 social distancing: Stress, anxiety, and psychological well-being. *Frontiers in Psychology*, *11*, 577639.
Elumalai, K. V., Sankar, J. P., Kalaichelvi, R., John, J. A., Menon, N., Alqahtani, M. S. M., & Abumelha, M. A. (2021). Factors affecting the quality of e-learning during the COVID-19 pandemic from the perspective of higher education students. *COVID-19 and Education: Learning and Teaching in a Pandemic-Constrained Environment*, *189*(3), 169.
Gomez-Poyato, M. J., Eito-Mateo, A., Mira-Tamayo, D. C., & Matías-Solanilla, A. (2022). Digital skills, ICTs and students' needs: A case study in social work degree, University of Zaragoza (Aragón-Spain). *Education Sciences*, *12*(7), 443.
Greco, A., Annovazzi, C., Palena, N., Camussi, E., Rossi, G., & Steca, P. (2022). Self-efficacy beliefs of university students: Examining factor validity and measurement invariance of the new academic self-efficacy scale. *Frontiers in Psychology*, *12*, 498824.
Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook*. Nature Spinger.
Hair, J. F., Sarstedt, M., & Ringle, C. M. (2019). Rethinking some of the rethinking of partial least squares. *European Journal of Marketing*, *53*(4), 566–584. https://doi.org/10.1108/EJM-10-2018-0665
He, S., Jiang, S., Zhu, R., & Hu, X. (2023). The influence of educational and emotional support on e-learning acceptance: An integration of social support theory and TAM. *Education and Information Technologies*, *28*(9), 11145–11165.
He, T., & Li, S. (2019). A comparative study of digital informal learning: The effects of digital competence and technology expectancy. *British Journal of Educational Technology*, *50*(4), 1744–1758.
Hendra, R., Habibi, A., Ridwan, A., Sembiring, D. A. E. P., Wijaya, T. T., Denmar, D., & Widana, I. W. (2025). The impact of perfectionism, self-efficacy, academic stress, and workload on academic fatigue and learning achievement: Indonesian Perspectives. *Open Education Studies*, *7*(1), 20250071.
Hensley, L. C., Iaconelli, R., & Wolters, C. A. (2022). "This weird time we're in": How a sudden change to remote education impacted college students' self-regulated learning. *Journal of Research on Technology in Education*, *54*(sup1), S203–S218.
Huang, L., & Zhang, T. (2022). Perceived social support, psychological capital, and subjective well-being among college students in the context of online learning during the COVID-19 pandemic. *The Asia-Pacific Education Researcher*, *31*(5), 563–574.
Hyseni Duraku, Z., Davis, H., & Hamiti, E. (2023). Mental health, study skills, social support, and barriers to seeking psychological help among university students: a call for mental health support in higher education. *Frontiers in Public Health*, *11*, 1220614.
Ilomäki, L., Paavola, S., Lakkala, M., & Kantosalo, A. (2016). Digital competence – an emergent boundary concept for policy and educational research. *Education and Information Technologies*, *21*(3), 655–679. https://doi.org/10.1007/s10639-014-9346-4
Indah, R. N., Toyyibah, T., Budhiningrum, A. S., & Afifi, N. (2022). The research competence, critical thinking skills and digital literacy of Indonesian EFL students. *Journal of Language Teaching and Research*, *13*(2), 315–324.
Kakada, P., Deshpande, Y., & Bisen, S. (2019). Technology support, social support, academic support, service support, and student satisfaction. *Journal of Information Technology Education: Research*, *18*.
Khasawneh, M. A. S. (2024). The efficacy of a programme utilizing digital learning technology in fostering the life skills of students with learning disabilities. *International Journal of Learning, Teaching and Educational Research*, *23*(4), 18–33.
Koyuncuoglu, D. (2022). Analysis of Digital and Technological Competencies of University Students. *International Journal of Education in Mathematics, Science and Technology*, *10*(4), 971–988.
Kumpikaitė-Valiūnienė, V., Aslan, I., Duobienė, J., Glińska, E., & Anandkumar, V. (2021). Influence of digital competence on perceived stress, burnout and well-being among students studying online

during the COVID-19 lockdown: A 4-country perspective. *Psychology Research and Behavior Management*, 1483–1498.

Lavoie-Tremblay, M., Sanzone, L., Aubé, T., & Paquet, M. (2022). Sources of stress and coping strategies among undergraduate nursing students across all years. *Canadian Journal of Nursing Research*, *54*(3), 261–271.

Leipold, B., Munz, M., & Michele-Malkowsky, A. (2019). Coping and resilience in the transition to adulthood. *Emerging Adulthood*, *7*(1), 12–20.

Li, J., Han, X., Wang, W., Sun, G., & Cheng, Z. (2018). How social support influences university students' academic achievement and emotional exhaustion: The mediating role of self-esteem. *Learning and Individual Differences*, *61*, 120–126.

Malinauskas, R. K., & Saulius, T. (2022). Perceived academic stress and social support among university undergraduate students during COVID–19 pandemic. *European Journal of Contemporary Education.*, *11*(3), 807–816.

Manca, S., & Delfino, M. (2021). Adapting educational practices in emergency remote education: Continuity and change from a student perspective. *British Journal of Educational Technology*, *52*(4), 1394–1413.

Maqsood, A., Gul, S., Noureen, N., & Yaswi, A. (2024). Dynamics of perceived stress, stress appraisal, and coping strategies in an evolving educational landscape. *Behavioral Sciences*, *14*(7), 532.

Mejías-Acosta, A., D'Armas Regnault, M., Vargas-Cano, E., Cárdenas-Cobo, J., & Vidal-Silva, C. (2024). Assessment of digital competencies in higher education students: development and validation of a measurement scale. *Frontiers in Education*, *9*, 1497376.

Mirata, V., Awinia, C., Godson, E., & Bergamin, P. (2022). The future of technology-based learning at the Open University of Tanzania. *International Journal of Emerging Technologies in Learning (Online)*, *17*(15), 28.

Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, *16*(1), 41.

Murdhiono, W. R., Fadlilah, S., & Vidayanti, V. (2021). The effect of online learning systems on academic stress during the Covid-19 pandemic among students in Indonesia. *International Medical Journal*, *28*(4), 445–448.

Najjar, N., Rouphael, M., Bitar, T., & Hleihel, W. (2025). The rise and drop of online learning: adaptability and future prospects. *Frontiers in Education*, *10*, 1522905.

Oliveira, G., Grenha Teixeira, J., Torres, A., & Morais, C. (2021). An exploratory study on the emergency remote education experience of higher education students and teachers during the COVID-19 pandemic. *British Journal of Educational Technology*, *52*(4), 1357–1376.

Pushkarev, G. S., Zimet, G. D., Kuznetsov, V. A., & Yaroslavskaya, E. I. (2020). The multidimensional scale of perceived social support (MSPSS): reliability and validity of Russian version. *Clinical Gerontologist*, *43*(3), 331–339.

Rashid, S., Fayez, O., Ismail, H., & Khan, R. F. (2021). Digital social support for undergraduate students during COVID-19: Pivotal support for the digital transformation. *Journal of Public Health Research*, *10*(4), jphr-2021.

Rodrigues, A. L., Cerdeira, L., Machado-Taylor, M. de L., & Alves, H. (2021). Technological skills in higher education—different needs and different uses. *Education Sciences*, *11*(7), 326.

Ross, P. M., Scanes, E., & Locke, W. (2024). Stress adaptation and resilience of academics in higher education. *Asia Pacific Education Review*, *25*(4), 829–849.

Sholes, J., Sullivan, A., & Self, S. (2023). The Impact of Long-Term Disruptions on Academic Success in Higher Education and Best Practices to Help Students Overcome Them. *Journal of Higher Education Theory & Practice*, *23*(4).

Shrestha, S., Haque, S., Dawadi, S., & Giri, R. A. (2022). Preparations for and practices of online education during the Covid-19 pandemic: A study of Bangladesh and Nepal. *Education and Information Technologies*, *27*(1), 243–265.

Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, *22*(9), e21279.

https://doi.org/10.24036/02026151174-0-86

Travis, J., Kaszycki, A., Geden, M., & Bunde, J. (2020). Some stress is good stress: The challenge-hindrance framework, academic self-efficacy, and academic outcomes. *Journal of Educational Psychology*, *112*(8), 1632.

Voisin, L. E., Phillips, C., & Afonso, V. M. (2023). Academic-support environment impacts learner affect in higher education. *Student Success*, *14*(1), 47–59.

Yuhuan, Z., Pengyue, Z., Dong, C., Qichao, N., Dong, P., Anqi, S., Hongbo, J., & Zhixin, D. (2022). The association between academic stress, social support, and self-regulatory fatigue among nursing students: a cross-sectional study based on a structural equation modelling approach. *BMC Medical Education*, *22*(1), 789.

Zhang, S., Rehman, S., Zhao, Y., Rehman, E., & Yaqoob, B. (2024). Exploring the interplay of academic stress, motivation, emotional intelligence, and mindfulness in higher education: a longitudinal cross-lagged panel model approach. *BMC Psychology*, *12*(1), 732.

Zhao, Y., Sánchez Gómez, M. C., Pinto Llorente, A. M., & Zhao, L. (2021). Digital competence in higher education: Students' perception and personal factors. *Sustainability*, *13*(21), 12184.

Zhou, J., & Yu, H. (2021). Contribution of social support to home-quarantined Chinese college students' well-being during the COVID-19 pandemic: the mediating role of online learning self-efficacy and moderating role of anxiety. *Social Psychology of Education*, *24*(6), 1643–1662.

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, *52*(1), 30–41.