

## Digital Literacy and Entrepreneurial Mindset as Predictors of Startup Intentions: The Mediating Role of Entrepreneurial Self-Efficacy among University Students

Firman Firman\* & Erni Masdupi

Department of Management, Faculty of Economics and Business, Universitas Negeri Padang, Padang, 25132, Indonesia

\*Corresponding author: Firman Firman

Jln. Prof. Dr. Hamka, Air Tawar, Padang Utara, Padang, Sumatera Barat, Indonesia

Email: [firmanfeunp@gmail.com](mailto:firmanfeunp@gmail.com)

**Received:** March 01, 2026; **Revised:** July 01, 2026; **Accepted:** August 01, 2026

**Abstract:** This study examined the simultaneous effects of digital literacy and entrepreneurial mindset on startup intentions and tested entrepreneurial self-efficacy as a mediating mechanism among university students. An explanatory quantitative design and cross-sectional survey were used with 221 students at Universitas Negeri Padang. The data were analyzed using partial least squares structural equation modeling in SmartPLS, including measurement-model assessment, structural-model evaluation, and bootstrapping with 5,000 subsamples. Digital literacy and entrepreneurial mindset positively affected entrepreneurial self-efficacy ( $\beta = 0.283$  and  $\beta = 0.516$ , respectively;  $p < 0.001$ ), while entrepreneurial self-efficacy strongly predicted startup intentions ( $\beta = 0.564$ ;  $p < 0.001$ ). The direct effects of digital literacy and entrepreneurial mindset on startup intentions were not significant. Their indirect effects through entrepreneurial self-efficacy were significant ( $\beta = 0.159$  and  $\beta = 0.291$ ;  $p < 0.001$ ), indicating full mediation. Digital literacy and entrepreneurial mindset strengthen startup intentions primarily when they increase students' entrepreneurial self-efficacy. Universities should therefore combine digital skill development and opportunity recognition with practice-based activities that build confidence in executing startup tasks.

**Keywords:** Digital Literacy; Entrepreneurial Mindset; Entrepreneurial Self-Efficacy; Startup Intentions; University Students

**How to Cite:** Firman, F., & Masdupi, E. (2026). Digital literacy and entrepreneurial mindset as predictors of startup intentions: The mediating role of entrepreneurial self-efficacy among university students. *Journal of Economic Education and Entrepreneurship Studies*, 7(4), 00-00. <https://doi.org/10.62794/je3s.v7i4.299>

Copyright 2026 © The Author(s)

The work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International \(CC BY-SA 4.0\)](https://creativecommons.org/licenses/by-sa/4.0/)



## INTRODUCTION

Digital transformation has changed how students recognize opportunities, obtain market information, build networks, and initiate platform-based ventures. Digital entrepreneurship involves the creation of business value through digital technologies, data, platforms, and online

ecosystems rather than the simple use of technology in conventional business activities (Nambisan, 2017; Sussan & Acs, 2017; Ganefri et al., 2025). In higher education, digital capability can therefore function as early entrepreneurial capital that enables students to test ideas, communicate with potential users, and access resources beyond the campus environment.

Digital literacy refers to the ability to operate digital tools, locate and critically evaluate information, create digital content, communicate and collaborate online, protect personal data, and adapt to new technologies. This multidimensional capability is particularly relevant to startups because early venture development commonly requires online market research, rapid content creation, digital communication, and data-informed experimentation (Ng, 2012; van Laar et al., 2017). Empirical studies have linked digital competence and digital literacy with digital entrepreneurial intention, opportunity recognition, and perceived control (Lam et al., 2025; Liang et al., 2025).

Digital capability alone, however, may not be sufficient to produce an intention to build a startup. An entrepreneurial mindset helps individuals interpret uncertainty as an opportunity for experimentation, innovation, networking, and value creation (Daspit et al., 2023). It encourages students to frame problems as solvable market needs and to remain adaptive when information is incomplete. Studies in university settings have shown that entrepreneurial mindset is associated with entrepreneurial readiness and intention, particularly when learning activities also develop attitudes and self-beliefs (González-Prida et al., 2024; Wardana et al., 2020).

Entrepreneurial intention is commonly explained as a planned cognitive state that precedes venture-creation behavior. The theory of planned behavior and entrepreneurial intention models emphasize attitudes, perceived behavioral control, and intentionality as important antecedents of entrepreneurial action (Ajzen, 1991; Krueger et al., 2000; Liñán & Chen, 2009). Meta-analytic evidence further shows that the strength of these relationships varies across individual and contextual conditions, indicating that cognitive mechanisms and boundary conditions should be examined explicitly (Schlaegel & Koenig, 2014).

Entrepreneurial self-efficacy is one such mechanism. It reflects confidence in performing entrepreneurial tasks, including identifying opportunities, making decisions, managing resources, coping with risk, and sustaining effort. Social cognitive theory positions self-efficacy as a central determinant of motivation and action (Bandura, 2001). Entrepreneurship research likewise shows that self-efficacy differentiates perceived entrepreneurial capability and can mediate the development of entrepreneurial intention (Chen et al., 1998; Zhao et al., 2005; Newman et al., 2019; Amani et al., 2024).

Prior studies have often reported direct positive relationships between digital skills or digital literacy and entrepreneurial intention (Dabbous & Boustani, 2023; Abaddi, 2024; Liang et al., 2025). These findings imply that digitally capable students may identify opportunities and perceive fewer barriers to venture creation. Nevertheless, a direct relationship should not be assumed in every context. When students have limited experience in validating markets, mobilizing resources, or operating a business, digital capability and opportunity-oriented thinking may first need to strengthen confidence in performing entrepreneurial tasks before they influence a startup-specific intention.

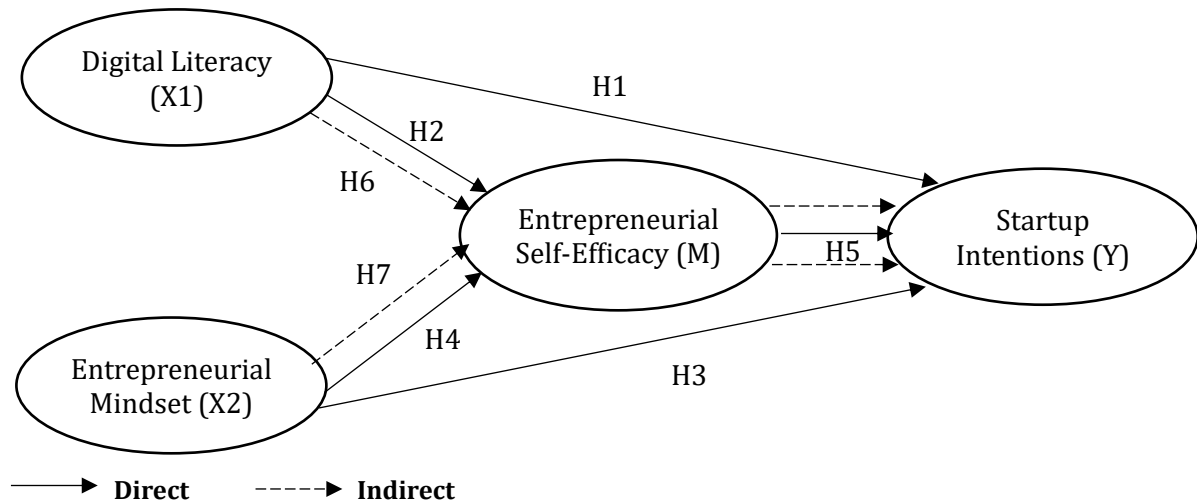
The present study addresses a more precise gap in relation to Lam et al. (2025), Amani et al. (2024), and Ganefri et al. (2024). Relative to Lam et al. (2025), the model adds entrepreneurial mindset as a simultaneous predictor alongside digital literacy. Relative to Amani et al. (2024), it focuses on startup intentions rather than broader entrepreneurial intentions. Relative to Ganefri et al. (2024), it applies a parsimonious two-predictor structure and explicitly tests whether

entrepreneurial self-efficacy fully mediates both relationships in the specific context of university students in Padang, Indonesia.

The Indonesian higher-education context is important because universities are expected to prepare graduates not only to seek employment but also to create digitally enabled ventures. Indonesian studies indicate that entrepreneurship education, digital learning, entrepreneurial mindset, and self-efficacy contribute to entrepreneurial preparation and digital entrepreneurial intention (Saptono et al., 2020; Wardana et al., 2020; Wibowo et al., 2023; Wardoyo et al., 2025). However, evidence remains limited regarding whether digital literacy and entrepreneurial mindset simultaneously influence a startup-specific intention through the same self-efficacy mechanism within a single university population.

Accordingly, this study examines digital literacy and entrepreneurial mindset as simultaneous predictors of startup intentions, with entrepreneurial self-efficacy as the mediator among students at Universitas Negeri Padang. Its contribution is threefold: it distinguishes startup intentions from general entrepreneurial intentions, tests a two-predictor mediation model, and evaluates full mediation in a Padang university context. The model integrates social cognitive theory, behavioral intention theory, and digital entrepreneurship research to explain not only whether digital capability and entrepreneurial thinking matter, but also how they are converted into startup intentions.

The conceptual model proposes that digital literacy and entrepreneurial mindset each influence startup intentions directly and indirectly through entrepreneurial self-efficacy. Entrepreneurial self-efficacy is also expected to have a direct positive effect on startup intentions. Figure 1 presents the four constructs and the seven hypothesized relationships.



**Figure 1.** Conceptual framework and hypothesized relationships

Based on the theoretical and empirical arguments, the hypotheses are formulated as follows:

- H1.** Digital literacy has a positive effect on students' startup intentions.
- H2.** Digital literacy has a positive effect on students' entrepreneurial self-efficacy.
- H3.** Entrepreneurial mindset has a positive effect on students' startup intentions.
- H4.** Entrepreneurial mindset has a positive effect on students' entrepreneurial self-efficacy.
- H5.** Entrepreneurial self-efficacy has a positive effect on students' startup intentions.

**H6.** Entrepreneurial self-efficacy mediates the effect of digital literacy on startup intentions.

**H7.** Entrepreneurial self-efficacy mediates the effect of entrepreneurial mindset on startup intentions.

## **METHOD**

This study employed an explanatory quantitative design with a cross-sectional survey to test predictive relationships among digital literacy, entrepreneurial mindset, entrepreneurial self-efficacy, and startup intentions within one period of data collection. The study population comprised university students enrolled at Universitas Negeri Padang. The final analytic sample consisted of 221 students who provided complete responses for all indicators. A mediation model was used to examine the cognitive mechanism linking digital capability and entrepreneurial mindset to startup intentions (Hayes, 2022).

Of the 221 respondents, 155 were female (70.14 percent) and 66 were male (29.86 percent). Most respondents entered university in 2025 (112 students; 50.68 percent), followed by the 2024 cohort (76 students; 34.39 percent), the 2023 cohort (32 students; 14.48 percent), and the 2022 cohort (1 student; 0.45 percent). In addition, 213 respondents (96.38 percent) had taken entrepreneurship coursework, while 109 respondents (49.32 percent) had participated in entrepreneurship training. These characteristics were retained for interpretation because academic exposure and practical experience may influence entrepreneurial confidence and intention.

The questionnaire used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Digital literacy (X1) was measured with four indicators covering the effective use of digital tools, evaluation of online information, digital communication or content creation, and adaptation to digital features. Entrepreneurial mindset (X2) was measured with five indicators covering opportunity recognition, innovation, solution orientation, network orientation, and adaptive decision-making. Entrepreneurial self-efficacy (M) was measured with four indicators covering confidence in addressing business challenges, making decisions, managing risk and resources, and achieving entrepreneurial targets. Startup intentions (Y) were measured with seven indicators covering commitment, planning, preparation, and intention to establish a startup. Representative item content included evaluating the reliability of online information, viewing problems as business opportunities, feeling confident in managing entrepreneurial tasks, and actively preparing to establish a startup.

The indicator domains were aligned with established digital literacy frameworks (Ng, 2012; van Laar et al., 2017), entrepreneurial mindset research (Daspit et al., 2023; Wardana et al., 2020), entrepreneurial self-efficacy measures (Chen et al., 1998; Zhao et al., 2005; Newman et al., 2019), and entrepreneurial intention instruments (Liñán & Chen, 2009; Thompson, 2009). The final SmartPLS model retained X1.1-X1.4, X2.1-X2.5, M1-M4, and Y1-Y7 after measurement-model assessment.

Data were analyzed using partial least squares structural equation modeling with SmartPLS. The measurement model was evaluated through Cronbach's alpha, rho\_A, composite reliability, average variance extracted, outer loadings, the Fornell-Larcker criterion, the heterotrait-monotrait ratio, and variance inflation factors. The structural model was evaluated through R-square, path coefficients, specific indirect effects, and total effects. Statistical significance was assessed using bootstrapping with 5,000 subsamples. This procedure is appropriate for estimating predictive relationships among latent constructs and testing mediation effects (Hair et al., 2022; Hayes, 2022).

**Table 1.** Respondent profile

| Characteristic              | Category | n   | Percentage |
|-----------------------------|----------|-----|------------|
| Gender                      | Female   | 155 | 70.14      |
| Gender                      | Male     | 66  | 29.86      |
| Year of entry               | 2025     | 112 | 50.68      |
| Year of entry               | 2024     | 76  | 34.39      |
| Year of entry               | 2023     | 32  | 14.48      |
| Year of entry               | 2022     | 1   | 0.45       |
| Entrepreneurship coursework | Yes      | 213 | 96.38      |
| Entrepreneurship training   | Yes      | 109 | 49.32      |

Source: processed research data.

## RESULTS AND DISCUSSION

### Research Results

#### Measurement Model Evaluation

The measurement model evaluation shows that all constructs met the criteria for internal reliability and convergent validity. Cronbach's alpha ranged from 0.857 to 0.915, rho\_A ranged from 0.871 to 0.915, composite reliability ranged from 0.896 to 0.940, and average variance extracted ranged from 0.613 to 0.796. These values indicate that the indicators consistently explain their latent constructs. This result supports the use of digital literacy, entrepreneurial mindset, entrepreneurial self-efficacy, and startup intentions as reflective constructs in the empirical model.

**Table 2.** Construct reliability and validity

|                                   | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|-----------------------------------|------------------|-------|-----------------------|----------------------------------|
| Entrepreneurial Self-Efficacy (M) | 0.915            | 0.915 | 0.940                 | 0.796                            |
| Digital Literacy (X1)             | 0.900            | 0.900 | 0.930                 | 0.770                            |
| Entrepreneurial Mindset (X2)      | 0.857            | 0.871 | 0.896                 | 0.634                            |
| Startup Intentions (Y)            | 0.895            | 0.904 | 0.917                 | 0.613                            |

Source: SmartPLS output.

The outer loading values show that all indicators made adequate contributions to their respective constructs. The loading range was 0.882 to 0.900 for entrepreneurial self-efficacy, 0.856 to 0.906 for digital literacy, 0.719 to 0.829 for entrepreneurial mindset, and 0.715 to 0.851 for startup intentions. Variance inflation factor values were below the common threshold of 5, indicating no indicator collinearity problem that would interfere with model interpretation. This result is important because a mediation model requires stable constructs before structural relationships are interpreted (Hair et al., 2022).

**Table 3.** Summary of outer loadings and indicator VIF

| Construct                     | Indicator | Outer loading range | VIF range      | Decision |
|-------------------------------|-----------|---------------------|----------------|----------|
| Entrepreneurial Self-Efficacy | M1 to M4  | 0.882 to 0.900      | 2.855 to 3.357 | Adequate |

|                         |              |                |                |          |
|-------------------------|--------------|----------------|----------------|----------|
| Digital Literacy        | X1.1 to X1.4 | 0.856 to 0.906 | 2.273 to 3.103 | Adequate |
| Entrepreneurial Mindset | X2.1 to X2.5 | 0.719 to 0.829 | 1.871 to 2.285 | Adequate |
| Startup Intentions      | Y1 to Y7     | 0.715 to 0.851 | 1.897 to 2.593 | Adequate |

Source: SmartPLS output.

Discriminant validity was also established. In the Fornell-Larcker criterion, the square root of the AVE for each construct was higher than its correlations with other constructs. Entrepreneurial self-efficacy had a value of 0.892, digital literacy 0.877, entrepreneurial mindset 0.796, and startup intentions 0.783. This pattern indicates that each construct has a distinct measurement identity.

**Table 4.** Fornell-Larcker criterion

| Construct | M     | X1    | X2    | Y     |
|-----------|-------|-------|-------|-------|
| M         | 0.892 |       |       |       |
| X1        | 0.604 | 0.877 |       |       |
| X2        | 0.692 | 0.623 | 0.796 |       |
| Y         | 0.695 | 0.492 | 0.562 | 0.783 |

Source: SmartPLS output. Diagonal values indicate the square root of AVE.

The heterotrait-monotrait ratio results further supported discriminant validity because all HTMT values were below 0.85. The highest HTMT value was found for the relationship between entrepreneurial mindset and entrepreneurial self-efficacy at 0.765, followed by startup intentions and entrepreneurial self-efficacy at 0.759. These results indicate that the relationships among constructs are theoretically meaningful but do not show excessive conceptual overlap.

**Table 5.** Heterotrait-monotrait ratio

| Construct | M     | X1    | X2    | Y |
|-----------|-------|-------|-------|---|
| M         |       |       |       |   |
| X1        | 0.666 |       |       |   |
| X2        | 0.765 | 0.712 |       |   |
| Y         | 0.759 | 0.540 | 0.620 |   |

Source: SmartPLS output.

### Structural Model Evaluation

The structural model evaluation shows that digital literacy and entrepreneurial mindset explained 52.8 percent of the variance in entrepreneurial self-efficacy. The adjusted R-square value of 0.524 indicates stable explanatory power after accounting for the number of predictors. The startup intentions model had an R-square value of 0.499 and an adjusted R-square value of 0.492. This means that digital literacy, entrepreneurial mindset, and entrepreneurial self-efficacy jointly explained nearly half of the variance in students' startup intentions. This finding indicates that startup intentions are determined not only by digital literacy or mindset but also by students' confidence in performing entrepreneurial actions.

**Table 6.** R Square

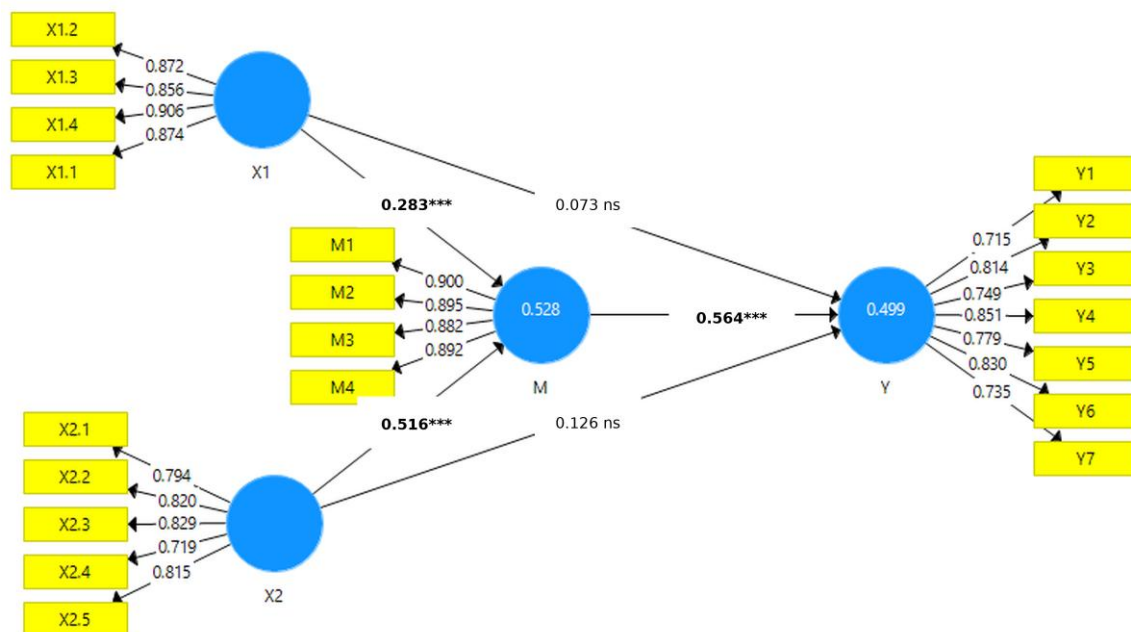
| Endogenous construct          | R Square | R Square adjusted | Interpretation                                                                         |
|-------------------------------|----------|-------------------|----------------------------------------------------------------------------------------|
| Entrepreneurial Self-Efficacy | 0.528    | 0.524             | Digital literacy and entrepreneurial mindset explain 52.8 percent of the variance in M |

|                    |       |       |                                                      |
|--------------------|-------|-------|------------------------------------------------------|
| Startup Intentions | 0.499 | 0.492 | The model explains 49.9 percent of the variance in Y |
|--------------------|-------|-------|------------------------------------------------------|

Source: SmartPLS output.

The path coefficient results show that digital literacy had a positive and significant effect on entrepreneurial self-efficacy, with a coefficient of 0.283, a t statistic of 4.158, and a p value of less than 0.001. Entrepreneurial mindset also had a positive and significant effect on entrepreneurial self-efficacy, with a coefficient of 0.516, a t statistic of 7.132, and a p value of less than 0.001. Entrepreneurial self-efficacy had a positive and significant effect on startup intentions, with a coefficient of 0.564, a t statistic of 8.417, and a p value of less than 0.001. These results confirm that self-efficacy is the main psychological pathway linking digital capacity and entrepreneurial thinking to startup intentions.

Conversely, the direct effect of digital literacy on startup intentions was not significant, with a coefficient of 0.073 and a p value of 0.287. The direct effect of entrepreneurial mindset on startup intentions was also not significant, with a coefficient of 0.126 and a p value of 0.118. These results indicate that digital capability and entrepreneurial thinking are not sufficient to foster startup intentions unless accompanied by students' confidence that they can carry out the entrepreneurial process. This pattern is consistent with social cognitive theory (Bandura, 2001), which positions self-efficacy as a central mechanism in the formation of entrepreneurial intention.



Significance: \*\*\* p < 0.001; ns = not significant. Values inside M and Y are R<sup>2</sup>.

**Figure 2.** Structural model with standardized coefficients and significance markers

**Table 7.** Path coefficients

| Path    | Original sample | Sample mean | STDEV | T statistics | P values | Decision      |
|---------|-----------------|-------------|-------|--------------|----------|---------------|
| M -> Y  | 0.564           | 0.561       | 0.067 | 8.417        | < 0.001  | Supported     |
| X1 -> M | 0.283           | 0.287       | 0.068 | 4.158        | < 0.001  | Supported     |
| X1 -> Y | 0.073           | 0.078       | 0.069 | 1.067        | 0.287    | Not supported |
| X2 -> M | 0.516           | 0.511       | 0.072 | 7.132        | < 0.001  | Supported     |
| X2 -> Y | 0.126           | 0.130       | 0.081 | 1.566        | 0.118    | Not supported |

Source: SmartPLS output.

The specific indirect effects test shows that entrepreneurial self-efficacy mediated the effect of digital literacy on startup intentions. The indirect effect of X1 -> M -> Y was 0.159, with a t statistic of 3.851 and a p value of less than 0.001. Entrepreneurial self-efficacy also mediated the effect of entrepreneurial mindset on startup intentions, with an indirect effect of 0.291, a t statistic of 5.100, and a p value of less than 0.001. Because the direct effects of X1 -> Y and X2 -> Y were not significant, whereas the indirect effects were significant, these results indicate a full mediation pattern in both paths.

The total effects show that digital literacy still had a significant total effect on startup intentions, with a coefficient of 0.233 and a p value of 0.006. Entrepreneurial mindset also had a significant total effect on startup intentions, with a coefficient of 0.417 and a p value of less than 0.001. Thus, the contribution of digital literacy and entrepreneurial mindset to startup intentions emerged mainly through entrepreneurial self-efficacy. This finding provides empirical evidence that self-efficacy is not merely an additional variable but a core mechanism in the formation of students' intentions to build startups.

**Table 8.** Specific indirect effects and total effects

| Effect type     | Path         | Original sample | STDEV | T statistics | P values | Decision    |
|-----------------|--------------|-----------------|-------|--------------|----------|-------------|
| Indirect effect | X1 -> M -> Y | 0.159           | 0.041 | 3.851        | < 0.001  | Significant |
| Indirect effect | X2 -> M -> Y | 0.291           | 0.057 | 5.100        | < 0.001  | Significant |
| Total effect    | X1 -> Y      | 0.233           | 0.084 | 2.760        | 0.006    | Significant |
| Total effect    | X2 -> Y      | 0.417           | 0.081 | 5.162        | < 0.001  | Significant |

Source: SmartPLS output.

**Table 9.** Summary of hypothesis testing

| Hypothesis | Statement                                                                                 | Decision      |
|------------|-------------------------------------------------------------------------------------------|---------------|
| H1         | Digital literacy has a positive effect on students' startup intentions.                   | Not supported |
| H2         | Digital literacy has a positive effect on students' entrepreneurial self-efficacy.        | Supported     |
| H3         | Entrepreneurial mindset has a positive effect on students' startup intentions.            | Not supported |
| H4         | Entrepreneurial mindset has a positive effect on students' entrepreneurial self-efficacy. | Supported     |
| H5         | Entrepreneurial self-efficacy has a positive effect on students' startup intentions.      | Supported     |

|    |                                                                                                     |           |
|----|-----------------------------------------------------------------------------------------------------|-----------|
| H6 | Entrepreneurial self-efficacy mediates the effect of digital literacy on startup intentions.        | Supported |
| H7 | Entrepreneurial self-efficacy mediates the effect of entrepreneurial mindset on startup intentions. | Supported |

Source: SmartPLS output and hypothesis interpretation results.

## Discussion

The first finding shows that digital literacy significantly strengthened entrepreneurial self-efficacy but did not directly predict startup intentions. This differs from studies that reported a direct relationship between digital capability and entrepreneurial intention (Dabbous & Boustani, 2023; Abaddi, 2024; Liang et al., 2025). The difference suggests that the ability to use digital tools and evaluate online information may provide resources for entrepreneurship without automatically producing commitment to establish a startup. In this sample, digital literacy became behaviorally relevant when students interpreted their digital capability as evidence that they could perform entrepreneurial tasks.

The second finding shows that entrepreneurial mindset had a strong effect on entrepreneurial self-efficacy, while its direct effect on startup intentions was not significant. Entrepreneurial mindset therefore remains important, but it appears to operate through perceived capability rather than as an immediate trigger of startup intention. This pattern is consistent with research showing that opportunity-oriented thinking and entrepreneurship education are more influential when they strengthen attitudes and self-efficacy (Wardana et al., 2020; Saptono et al., 2020). Students may recognize opportunities and value innovation yet still hesitate to form a startup intention unless they feel capable of testing a market, making decisions, and managing risk.

Entrepreneurial self-efficacy was the strongest direct predictor of startup intentions (beta = 0.564,  $p < 0.001$ ). This finding supports social cognitive theory and earlier evidence that self-efficacy channels learning, experience, and perceived competence into entrepreneurial intention (Zhao et al., 2005; Newman et al., 2019; Duong & Vu, 2024; Amani et al., 2024; Ye & Kang, 2025). Startup intention is a demanding and specific outcome; consequently, confidence in performing concrete entrepreneurial tasks may be more proximal than general digital capability or opportunity-oriented cognition.

The significant indirect effects and non-significant direct effects indicate full mediation for both predictor paths. Digital literacy and entrepreneurial mindset had significant total effects on startup intentions, but their effects occurred mainly through entrepreneurial self-efficacy. This result extends entrepreneurial intention models by specifying a common cognitive bridge through which two distinct resources, digital capability and entrepreneurial thinking, are converted into startup-specific intention. It also explains why possession of digital skills or an entrepreneurial outlook does not necessarily lead to startup commitment in the absence of confidence to act.

The sample composition offers a plausible contextual explanation for the full mediation pattern. Students from the 2025 cohort represented 50.68 percent of respondents, meaning that the sample was dominated by first-year students with relatively limited academic and real-world entrepreneurial experience. Students at this stage may be able to use digital technologies and recognize opportunities, but they may not yet have accumulated market-validation, resource-mobilization, or business-operation experience. Under these conditions, entrepreneurial self-

efficacy can become the principal cognitive mechanism through which capability and mindset are translated into startup intentions.

The full mediation result may also reflect the use of startup intentions rather than a broad entrepreneurial intention measure. Establishing a startup implies a technology-enabled, innovation-oriented venture and may therefore require a stronger perception of task-specific capability. Measurement differences, the single-university setting, and the Indonesian educational context may help explain why the direct paths were weaker than those reported in other studies. Accordingly, the result should be interpreted as context-sensitive rather than as evidence that digital literacy or entrepreneurial mindset never has a direct effect.

## **Implications**

The practical implication is that universities should design entrepreneurship learning that integrates digital literacy, opportunity recognition, problem-solving, startup idea validation, risk simulation, and platform-based business projects. Technical instruction in applications, social media, or content creation is insufficient unless students use those capabilities to identify market problems and test solutions. Practice-based activities such as pitching, prototyping, customer interviews, and digital marketing experiments can provide mastery experiences that strengthen entrepreneurial self-efficacy (Nowiński et al., 2019; Wardana et al., 2020).

For study-program managers, the success of entrepreneurship education should therefore be assessed not only through conceptual knowledge but also through students' confidence and readiness to take initial venture-creation steps. Incubation programs, market-validation sprints, alumni mentoring, and interdisciplinary digital projects can connect classroom capability with real entrepreneurial experience. This approach is consistent with Indonesian evidence emphasizing the roles of entrepreneurial preparation, digital entrepreneurship education, and institutional support (Saptono et al., 2020; Wibowo et al., 2023; Wardoyo et al., 2025).

Campus incubation units should also structure learning as a gradual sequence: identifying a market problem, creating a simple prototype, obtaining user feedback, revising the value proposition, preparing a pitch deck, and assessing operational and financial risks. Repeated completion of these tasks can build credible mastery experiences. As entrepreneurial self-efficacy increases, students are more likely to convert digital literacy and entrepreneurial mindset into focused and realistic startup intentions.

## **Limitations and Future Research Agenda**

This study has several limitations. First, the cross-sectional design captured respondents at only one point in time and therefore cannot establish how startup intentions change as students gain experience. Second, the study relied on self-reported perceptions rather than behavioral evidence. Future studies should combine surveys with indicators such as incubation participation, prototype development, customer interviews, digital sales activity, or actual venture creation.

Third, the sample was drawn from one university and was dominated by first-year students from the 2025 cohort. This composition limits generalization and may have contributed to the full mediation pattern. Future research should use multi-university and longitudinal samples, balance respondents across years of study, and conduct multigroup analysis based on entrepreneurship training, prior business experience, gender, and disciplinary background. The indicator structure should also be re-examined with larger and more diverse samples.

Future research can extend the model by adding university support, social media engagement, AI literacy, digital technology anxiety, and the entrepreneurial ecosystem. Institutional and ecosystem variables are relevant because startup development depends on both individual cognition and access to networks, infrastructure, mentorship, and finance (Sussan & Acs, 2017; Bui et al., 2025). AI literacy may also influence opportunity recognition, rapid prototyping, and digital business experimentation, while technology anxiety may weaken students' ability to convert capability into action (Bickley et al., 2025; Duong et al., 2024).

## CONCLUSION

This study shows that digital literacy and entrepreneurial mindset are associated with university students' startup intentions primarily through entrepreneurial self-efficacy. Both predictors were positively related to entrepreneurial self-efficacy, which was the strongest predictor of startup intentions. The nonsignificant direct effects, combined with significant indirect effects, support full mediation in both pathways.

The study contributes by identifying entrepreneurial self-efficacy as the cognitive mechanism through which digital capability and opportunity-oriented thinking are linked to startup-specific intention in a two-predictor model. Universities should therefore combine digital-literacy and entrepreneurial-mindset development with repeated mastery experiences, including market validation, prototyping, pitching, and business simulation. Because the sample was drawn from one Indonesian university and was dominated by first-year students with limited startup experience, the full mediation pattern should be tested across institutions, study levels, and levels of entrepreneurial experience.

## REFERENCES

- Abaddi, S. (2024). Digital skills and entrepreneurial intentions for final-year undergraduates: Entrepreneurship education as a moderator and entrepreneurial alertness as a mediator. *Management & Sustainability: An Arab Review*, 3(3), 298-321. <https://doi.org/10.1108/MSAR-06-2023-0028>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Amani, D., Ismail, I. J., Makona, A., Changalima, I. A., & Kazungu, I. (2024). Extending the mediation role of entrepreneurial self-efficacy on enhancing students' entrepreneurial intentions: A moderated mediation model. *The International Journal of Management Education*, 22(1), Article 100915. <https://doi.org/10.1016/j.ijme.2023.100915>
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Bickley, S. J., Macintyre, A., & Torgler, B. (2025). Artificial intelligence and big data in sustainable entrepreneurship. *Journal of Economic Surveys*, 39(1), 103-145. <https://doi.org/10.1111/joes.12611>
- Bui, H. N., Pham, D. K., Phan, T. T. H., Duong, C. D., & Tran, T. P. H. (2025). Balancing confidence and aspiration: University supports and e-entrepreneurial intentions in Vietnam. *The International Journal of Management Education*, 23(3), Article 101271. <https://doi.org/10.1016/j.ijme.2025.101271>
- Chen, C. C., Greene, P. G., & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, 13(4), 295-316. [https://doi.org/10.1016/S0883-9026\(97\)00029-3](https://doi.org/10.1016/S0883-9026(97)00029-3)

- Dabbous, A., & Boustani, N. M. (2023). Digital explosion and entrepreneurship education: Impact on promoting entrepreneurial intention for business students. *Journal of Risk and Financial Management*, 16(1), Article 27. <https://doi.org/10.3390/jrfm16010027>
- Daspit, J. J., Fox, C. J., & Findley, S. K. (2023). Entrepreneurial mindset: An integrated definition, a review of current insights, and directions for future research. *Journal of Small Business Management*, 61(1), 12-44. <https://doi.org/10.1080/00472778.2021.1907583>
- Duong, C. D., Ngo, T. V. N., Nguyen, T. P. T., Tran, N. M., & Pham, H. T. (2024). Digital entrepreneurial education and digital entrepreneurial intention: A moderated mediation model. *Social Sciences & Humanities Open*, 10, Article 101178. <https://doi.org/10.1016/j.ssaho.2024.101178>
- Duong, C. D., & Vu, N. X. (2024). Entrepreneurial education and intention: Fear of failure, self-efficacy and gender. *Journal of Small Business and Enterprise Development*, 31(4), 629-654. <https://doi.org/10.1108/JSBED-02-2023-0057>
- Ganefri, Kamdi, W., Makky, M., Hidayat, H., & Rahmawati, Y. (2024). Entrepreneurship education and entrepreneurial intention among university students: The roles of entrepreneurial mindset, digital literacy, and self-efficacy. *Journal of Social Studies Education Research*, 15(4), 85-134. <https://jsser.org/index.php/jsser/article/view/5891>
- Ganefri, Waras, Trisno, B., Nordin, N. M., Hidayat, H., Rahmawati, Y., & Nurhidayatulloh. (2025). Cultivating digital entrepreneurs: Unravelling factors shaping digital entrepreneurship intention among engineering students in higher education. *The International Journal of Management Education*, 23(2), Article 101100. <https://doi.org/10.1016/j.ijme.2024.101100>
- González-Prida, V., Gómez, J. F., & Crespo Márquez, A. (2024). Fostering entrepreneurial mindsets: Factors shaping entrepreneurial intention among university students. *Societies*, 14(10), Article 202. <https://doi.org/10.3390/soc14100202>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). The Guilford Press.
- Krueger, N. F., Jr., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5-6), 411-432. [https://doi.org/10.1016/S0883-9026\(98\)00033-0](https://doi.org/10.1016/S0883-9026(98)00033-0)
- Lam, B. Q., Tran, H. Y., Nguyen, K. A., Nguyen, K. T., & Pham, M. (2025). Digital competence and digital entrepreneurial intention: A social cognitive approach. *Entrepreneurial Business and Economics Review*, 13(2), 139-153. <https://doi.org/10.15678/EBER.2025.130208>
- Liang, Y., Chen, R., Hong, H., Li, S., & Han, L. (2025). Shaping digital entrepreneurial intention in higher education: The role of entrepreneurship education, creativity, and digital literacy among Chinese university students. *Journal of Innovation & Knowledge*, 10(5), Article 100788. <https://doi.org/10.1016/j.jik.2025.100788>
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593-617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
- Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029-1055. <https://doi.org/10.1111/etap.12254>
- Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2019). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes, and an agenda for future research. *Journal of Vocational Behavior*, 110, 403-419. <https://doi.org/10.1016/j.jvb.2018.05.012>

- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065-1078. <https://doi.org/10.1016/j.compedu.2012.04.016>
- Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 44(2), 361-379. <https://doi.org/10.1080/03075079.2017.1365359>
- Saptono, A., Wibowo, A., Narmaditya, B. S., Karyaningsih, R. P. D., & Yanto, H. (2020). Does entrepreneurial education matter for Indonesian students' entrepreneurial preparation: The mediating role of entrepreneurial mindset and knowledge. *Cogent Education*, 7(1), Article 1836728. <https://doi.org/10.1080/2331186X.2020.1836728>
- Schlaegel, C., & Koenig, M. (2014). Determinants of entrepreneurial intent: A meta-analytic test and integration of competing models. *Entrepreneurship Theory and Practice*, 38(2), 291-332. <https://doi.org/10.1111/etap.12087>
- Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. *Small Business Economics*, 49(1), 55-73. <https://doi.org/10.1007/s11187-017-9867-5>
- Thompson, E. R. (2009). Individual entrepreneurial intent: Construct clarification and development of an internationally reliable metric. *Entrepreneurship Theory and Practice*, 33(3), 669-694. <https://doi.org/10.1111/j.1540-6520.2009.00321.x>
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577-588. <https://doi.org/10.1016/j.chb.2017.03.010>
- Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: The mediating role of attitude and self-efficacy. *Heliyon*, 6(9), Article e04922. <https://doi.org/10.1016/j.heliyon.2020.e04922>
- Wardoyo, C., Narmaditya, B. S., Qurrata, V. A., Satrio, Y. D., & Sahid, S. (2025). Are students ready for digital business? Antecedents of entrepreneurial intentions among Indonesian students using a serial mediation. *Social Sciences & Humanities Open*, 11, Article 101213. <https://doi.org/10.1016/j.ssaho.2024.101213>
- Wibowo, A., Narmaditya, B. S., Saptono, A., Effendi, M. S., Mukhtar, S., & Mohd Shafiai, M. H. (2023). Does digital entrepreneurship education matter for students' digital entrepreneurial intentions? The mediating role of entrepreneurial alertness. *Cogent Education*, 10(1), Article 2221164. <https://doi.org/10.1080/2331186X.2023.2221164>
- Ye, Z.-M., & Kang, K.-W. (2025). The impact of entrepreneurial self-efficacy and entrepreneurship on entrepreneurial intention: Entrepreneurial attitude as a mediator and entrepreneurship education having a moderate effect. *Sustainability*, 17(10), Article 4733. <https://doi.org/10.3390/su17104733>
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6), 1265-1272. <https://doi.org/10.1037/0021-9010.90.6.1265>