Shaping Future Entrepreneurs: Education, Intention, and the Adoption of AI

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ABSTRACT

Nowadays, technology cannot be separated from the business and education sectors, with Artificial Intelligence (AI) emerging as a vital tool for early-stage entrepreneurs. In higher education, students are increasingly expected to combine business knowledge with the ability to utilize digital tools, such as AI. However, the link between entrepreneurship education, entrepreneurial intention, and AI adoption for enhancing entrepreneurial capabilities remains underexplored. Using a purposive sampling method, data were collected from 175 valid respondents, and the model was tested using the structural equation model. The study found that entrepreneurial education and intention have a direct influence on the adoption of AI. Furthermore, AI adoption can mediate and enhance entrepreneurial competencies in the higher education context. The study offers theoretical insights into the integration of AI in the context of entrepreneurship education, providing practical implications that aim to prepare students for digital entrepreneurship.

Keywords: Entrepreneurial Education, Entrepreneurial Intention, AI Adoption, Entrepreneurial Capabilities
JEL Classifications: M13, L26, I23

1. INTRODUCTION

Today's daily life cannot be separated from technology. Many businesses utilize technology to gain a competitive advantage. One of the technologies currently gaining attention and attracting many entrepreneurs is artificial intelligence (AI). AI is recognized as a game-changer that can transform how businesses create, operate, and develop. AI technology can help people gain insight into starting or growing a business (Wang et al., 2022).

AI utilization in the entrepreneurship area can establish new ideas and increase the entrepreneurial capabilities to optimize their processes ideation and product development (Chalmers et al., 2021). AI's ability to analyze large amounts of data enables businesses to better understand customer needs and market trends,

facilitating informed decision-making (Coussement et al., 2024; Somià and Vecchiarini, 2024). Entrepreneurship students can also utilize these AI-driven capabilities to bring additional conviction through leveraging AI for complex tasks such as identifying opportunities or business model development, potentially gaining competitive advantages in recognizing market trends and solving problems (Duan et al., 2019; Dwivedi et al., 2021). However, the rapid utilization of AI among students can also raise challenges regarding the immersion of students knowledge, skills, and ethics. These circumstances underscore the need for education systems to prepare future entrepreneurs for responsible AI utilization (Al-Emran and Griffy-Brown, 2023; Chiu et al., 2023).

AI era offers some opportunities and challenge for young and inexperienced entrepreneur, thus the entrepreneurship education

in higher education should play its vital role in equipping aspiring and nascent entrepreneur students with the entrepreneurial mindset, knowledge, and competencies needed to not just initiate the business but also develop their business (Nabi et al., 2017; Shahzad et al., 2021). Another factor that can be affected is startup readiness, which reflects an individual's preparedness to launch and sustain a business, serving as a foundation for entrepreneurial success (Shahzad et al., 2021; Sreenivasan and Suresh, 2023). A recent study employing a systematic literature approach demonstrates that experiential learning approaches have a positive impact on entrepreneurship programs as a pedagogy for developing real-world entrepreneurial competencies and skills (Askren and James, 2021; Motta and Galina, 2023). Well-designed curricula integrate solid theoretical foundations with practical orientation, ensuring students acquire knowledge and build skills through hands-on experience. Prior studies in various contexts have also demonstrated a positive link between participation in entrepreneurship education and higher entrepreneurial intention among students (Ghouse et al., 2024; Weng et al., 2022). The development of technology is pressing educational institutions to enhance and align their curricula by incorporating practical AI applications and fostering a deeper understanding of AI technologies among students (Biswas and Verma, 2021; Upadhyay et al., 2021).

Despite the robust findings from previous studies, a notable gap remains in understanding how AI fits into entrepreneurship education and the entrepreneurship intention–action paradigm, particularly in the context of student entrepreneurs in emerging economies such as Southeast Asia (Nguyen and Nguyen, 2024a, 2024b). AI adoption in business has until recently been examined mainly in the context of established firms or developed economies, leaving questions about how young entrepreneurs learn to adopt and apply AI tools. This gap is especially pronounced in regions like Southeast Asia, where most scholars work on entrepreneurship education and technology integration has been concentrated in developed countries such as North America and Europe, and studies focusing on AI within entrepreneurship programs in Southeast Asian contexts are scarce (Inkizhinov et al., 2021; Mei and Symaco, 2022; Nabi et al., 2017). For instance, a recent industry study in ASEAN found that while awareness of AI among online business owners is high, actual adoption of AI in operations remains relatively low, suggesting that many entrepreneurs in the region have yet to translate AI's potential into practice (Ahmad et al., 2024; Lada et al., 2023; Somjai et al., 2020). Furthermore, students often face resource constraints and skill gaps distinct from those of experienced, full-time entrepreneurs, and the role of university education in supporting their use of advanced technologies is not well understood (Black and and Mischel, 2023; Martins et al., 2022). There is thus a compelling need to explore how entrepreneurship education can better prepare student entrepreneurs to adopt AI and, in turn, how AI utilization might enhance their entrepreneurial capabilities (Al-Emran and Griffy-Brown, 2023; Wang et al., 2022). By addressing issues, our research aims to enrich the theoretical understanding of the interplay between education, entrepreneurial intention, and technology adoption in entrepreneurship, and to provide practical insights for enhancing entrepreneurship education in the AI era, particularly within the context of higher education in emerging markets.

2. LITERATURE REVIEW

2.1. Entrepreneurial Education (EE)
Entrepreneurship education refers to formal and informal education programs, like internships, mentorship, business simulations, or startup incubators, that equip students with the entrepreneurial knowledge, skills, and mindset necessary for venture creation to foster the creativity process, innovation, and the ability to recognize business opportunities based on the business environment analysis and market needs analysis (Kuratko, 2005; Weng et al., 2022). EE can also create structured learning experiences, inside or outside the classroom, to develop students' knowledge, skills, and mindset for entrepreneurship, especially in a higher education context (Jena, 2020; Kuratko, 2005; Weng et al., 2022).

EE consists of the three sub-dimensions, as highlighted in the previous study such as experiential learning, curriculum design, and skill development (Bauman and Lucy, 2021; Boldureanu et al., 2020; Lerro et al., 2024). Experiential learning is a cornerstone of modern EE because this approach can engage students in active entrepreneurship practice and reinforce the learning outcomes (Kolb, 1984; Motta and Galina, 2023). Curriculum design in higher education pertains to how entrepreneurship programs are structured to align and integrate with many interdisciplinary courses and be relevant to current business needs, for example such as technology, ethics, problem solving, and decision making (Askren and James, 2021; Cheng and Liu, 2023). Aligning the EE curricula with current business needs can balance the theoretical concept and real business practice, resulting in a solid theoretical foundation and a practical orientation (Cheng and Liu, 2023; Lerro et al., 2024). Finally, research also found that EE helps student to develop their skills and competencies, such as opportunity recognition, creative problem-solving, communication, teamwork, and leadership, to adapt to a current dynamic business environment (Bauman and Lucy, 2021; Pulaj Brakaj and Šafránková, 2024).

Previous studies have found that EE can increase students' entrepreneurial awareness through higher education courses that focus on shaping entrepreneurial attitudes, while also developing entrepreneurial skills. These skills should be further addressed in subsequent mentoring programs (Fretschner and Weber, 2013). Additionally, entrepreneurial knowledge and education can positively influence students' entrepreneurial intentions and behavior (Boldureanu et al., 2020; Nguyen and Nguyen, 2024b). Studies have shown that educational programs designed to foster entrepreneurial skills can enhance students' entrepreneurial intentions by providing them with the necessary competencies and confidence (Bazkiaei et al., 2020; Biswas and Verma, 2021). These suggestions are especially valuable in today's digital age, when incorporating AI-based tools, such as automated business plan tools and data-driven opportunity recognition systems, into their entrepreneurial journey so that it can help them learn more about starting a new venture (Somià and Vecchiarini, 2024; Vecchiarini and Somià, 2023). As a result, incorporating AI into entrepreneurship education can boost students' enthusiasm and

intention, and also prepare them for the tech world of today's startup ecosystems.

2.2. Entrepreneurial Intention (EI)

Entrepreneurial intention (EI) is a person with a conscious commitment and a plan to start a new business or venture in the future (Bazkiaei et al., 2020; Jena, 2020). Empirical studies in previous studies have found that students who undergo EE exhibit higher entrepreneurial intentions than students who do not take EE (Liu et al., 2019; Pulaj Brakaj and Šafránková, 2024). Students with high EI can form their attitude and self-efficacy through exposure to entrepreneurial activities and role models by building a more favorable attitude toward starting a business and increasing students' belief in their ability to succeed (Pham et al., 2023; Yousaf et al., 2021). Another study conducted by Motta and Galina's (2023) underscores that experiential learning can positively impact entrepreneurial intention, reinforcing that practice-oriented education bolsters students' resolve to pursue entrepreneurship.

Digital transformation and advancements in technology, including AI, have significantly influenced entrepreneurial intentions, offering new opportunities and reducing traditional barriers to entry (Duong et al., 2024; Shahzad et al., 2021). As businesses increasingly adopt AI technologies, students have unique opportunities to engage in entrepreneurial activities that leverage these advancements, further motivating their entrepreneurial intentions. This trend is particularly evident in regions like Indonesia and Malaysia, where initiatives promoting entrepreneurship education are gaining traction among students (Hassan et al., 2020; Tan and Arceo, 2024). However, despite growing interest and an intention to pursue entrepreneurship, a critical gap remains between intention and actual entrepreneurial action. This gap can be addressed through enhanced support systems, including mentorship, access to resources, and exposure to emerging technologies like AI (Ndofirepi, 2020; Yousaf et al., 2021).

Recent studies highlight that entrepreneurial intention among higher education students is shaped by factors such as educational background, their internal personality traits such as openness to experience, conscientiousness, and risk-taking propensity, which have been identified as critical predictors of entrepreneurial intention, suggesting that individual differences play a substantial role in shaping entrepreneurial aspirations (Cao et al., 2022; Duong et al., 2024). Factors such as openness to AI, personality traits, and social influence can be viewed as dimensions or antecedents of a student entrepreneur's intention to adopt innovative technologies practices in today business environment (Duong, 2025; Marchena Sekli and Portuguez-Castro, 2025). Previous research also shows that students with a high intention of entrepreneurship, which can be enhanced with AI to generate data-driven insights and automate decision-making processes, can improve the efficiency of business operations (Solórzano Solórzano et al., 2024; Vecchiarini and Somià, 2023).

2.3. Artificial Intelligence Adoption (AIA)

AI Adoption in the entrepreneurial context refers to the extent to which entrepreneurs embrace and implement AI tools and systems in their business processes (Upadhyay et al., 2021, 2022). The adoption of AI can range from using AI-driven decision support systems or analytics to enhance strategy or assist in creating a marketing strategy (Coussement et al., 2024; Dwivedi et al., 2021). In the entrepreneurship and business context, AI adoption can be examined into two facets which are AI-driven decision-making and ethical AI use (Rajagopal et al., 2022; Rezaei et al., 2024). AI-driven decision-making can be defined as the integration of AI technologies into organizational processes to generate data-driven insights that guide strategic or operational decisions (Chintala and Thiyagarajan, 2023; Rajagopal et al., 2022). This AI utilization can include product development, customer targeting, pricing, and venture scalability decisions in entrepreneurial settings (Dwivedi et al., 2021; Gültekin et al., 2024) and make these entrepreneurs can leverage their business to detect patterns in customer behavior, predict market shifts, and assess risks, enabling more agile strategic responses.

In parallel, the responsible use of ethical AI emphasizes the integration of AI systems, prioritizing fairness, accountability, transparency, and data privacy. Entrepreneurs must be aware of potential biases embedded in AI algorithms and ensure compliance with ethical standards, norms, and government regulations (Rezaei et al., 2024). This is especially pertinent for student entrepreneurs in emerging countries where regulatory awareness and digital ethics education may be limited (Cheng and Liu, 2023). Ethical AI use emphasizes the responsible integration of AI systems by prioritizing fairness, accountability, and transparency (Hosseini et al., 2023). Educational institutions must be aware of biases embedded in AI and ensure that the AI utilization by students aligns with ethical norms and data protection regulations (Nguyen et al., 2023; Rezaei et al., 2024).

2.4. Entrepreneurial Capabilities (EC)

Entrepreneurs who adopt AI for their businesses are expected to experience significant implications to enhance their entrepreneurial capabilities (Shepherd and Majchrzak, 2022). Entrepreneurial capabilities can be defined as the core competencies and higher-order skills that enable entrepreneurs to identify opportunities, formulate effective strategies, and build strong networks to grow their businesses (Lashitew et al., 2022; Ng and Kee, 2018; Rahman et al., 2015). To address and perceive market gaps or emerging customer needs and conceive viable business ideas, entrepreneurs need the ability to recognize opportunities, as well as the distinguishing skill of successful entrepreneurs, which is linked to creativity and market insight. Strategic thinking refers to the ability to plan and execute long-term strategies, make informed decisions in any form of situation, and allocate resources effectively in pursuit of business objectives (Alvarez and Barney, 2017; McGrath and MacMillan, 2004). The integration of AI into a student entrepreneur's toolkit can influence these capabilities in multiple ways. AI technologies excel at processing large amounts of data and identifying patterns that might be imperceptible to humans (Shepherd and Majchrzak, 2022). Thus, AI analytics can sift through market trends, customer feedback, or social media data to identify emerging needs or inefficiencies, providing entrepreneurs with richer insights for opportunity spotting. A recent exploratory study found that students used an AI chatbot

(ChatGPT) to assist with a business model development task and enhanced students ability to spot opportunities and improved the quality of their ideas (Al-Emran and Griffy-Brown, 2023; Chiu et al., 2023; Khalid, 2020). By rapidly generating or evaluating ideas, AI can expand the solution space that entrepreneurs consider, thereby sharpening their ability to recognize opportunities. Similarly, AI tools can also support strategic thinking by offering predictive models and scenario analysis that inform strategic choices. Entrepreneurs can utilize AI-driven simulations as a decision support system to evaluate the potential outcomes of various strategies with data-driven evidence (Ahmad et al., 2024; Chintala and Thiyagarajan, 2023). In other words, by automating routine analyses and generating insights, AI allows entrepreneurs to focus more on higher-level strategic deliberation, potentially improving their strategic thinking proficiency.

Networking abilities might also be influenced by AI adoption. Networking is fundamentally a social skill that, in the modern networking era, often occurs on digital platforms where AI algorithms play a role in giving some suggestions. An entrepreneur comfortable with AI tools may better leverage digital networking opportunities, using platforms to identify and connect with relevant partners or mentors (Al-Emran and Griffy-Brown, 2023; Ghouse et al., 2024). Additionally, adopting AI in one's business can itself expand an entrepreneur's network in the tech community, leading to new collaborations. More directly, AI can handle specific daily simple communication tasks such as using chatbots or AI-based email drafting for initial customer contact, which frees entrepreneurs to focus on building high-value relationships.

Overall, the existing literature highlights the significant influence of entrepreneurial education, startup readiness, entrepreneurial intention, and artificial intelligence on the development of entrepreneurial capabilities. While past research has independently explored these variables, few studies have connected them in a comprehensive model (Al-Emran and Griffy-Brown, 2023; Chiu et al., 2023), especially in the context of higher education students who are just beginning their entrepreneurial journey. Recognizing this gap, this study proposes an integrated research framework that examines not only the direct impact of education and readiness on entrepreneurial capabilities but also how intention and AI adoption mediate these relationships.

The goal of the proposed research framework (Figure 1) is to investigate the relationship between entrepreneurial capabilities, as the dependent variable, and entrepreneurship education and entrepreneurial intention, as independent factors. Additionally, the model incorporates mediating variables in the adoption of artificial intelligence. This framework reflects the assumption that students who receive structured entrepreneurship education and demonstrate a high level of intention to start a business are more likely to develop entrepreneurial capabilities, particularly when they implement AI in their business.

This model builds on prior research that highlights the contributions of entrepreneurship education and intention, which is also extended by introducing an important mediator. Entrepreneurial intention represents the students' internal drive to engage in entrepreneurial activities, while AI adoption represents external enablers that support decision-making, efficiency, and innovation. The framework is tested through the following hypotheses:

H_1: Entrepreneurship education positively influences AI adoption

H_2: Entrepreneurial Intention positively influences the adoption of AI.

H_3: Entrepreneurship education positively influences entrepreneurial capabilities

H_4: Entrepreneurial intention positively influences entrepreneurial capabilities

H_5: Adoption of AI positively influences entrepreneurial capabilities

H_6: Adoption of AI mediates the relationship between entrepreneurship education and entrepreneurial capabilities

H_7: Adoption of AI mediates the relationship between entrepreneurial intention and entrepreneurial capabilities.

3. METHODOLOGY

This study employed a quantitative research approach to examine the entrepreneurial capabilities of higher education students, focusing on variables related to this aspect. Quantitative research is characterized by its systematic investigation of phenomena through the collection and analysis of numerical data, enabling researchers to identify patterns, relationships, and trends within the target population (Cooper and Schindler, 2014; Sekaran and Bougie, 2019). This approach is well-suited for studies that aim to generate generalizable findings across large populations, making it ideal for this research. The target population consists of undergraduate students in higher education in Indonesia, which is 8,291,058 (PDDIKTI, 2025). These students represent a critical demographic for entrepreneurial development in the region. A purposive sampling method is employed to select respondents who meet specific inclusion criteria, ensuring the relevance

Figure 1: Propose research framework
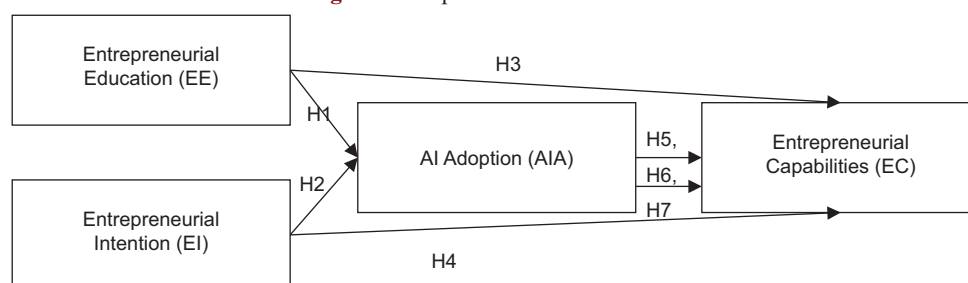
and validity of the data collected (Cooper and Schindler, 2014; Sekaran and Bougie, 2019). The criteria for participation include: (1) Respondents must be current higher education students in Indonesia, and (2) Respondents must have been running the business. This sampling method focuses on individuals with relevant entrepreneurial experience, enhancing the reliability of the findings by targeting those most aligned with the study's objectives. This non-random criterion can obtain insightful data from individuals actively engaged in entrepreneurship.

To determine the sample size, researchers calculated the minimum requirement using a standard formula, considering a population size of 8,291,058 students, a 95% confidence level (Z-score = 1.96), and a 10% margin of error. Based on these parameters, the minimum required sample size is 97 respondents. However, a total of 175 valid responses were collected for analysis, exceeding the minimum requirement and thereby increasing the robustness of the results.

Data will be collected using structured questionnaires designed to capture quantitative insights into the key variables under study. The closed-end questionnaire gathered precise data on entrepreneurial education, entrepreneurial intention, AI adoption, and entrepreneurial capabilities. The questionnaires will be distributed online through accessible digital platforms, using a 1-6 Likert scale.

The study will employ descriptive and inferential statistics to analyze the data. Descriptive statistics will summarize the key characteristics of the data, while inferential statistics will test hypotheses and explore relationships between variables. A structural equation model (SEM) will be employed to investigate the direct and indirect relationships among the independent variables (entrepreneurial education and startup readiness), the mediators (entrepreneurial intention and AI adoption), and the dependent variable (entrepreneurial capabilities). The analysis will be conducted using SMART-PLS, a robust statistical tool for path analysis and hypothesis testing.

4. RESULTS AND DISCUSSION

This section begins with an overview of the respondents' profiles, providing background context for the study as presented on Table 1. An evaluation of the measurement model follows, including validity and reliability testing, to ensure the accuracy and consistency of the instruments used. The final part presents the results of hypothesis testing and discusses the findings to previous research and theoretical perspectives.

In terms of domicile, 38.3% of respondents were from West Java, 34.9% from Jakarta and Banten, 12% from East Java, 8% from Central Java and Yogyakarta, 5.1% from Sumatera, and 1.7% from Sulawesi. Regarding business experience, 92% had prior experience in running a business, while 8% had no such experience. In terms of business type, 63.4% of the businesses were in the Food and Beverage sector, 15.4% in Fashion, 10.9% in Design and Photography, and both Trading and Others accounted for 5.1% each. For business duration, 45.1% of respondents had

Table 1: Respondent demographic profile

Description	#	%
Gender		
Male	90	51
Female	85	49
Business experience		
<3 Mo	12	7
3-6 Mo	28	16
7-12 Mo	14	8
1-1.5 Year	34	19
1.6-2 Year	8	5
>2 Years	79	45
Types of business		**%**
F and B	111	63
Fashion	27	15
Trading	9	5
Design and photography	19	11
Others	9	5
Experience in business		
Yes	161	92
No	14	8
Domicile		
Jakarta and Banten	61	35
West Java	67	38
Central Java and Yogyakarta	14	8
East Java	21	12
Sumatera	9	5
Sulawesi	3	2
SES economic		
Lower	28	16
Middle	70	40
Upper	77	44

operated for more than 2 years, 19.4% for 1-1.5 years, 16% for 3-6 months, 8% for 7-12 months, 6.9% for less than 3 months, and 4.6% for 1.6-2 years. Lastly, in terms of socio-economic status, 44% of respondents were from the upper SES, 40% from middle SES, and 16% from lower SES.

The majority of responders were primarily found in Jakarta, Banten, and West Java Province, indicating that entrepreneurial activity is concentrated in economically active and urban areas. The vast majority were primarily involved in the food and beverage industry and had previous business experience. A mature degree of entrepreneurial participation was demonstrated by the fact that many had been operating their companies for longer than two years. Most responders were from high and middle socioeconomic groups, indicating a balanced socioeconomic background and strong access to resources and support networks.

4.1. Validity and Reliability Measurement
The results of the outer loading analysis showed that most indicators met the recommended reliability threshold of 0.70 (Hair et al., 2022), indicating strong item reliability across constructs. However, three indicators from the entrepreneurial education construct (skill development-SD1) and the entrepreneurial intention construct (personality traits 1 and 2) had a loading value below 0.70 and were therefore removed from further analysis. The removal was based on the guideline that indicators with loadings between 0.40 and 0.70 should be considered for deletion if it improves the construct's composite reliability and AVE (Hair et al., 2022). After eliminating SD1, the remaining

indicators demonstrated acceptable reliability, ensuring robust measurement of each construct.

4.2. Construct Validity and Discriminant Validity

The model was evaluated using Cronbach's Alpha (CA) and Composite Reliability (CR) to assess its internal consistency. Table 2 shows that both CA and CR are above the minimum thresholds of 0.7 (Hair et al., 2022) for AI adoption (AIA), entrepreneurial capabilities (EC), entrepreneurial education (EE), and entrepreneurial intention (EI). Convergent and discriminant validity are also measured in this model by using Average Variance Extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT). Based on Tables 2 and 3, the AVE result is above the thresholds of 0.5 and the HTMT also ranges below 1, meaning that each construct met this criterion, confirming that the constructs are distinct from one another and thus possess discriminant validity (Franke and Sarstedt, 2019; Henseler et al., 2015).

4.3. Model Predictive Power (R² Analysis)

Table 4 presents the predictive power of the structural model, assessed using the coefficient of determination (R^2). The R^2 value for the EC variable is 0.821, which means that its predictors explain 82.1% of the variance in the model and can be categorized as substantial (Hair et al., 2022). The R^2 for AIA is 0.734, indicating a moderate to high level of prediction compared to its predecessors. These R^2 results show that the structural model can make reasonable predictions about the endogenous constructs.

Table 2: Construct validity and reliability result

Variable	Cronbach's alpha	rho_A	Composite reliability	Average variance extracted (AVE)
AIA	0.929	0.930	0.944	0.739
EC	0.950	0.951	0.957	0.670
EE	0.933	0.938	0.943	0.625
EI	0.873	0.877	0.904	0.612

Table 3: Discriminant validity result (HTMT)

Variable	AIA	EC	EE	EI
AIA				
EC	0.921			
EE	0.863	0.851		
EI	0.873	0.911	0.823	

Table 4: Model predictive power

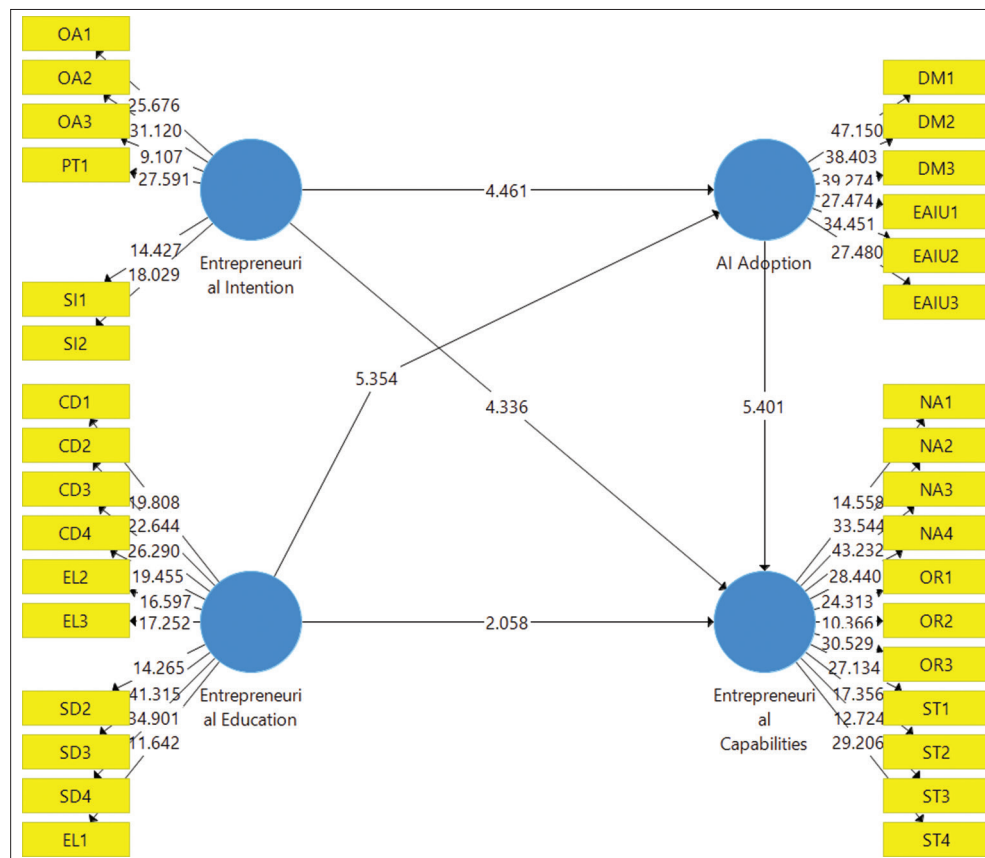| Variable	R-square	R-square adjusted
AIA	0.734	0.731
EC	0.821	0.817

4.4. Hypothesis Testing and Discussion

The results of the hypothesis testing are presented in Table 5 and Figure 2 which show that all hypotheses are supported. As Hair et al. (2022) suggest, a P-value below 0.05 indicates that the effect is statistically significant, confirming the proposed relationship in the structural model.

EE was found to significantly influence AIA ($\beta = 0.491$, $t = 5.354$, $P < 0.001$), demonstrating that students who participate in structured entrepreneurial learning are more likely to adopt AI tools in their entrepreneurial practices. Similar to EI, it also showed a significant effect on AIA ($\beta = 0.424$, $t = 4.461$, $P < 0.001$), indicating that students with strong entrepreneurial motivation are more likely to integrate AI into their ventures. These findings support previous studies, which suggest that students are increasingly willing to adopt AI as a key entrepreneurial trait in the digital age. This result enables entrepreneurs to optimize decision-making, automate routine tasks, and gain strategic advantages through data-driven insights (Ndofirepi, 2020; Solórzano Solórzano et al., 2024; Somià and Vecchiarini, 2024). Thus, both educational and intentional factors serve as critical antecedents to AI adoption, bridging entrepreneurial competence with technological adaptability (Marchena Sekli and Portuguez-Castro, 2025; Pulaj Brakaj and Šafránková, 2024).

The results also confirmed that EE has a direct influence on EC ($\beta = 0.183$, $t = 2.058$, $P = 0.037$) with a modest but significant effect. In parallel, EI also has a significant effect on EC ($\beta = 0.332$, $t = 4.336$, $P < 0.001$), reinforcing previous studies that internal motivation can strongly contribute to the development of entrepreneurial skills (Duong et al., 2024; Shahzad et al., 2021). Among the strongest relationships in this research model, AIA also has a significant effect on enhancing EC ($\beta = 0.457$, $t = 5.401$, $P < 0.001$), underscoring the crucial role AI plays in strengthening decision-making, opportunity recognition, and strategic thinking (Chintala and Thiyagarajan, 2023; Duan et al., 2019). These findings also suggest that education programs may need to go beyond designing curricula and focus more on helping students effectively utilize AI in real-world situations. These insights demonstrate that, in the AI era, being digitally ready and able to utilize technology hands-on are becoming increasingly important for business success.

Further findings also reveal the mediating role of AI Adoption in the context of higher education. The indirect effect of EE on EC through AIA was statistically significant ($\beta = 0.224$, $t = 4.590$, $P < 0.001$), indicating that AI use serves as a pathway through which education enhances entrepreneurial outcomes. Similarly, EI also indirectly influences EC via AIA ($\beta = 0.194$, $t = 3.138$,

Table 5: Path coefficient results

Hypotheses	Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (|O/STDEV|)	P-values
H$_1$	EE -> AIA	0.491	0.504	0.092	5.354	0.000
H$_2$	EI -> AIA	0.424	0.412	0.095	4.461	0.000
H$_3$	EE -> EC	0.183	0.200	0.089	2.058	0.040
H$_4$	EI -> EC	0.332	0.318	0.077	4.336	0.000
H$_5$	AIA -> EC	0.457	0.453	0.085	5.401	0.000
H$_6$	EE -> AIA -> EC	0.224	0.226	0.049	4.590	0.000
H$_7$	EI -> AIA -> EC	0.194	0.189	0.062	3.138	0.002

Figure 2: Path analysis

P < 0.05). These findings are consistent with broader previous literature demonstrating that AI technology and adoption can advance entrepreneurial self-efficacy, identity, and performance (Duong, 2025; Duong et al., 2024), and show that using AI in educational settings can increase student motivation and strengthen the link between intention and action for developing advanced entrepreneurial skills in today's digital economy for their new venture (Shahzad et al., 2021; Solórzano Solórzano et al., 2024).

5. CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

This study examined the impact of entrepreneurship education (EE), entrepreneurial intention (EI), and AI adoption (AIA) on entrepreneurial capabilities (EC) in the higher education context. The results provide empirical support for the theoretical framework, confirming all seven proposed hypotheses. Specifically, EE and EI have a significant influence on AIA, suggesting that structured educational experiences and strong internal motivation contribute to the adoption of AI technologies in entrepreneurial experiential learning. This highlights the pivotal role of both cognitive and behavioral readiness in encouraging students to engage with advanced digital tools.

Moreover, EE and EI were also found to have direct positive effects on EC, aligning with previous findings that underscore the importance of formal education and internal motivation in developing entrepreneurial skills. Notably, AIA emerged as a strong predictor of EC, reinforcing the growing importance of AI in shaping modern entrepreneurial competencies such as opportunity recognition, strategic thinking, and decision-making.

Importantly, AIA also demonstrated a mediating role in the relationship between EE, EI, and EC. This suggests that AI adoption in todays business environment supports the impact of education and intention on student capability development. These findings reflect a broader shift in entrepreneurial education, where digital literacy and technological integration are becoming essential for success in the contemporary business environment.

Theoretical Implications: This study enriches entrepreneurial theory by positioning AI adoption as a critical mechanism that links education, intention, and entrepreneurial success. It advances the understanding of how digital technologies interact with psychological and pedagogical factors in entrepreneurial capability development.

This study has implications for academia and practice. For academics, this research highlights the importance of integrating AI tools into entrepreneurship curricula to better equip students for real-world challenges. For policymakers and businesses, these findings underscore the importance of incorporating AI in entrepreneurship programs, which can ensure that students are kept motivated and equipped to leverage emerging technologies in venture creation.

Although this study offers valuable insights, its scope is limited to student entrepreneurs in Indonesia and relies on cross-sectional

data. Future studies could expand this model by including other technological or entrepreneurial variables, or future studies can examine the longitudinal effects of AI use on venture growth. Additionally, comparative studies across different cultural or economic contexts could further validate the model.

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