

# The Role of Entrepreneurial Education on Enhancing Entrepreneurial Intentions on Indonesian Students

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## ABSTRACT

This study investigated the role of entrepreneurial education on entrepreneurial intention by applying the modified TPB model with opportunity recognition. Our research involved 395 Indonesian high school and undergraduate students aged 15–25 years with structural equation modeling partial least squares (SEM-PLS) for data analysis. The results showed the crucial role of entrepreneurial education on antecedents of entrepreneurial intention, but no direct effect on entrepreneurial intention. Entrepreneurial education also indirectly foster entrepreneurial intention by strengthening positive attitudes, self-efficacy, and opportunity recognition skills. The study provides insight about the interaction between entrepreneurial education with individual traits and social norms in developing entrepreneurial intention, particularly with the ability to seize the entrepreneurial opportunity.

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## 1. INTRODUCTION

With the recent national unemployment at 4,76% of total Indonesian population (Badan Pusat Statistik, 2025), entrepreneurship is a viable option to deal with employment issue. By creating new job vacancy, entrepreneurship is beneficial to decrease the unemployment, therefore improving the national economic activities (Suratno et al., 2021). Recognizing the contribution of entrepreneurship for national economic performance, the Indonesian governments issued various education programs to foster and nurture the aspiring entrepreneur, particularly in universities and vocational schools (Saptono et al., 2020; Hermanto & Suryanto, 2017).

Prior study (Kristiansen & Indarti, 2004) revealed that students' entrepreneurial intention was mainly affected by their self-efficacy and access to capital, social networks, and information. External support, such as from family, parents, friends, or teacher was play an important role in fostering entrepreneurial intention (Astuti & Martdianty, 2012; Ridha et al., 2017). Entrepreneurial education is also listed as the crucial factor in developing student's willingness to become an entrepreneur (Handayati et al., 2020). Entrepreneurial education is expected to improve the necessary entrepreneurial abilities and skills.

One of crucial ability for entrepreneur is opportunity recognition, which is regarded as the core of entrepreneurship (Shane & Venkataraman, 2000). As such, there is an importance on entrepreneurial education to enhance the student's ability for recognizing business opportunities (DeTienne & Chandler, 2004). Previous research highlighted the role of opportunity recognition in shaping entrepreneurial intention (Soomro & Shah, 2021) (Hassan et al., 2020). However, the influencing factors of opportunity recognition is relatively underexplored. Furthermore, opportunity recognition and entrepreneurial education both play critical roles in shaping entrepreneurial intention

(Anwar et al., 2022); therefore, there is a necessity to integrate opportunity recognition and entrepreneurial education to investigate their direct impact on entrepreneurial intention. Another avenue of research is integrating other determinants of entrepreneurial intention with entrepreneurial education and opportunity recognition into a conceptual model. Our research aims to investigate the influence entrepreneurial education of opportunity recognition, alongside other selected antecedents, in shaping the entrepreneurial intention on students.

## 2. RESEARCH METHOD

The model developed in this research is a modified Theory of Planned Behavior (TPB) (Ajzen, 1991), which has been utilized in entrepreneurship research (Lortie & Castogiovanni, 2015). The model explains that the individual intention to perform certain behavior is affected by three components, namely attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). Within the entrepreneurial context, opportunity recognition can be added as a compatible predictor for entrepreneurial intention, as examining the connection between intention and opportunity is worth to be considered (Karimi et al., 2016; Lortie & Castogiovanni, 2015). Opportunity recognition or identification is the ability to recognize ideas with potential benefits and convert them into viable business concepts. The expected results are an added value for customers or society and revenue generation (Lumpkin & Lichtenstein, 2005).

Entrepreneurial education is a method to develop the enterprising competencies of students who are keen on recognizing opportunities and developing business, establishing a new business, or developing and growing aspects in an existing business. Its main focus is the application of enterprising competencies and extending the learning environment to face real-life business risks which include legal aspects, legal issues, funding issues, start-up, and growth strategies (Quality Assurance Agency, 2018). The scopes of entrepreneurial education are including all types of learning, education, and training which foster an entrepreneurial spirit, competence, and behavior, regardless of the presence of commercial goals (European Commission, 2014).

Entrepreneurial education has been regarded as an important factor in fostering entrepreneurial intention and influencing its antecedents. Students who have enrolled in entrepreneurial education can acquire relevant skills and knowledge, gain a positive perception of entrepreneurship, and increase their entrepreneurial intention (Bae et al., 2014). Entrepreneurial education also plays significant roles for students to develop their entrepreneurial spirit, build a strong entrepreneurial atmosphere to encourage student's interest in entrepreneurship, cultivate the necessary enthusiasm, and provide a positive influence on their entrepreneurial behavior (Hou et al., 2019).

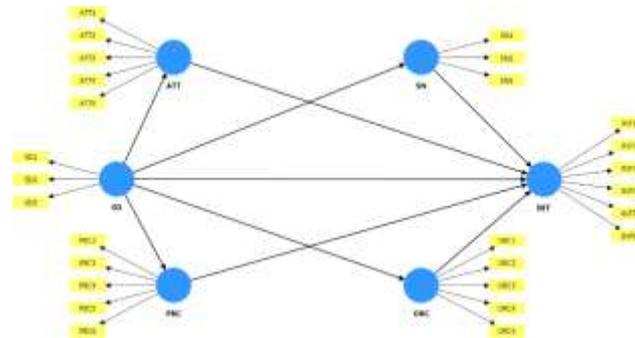
To investigate the direct effects of selected variables, we propose several hypotheses stated below:

- H1: entrepreneurial education has a positive influence on attitude
- H2: entrepreneurial education has a positive influence on subjective norms
- H3: entrepreneurial education has a positive influence on perceived Behavioral control
- H4: entrepreneurial education has a positive influence on opportunity recognition
- H5: entrepreneurial education has a positive influence on entrepreneurial intention
- H6: attitude has a positive influence on entrepreneurial intention
- H7: subjective norms have a positive influence on entrepreneurial intention
- H8: perceived behavioral control has a positive influence on entrepreneurial intention
- H9: opportunity recognition has a positive influence on entrepreneurial intention

Furthermore, we also explored the indirect effects of the antecedents through mediation, with the proposed hypotheses:

- H10: Attitude mediates the effect of entrepreneurial education on entrepreneurial intention
- H11: Subjective norms mediate the effect of entrepreneurial education on entrepreneurial intention
- H12: Perceived behavioral control mediates the effect of entrepreneurial education on entrepreneurial intention
- H13: Opportunity recognition mediates the effect of entrepreneurial education on entrepreneurial intention

The conceptual model is presented in Figure 1.



**Figure 1.** The proposed conceptual model

This study employed quantitative approach to investigate the impact of entrepreneurial education on, attitude, subjective norms, perceived behavioral control, opportunity recognition, and entrepreneurial intention. The sampling method utilized in this study is non-probability purposive sampling, which selected respondents based on specific criteria. Purposive sampling is selected in this study since the scope of study is determined based on particular judgements with specific focus on sample selection (Saunders et al., 2023). The respondents were Indonesian high school and undergraduate students aged between 15 and 25 years old. A total of 395 respondents were involved in the study. The collected data were analyzed using structural equation modeling partial least squares (SEM-PLS) with SmartPLS 4 software. This approach is well-suited to analyze causality and relations between latent variables in a multivariate analysis framework (Hair et al., 2019). The questionnaires were distributed to respondents using Google Forms. The items for entrepreneurial education were selected from (Wardana et al., 2020), attitude, subjective norms, perceived behavioral control, and entrepreneurial intention from (Liñán & Chen, 2009), and opportunity recognition from (Kuckertz et al., 2017). A sample of the questionnaire items are presented in Table 1.

**Table 1.** List of Questionnaire Items

Construct	Item	Statements
Entrepreneurial Education	ED1	The university develops entrepreneurial skills
	ED2	The university presents the substantial knowledge on entrepreneurship
	ED3	Learning approach and university curricula enhances me to provide creative ideas of being an entrepreneur
Attitude	ATT1	Being an entrepreneur has more advantage to me
	ATT2	Being an entrepreneur is attractive
	ATT3	I will built my own company if I had opportunity and resources
	ATT4	Being an entrepreneur give me high satisfaction
	ATT5	I would choose to be an entrepreneur among other options
Subjective Norms	SN1	My immediate family would approve my decision to start a business
	SN2	My close friends would approve my decision to start a business
	SN3	My classmates would approve my decision to start a business
Perceived Behavioral Control	PBC1	Starting new ventures and operating it is easy
	PBC2	I am prepared to start a viable firm
	PBC3	I can control the creation process of a new firm
	PBC4	I know the necessary practical details to start a firm
	PBC5	I know how to develop an entrepreneurial project
	PBC6	If I tried to start a firm, I would have a high probability of succeeding

Opportunity Recognition	ORC1	I am always alert to business opportunities
	ORC2	I research potential markets to identify business opportunities
	ORC3	I search systematically for business opportunities
	ORC4	I look for information about new ideas on products or services
	ORC5	I regularly scan the environment for business opportunities
Entrepreneurial Intention	INT1	I am ready to make anything to be an entrepreneur
	INT2	My professional goal is to become an entrepreneur
	INT3	I will make every effort to start and run my own firm
	INT4	I am determined to create a firm in the future
	INT5	I have very seriously thought of starting a firm
	INT6	I have got the firm intention to start a firm someday

### 3. RESULTS AND DISCUSSIONS

The first step of PLS-SEM is ensuring the outer loading of each item are exceeding 0,70 to confirm the reliability of the indicators, with the minimum threshold value of 0,7 (Hair et al., 2019). After omitting the item PBC1 below 0,7 (Outer loading = 0,689), the rerun, revealed all of the outer loadings exceed 0,70. The Cronbach's alpha, the composite reliability  $\rho_c$  (upper limit), and the exact reliability coefficient  $\rho_A$  had values between 0.70-0.95, confirming the presence of the reliability of internal consistency (Hair et al., 2019). The test results were presented in Table 2.

**Table 2.** Measurement Validity and Reliability Test

Construct	Item	Outer Loadings	Cronbach's alpha	Composite reliability ( $\rho_a$ )	Composite reliability ( $\rho_c$ )	Average variance extracted (AVE)
Entrepreneurial Education	ED1	0,943	0,936	0,936	0,959	0,886
	ED2	0,941				
	ED3	0,941				
Attitude	ATT1	0,897	0,92	0,921	0,94	0,759
	ATT2	0,9				
	ATT3	0,882				
	ATT4	0,876				
	ATT5	0,799				
Subjective Norms	SN1	0,895	0,911	0,912	0,944	0,849
	SN2	0,93				
	SN3	0,937				
Perceived Behavioral Control	PBC2	0,866	0,913	0,916	0,935	0,743
	PBC3	0,874				
	PBC4	0,863				
	PBC5	0,881				
Opportunity Recognition	PBC6	0,823	0,943	0,943	0,956	0,814
	ORC1	0,889				
	ORC2	0,914				
	ORC3	0,891				
	ORC4	0,895				
Entrepreneurial Intention	ORC5	0,921	0,957	0,958	0,966	0,824
	INT1	0,858				
	INT2	0,922				
	INT3	0,924				
	INT4	0,909				
	INT5	0,909				
INT6	0,923					

Discriminant validity, a measurement to ensure a construct has stonger relationships with its own indicators in contrast with the other constructs in the model, was assessed using Fornell-Larcker criterion test (Hair et al., 2022). Table 3 confirmed the constructs' strong discriminating power, with all of the average variance extracted (AVE) values were exceeding the average variance extracted (AVE) values.

**Table 3.** Results of discriminant validity using Fornell-Larcker criterion

Constructs	Attitude	Entrepreneurial education	Entrepreneurial intention	Opportunity recognition	Perceived behavioral control	Subjective norms
Attitude	0,871					
Entrepreneurial education	0,743	0,941				
Entrepreneurial intention	0,846	0,741	0,908			
Opportunity recognition	0,752	0,725	0,854	0,902		
Perceived behavioral control	0,717	0,655	0,834	0,836	0,862	
Subjective norms	0,808	0,678	0,762	0,76	0,714	0,921

The structural model was assessed using R-square and and F-square value. Table 4 presented the moderate effects of entrepreneurial education on attitude, subjective norms, perceived behavioral control, and opportunity recognition (0,33-0,67), with the strong effects of entrepreneurial intentions antecedents (above 0,57) (Chin, 1998).

**Table 4.** Results of R-square test

Construct	R-square	R-square adjusted
Attitude	0,552	0,551
Entrepreneurial intention	0,849	0,847
Opportunity recognition	0,526	0,524
Perceived behavioral control	0,429	0,427
Subjective norms	0,459	0,458

The hypoteses testing were presented in Table 5. The hypotheses are accepted if the P values are below 0,05, with the t-value are above 1,65 for one-tailed testing (Hair et al., 2022).

**Table 5.** Hypothesis Testing for Direct Effects

Hypotheses (Direct Effects)	Original sample (O)	T statistics ( O/STDEV )	P values	Decision
H1: Entrepreneurial education -> Attitude	0,743	25,502	0	Accepted
H2: Entrepreneurial education -> Subjective norms	0,678	18,63	0	Accepted
H3: Entrepreneurial education -> Perceived behavioral control	0,655	18,019	0	Accepted
H4: Entrepreneurial education -> Opportunity recognition	0,725	22,129	0	Accepted
H5: Entrepreneurial education -> Entrepreneurial intention	0,071	1,437	0,151	Rejected
H6: Attitude -> Entrepreneurial intention	0,393	6,104	0	Accepted
H7: Subjective norms -> Entrepreneurial intention	-0,026	0,469	0,639	Rejected
H8: Perceived behavioral control -> Entrepreneurial intention	0,278	5,987	0	Accepted
H9: Opportunity recognition -> Entrepreneurial intention	0,294	5,501	0	Accepted

Hypotheses (Indirect Effects)	Original sample (O)	T statistics ( O/STDEV )	P values	Decision
H10: Attitude mediates the effect of entrepreneurial education on entrepreneurial intention	0,292	5,733	0	Accepted
H11: Subjective norms mediate the effect of entrepreneurial education on entrepreneurial intention	-0,018	0,467	0,641	Rejected
H12: Perceived behavioral control mediates the effect of entrepreneurial education on entrepreneurial intention	0,182	5,714	0	Accepted
H13: Opportunity recognition mediates the effect of entrepreneurial education on entrepreneurial intention	0,213	5,322	0	Accepted

### The Effects of Entrepreneurial Education on Attitude, Subjective Norms, Perceived Behavioral Control, Opportunity Recognition, and Entrepreneurial Intention

The hypotheses testing revealed the positive influence of entrepreneurial education on attitude (t-value=25,502; p-value=0,000), subjective norms (t-value=18,63; p-value=0,000), perceived behavioral control (t-value=18,019; p-value=0,000), and opportunity recognition (t-value=22,129; p-value=0,000), supporting H1, H2, H3, and H4. However, entrepreneurial education didn't have direct effect on entrepreneurial intention (t-value=1,437; p-value=0,151), rejecting H4.

Entrepreneurial education has been cited as the key component to develop entrepreneurial attitude. One of the mechanics to improve entrepreneurship intention is by developing a positive evaluation toward entrepreneurship (Rauch & Hulsink, 2015). Entrepreneurial education also cultivates students' attraction to start a business (Tessema Gerba, 2012) and develops the necessary mindset and behavior to become an entrepreneur (Wardana et al., 2020). In line with Wardana et al. (2020) and Sun et al. (2017), entrepreneurial education is vital to develop positive attitude toward entrepreneurship. Findings on Indonesian students (Wardana et al., 2020) revealed the role of entrepreneurial education in fostering entrepreneurial mindset, attitudes, and behavior, and also equipping students with both the theoretical foundation and practical attitudes to become an entrepreneur.

Regarding to subjective norms, entrepreneurial education also provides an opportunity to build a network consisting of entrepreneurially-minded friends and peers (Karimi et al., 2016). Through entrepreneurial education, students may develop a perception that entrepreneurship is more valued by their important peoples (Misoska et al., 2016). It is possible that during the period of entrepreneurial education, students' significant others (such as families and friends) will change their attitudes on being an entrepreneur as a career option (Tessema Gerba, 2012). In alignment with Sun et al. (2017), entrepreneurial education provides students with exposures to role model in entrepreneurship, further enhancing the social norm and increasing the intention.

Participating in an entrepreneurial education program is also beneficial for students perceived behavioral control or self-efficacy. Students can gain the skills and knowledge that allow them to become capable entrepreneurs (Wardana et al., 2020). Aligned with self-efficacy, entrepreneurial education also teaches students about coping strategies. This method allows them to maintain a high level of motivation and interest, bolstering their expectation of success (Bae et al., 2014). Our results were supported with previous findings (Li & Wu, 2019; Anwar et al., 2022). For Indonesian students, entrepreneurial education play a vital role in bolstering perceived behavioral control by providing students with both theoretical knowledge and practical training and mentoring, improving their sense of entrepreneurial competency (Lestari et al., 2025).

Entrepreneurial education also plays a role in developing students' opportunity recognition abilities. equips students with creativity, skills, and competencies of opportunity recognition and enables them to access information about local business environments, prospective networks, and role models (Ratten & Jones, 2021; Liñán, 2007). Students who have enrolled in an entrepreneurial education program can identify more business opportunities and generate more innovative opportunities (DeTienne & Chandler, 2004), improving overall their opportunity recognition capabilities (Muñoz et al., 2011).

The absence of impact of entrepreneurial education on entrepreneurial intention was not surprising. A myriad of research presented diverse, often conflicting results of entrepreneurial education's effect on entrepreneurial intention. Positive influences of entrepreneurial education to reinforce students' entrepreneurial intention are found in several studies (Tessema Gerba, 2012; Bae et al., 2014; Liu et al., 2019; Hou et al., 2019; Ndofirepi, 2020). Our finding, however, is in line with (Karimi et al., 2016), (Oosterbeek et al., 2010), and (von Graevenitz et al., 2010), which reveal that entrepreneurial education doesn't positively affect the entrepreneurship intention, even diminishing students' intention. The possible explanation is entrepreneurial education isn't directly influencing intention, but fostering entrepreneurial skills or orientation; the intention become the consequence of entrepreneurial education mediated by individual traits and social norms (Martins et al., 2022).

### **The Effects of Attitude, Subjective Norms, Perceived Behavioral Control, and Opportunity Recognition on Entrepreneurial Intention**

Our results confirmed the positive relation of attitude (t-value=6,104; p-value=0,000), perceived behavioral control (t-value=5,987; p-value=0,000), and opportunity recognition (t-value=5,501; p-value=0,000) on entrepreneurial intention, validating H6, H8, and H9. The influence of subjective norms on entrepreneurial intention (H7), however, was rejected (t-value=0,469; p-value=0,639).

Attitude involves the judgment process of the behavior, divided into the evaluative/cognitive judgments and affective judgments (Ajzen, 1991). The former refers to the perceived risk and benefits (the benefits are higher compared with the risks), while the latter refers to the experience of positive or negative feelings, e.g., becoming an entrepreneur is interesting (Ajzen, 1991; Wathanakom et al., 2020). The result goes in line with past findings (Palupi & Santoso, 2017) (Amofah & Saladrigues, 2022).

The effects of subjective norms on entrepreneurial intention are not always consistent, often being omitted from the EIM by some scholars (e.g., Krueger et al., 2000). The results are in conflict with previous studies (Farrukh et al., 2018). The possible explanation is lack of supports from family, friends, and society (Al-Mamary et al., 2020). This phenomenon is more prominent in a society with less tolerant with uncertainty and prefer stability over change (Shook & Bratianu, 2010).

Individuals who have strong motivation to involve in the challenging task of entrepreneurship will perform better on it. They also tend to be self-driven, possess high persistence to perform the task despite potential adversities and barriers they may face (Al-Jubari, 2019). The finding is consistent with (Farrukh et al., 2018) (Wardana et al., 2020).

The higher level of opportunity perception will enhance the cognitive process, bolstering the individual intention and energy level to build a new business (Krueger et al., 2000; Edelman & Yli-Renko, 2010). This means that the opportunity recognition and entrepreneurial intention have close-knit relation; a desirable and feasible opportunity will invoke an individual to become an entrepreneur (Karimi et al., 2016). Our result is in concordance with previous studies (Anwar et al., 2022).

### **The Mediating Effects of Attitude, Subjective Norms, Perceived Behavioral Control, and Opportunity Recognition on Entrepreneurial Intention**

Analyzing the indirect mediating effects of the modified TPB variables, the results revealed the mediating capabilities of attitude (t-value=5,733; p-value=0,000), perceived behavioral control (t-value=5,714; p-value=0,000), and opportunity recognition (t-value=5,322; p-value=0,000) on entrepreneurial education to entrepreneurial intention, validating H10, H12, and H13. On the contrary, the mediating effect of subjective norms were nonexistent (t-value=0,467; p-value=0,641); therefore, H11 was rejected.

Prior findings (Aga & Singh, 2022; Lavelle, 2019) confirmed the ability of attitude to enhance the impact of entrepreneurial education in nurturing entrepreneurial intention. The indirect role of perceived behavioral control on fostering entrepreneurship intention was in line with (Aga & Singh, 2022). Entrepreneurial education was also improving opportunity recognition to bolster entrepreneurial intention, as found in (Wei et al., 2019; Hou et al., 2022). The absence of subjective norms ability to indirectly enhance entrepreneurial intention was in conflict with past studies (Zhang et al., 2018; Aga & Singh, 2022).

#### 4. CONCLUSION

The findings revealed the importance of entrepreneurial education to improve individual traits and social norms, which indirectly fostering entrepreneurial intention. Furthermore, improving both necessary individual capabilities and societal support is crucial to nurture students' willingness to become entrepreneurs. Our study is also bound to several limitations. First, our sample frames didn't distinguish between different characteristics, such as business versus non-business students, (Wijayati et al., 2021) or gender (Palupi & Santoso, 2017), which can be explored in future research. Difference between gender can also be assessed. Second, our study employed cross-sectional approach, which potentially expand by considering longitudinal designs to capture the long-term effects of entrepreneurial education. Conducting cross-cultural comparisons to better understand contextual differences is also recommended, with example from Martins et al. (2022). Furthermore, the conceptual model could be improved by assessing the moderating variables, such as prior exposure to entrepreneurship (Zhang et al., 2018), perceived university support (Lestari et al., 2025). Practically, the results encourage policymakers and higher education institutions to strengthen entrepreneurial education programs that emphasize experiential learning, mentorship, and opportunity recognition to foster stronger entrepreneurial intentions among students.

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