

THE EFFECT OF ENTREPRENEURSHIP EDUCATION, ENTREPRENEURIAL MINDSET ON STUDENTS' ABILITY TO INNOVATE WITH CREATIVITY AS A MEDIATION VARIABLE IN THE ENTREPRENEURIAL INDEPENDENCE PROGRAM OF JAKARTA STATE UNIVERSITY

Ahmad Saoki Andriyana¹, Dedi Purwana², Suparno³

¹Jakarta State University

²Jakarta State University

³Jakarta State University

Email: Saoki.andriyana10@gmail.com¹, dpurwana@unj.ac.id², suparno@unj.ac.id³

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Abstract

This study aims to analyses the impact of entrepreneurship education and entrepreneurial mindset on students' innovation capacity, with creativity as a mediating variable. A quantitative approach with an interpretive style was used. Data were collected through questionnaires distributed to 150 undergraduate students participating in the Wira Wiri program at various universities in Indonesia. The data were analysed using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS). The results indicate that entrepreneurship education has a positive and significant effect on both entrepreneurial mindset and creativity. Furthermore, entrepreneurial mindset significantly influences creativity. Creativity, in turn, has a direct effect on innovation capability. Both entrepreneurship education and entrepreneurial mindset also exhibit direct effects on students' innovation capability. Additionally, creativity is proven to act as a significant partial mediator in the relationship between the independent variables and innovation capability. These findings underscore the importance of strengthening entrepreneurship education and fostering an entrepreneurial mindset to enhance students' creativity and innovation within higher education environments.

1. INTRODUCTION

The rapid process of globalization of the business world and fierce competition has encouraged innovation to pursue alternative opportunities to drive business competition Song and Lee (2020). The condition of business competition in Indonesia is increasingly dynamic along with economic growth. Many companies, both local and international, are competing for market share. Factors such as technological developments, changes in government regulations, and increased consumer awareness encourage innovation and efficiency (Ahyani et al., 2022).

Product development is currently increasing and diverse in accordance with the demands of the increasingly complex needs of the community, the effect of lifestyle Nizam et al., (2020). The innovation process often faces problems and challenges, the difficulty in generating creative ideas is limited to conventional thinking and lack of innovation (Mawardi et al., 2021). Today's business world is facing difficult challenges because consumers are now more careful in choosing quality products, offering affordable prices, and are sensitive to the needs and progress of the times. Nowadays, many companies in social conditions and advances in information technology can increase the number of new competitors from abroad. These new competitors are usually more efficient, thanks to human resources that have broad horizons, good technical education, and access to the latest information technology (Barcode, 2021). The trend of the condition of the Ability to Innovate in Indonesia is still very limited, data on the creation of intellectual property rights (IPR) is still being encouraged in Indonesia to increase innovation, protect creativity, and support economic growth by providing strong legal protection for creators and rights owners.



Figure 1. HKI product protection

The ability to innovate is very important, products or services lacking innovation that do not fit the market, do not have new value, causing the value to decrease (Anderson & Hidayah, 2023).

	GII Position	Innovation Inputs	Innovation Outputs
2020	85th	91st	76th
2021	87th	87th	84th
2022	75th	72nd	74th
2023	61st	64th	63rd

Figure 2. Innovation Input

The Global Innovation Index (GII) ranks Indonesia 61st globally well below neighboring countries such as Malaysia, Thailand, and Singapore (Akbar et al., 2022). Similarly, Indonesia's entrepreneurial activity is low compared to other nations. In 2018, Indonesia scored only 0.7 out of 10, placing it among the lowest in terms of entrepreneurial ecosystem development (Jayani Hadya Dwi, 2019). Although the country has a large number of entrepreneurs, most remain at the early stage, with limited educational background and weak entrepreneurial mindset (Sungkawati & Rosyidi, 2023). In addition to Indonesia's lack of passionate innovation, entrepreneurship in Indonesia has also not increased compared to other countries.

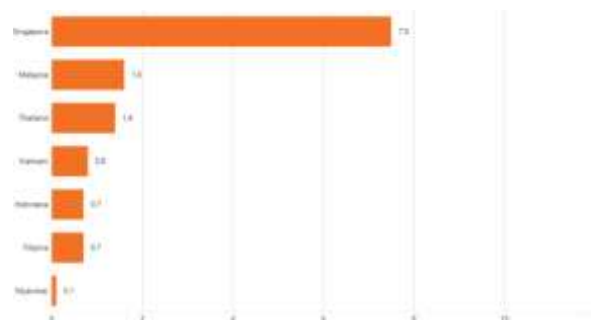


Figure 3. Global Innovation Index (GII) ranks

In 2018, Indonesia and the Philippines were the second lowest in entrepreneurship. Both countries scored 0.7 out of a total scale of 10. The higher the score, the better the entrepreneurial atmosphere in a country. Globally, Indonesia ranks 50th among the 80 countries analyzed. Indonesia's low ranking in entrepreneurship is due to similarly low scores on each of the indicators, all of which fall below 2 on a scale of 10. Some indicators scored minimally, including a strong legal system and technological skills, with scores of 0.3 and 0.5 respectively. On the other hand,

Indonesia achieved the highest score of 1.8 for the indicator that shows Indonesia's connectedness to the world as a whole (Jayani Hadya Dwi, 2019).

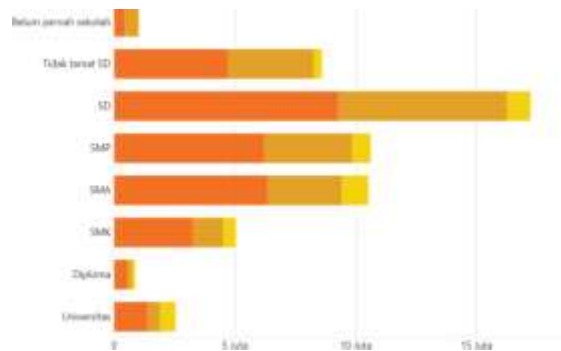


Figure 4. Entrepreneur Education Level in Indonesia

In Indonesia, there are about 56.5 million entrepreneurs, of which about 52 million are new entrepreneurs. They consist of 32.2 million people who run their own businesses and 19.8 million people who are assisted by permanent workers. Meanwhile, the number of established entrepreneurs reached 4.5 million. Therefore, in 2023, the percentage of new entrepreneurs will be 35.21%, and established entrepreneurs 3.04% of the total workforce in the country. When analyzed by education, most entrepreneurs in Indonesia only have an Entrepreneurial Mindset is one of the main keys in creating and developing a successful business. It involves the ability to see opportunities, take measured risks, innovate, and have perseverance in the face of challenges. In Indonesia, the development of Entrepreneurial Mindset still faces various challenges that need to be overcome in order to make a more significant contribution to the national economy (Sungkawati & Rosyidi, 2023).

Limited access to resources and assistance for aspiring entrepreneurs, many schools and universities in Indonesia do not have special facilities and programs to support entrepreneurship development (Aulia et al., 2023), such as business incubators, mentorship, and access to venture capital. In this case, facilities and programs are essential to provide comprehensive support to aspiring entrepreneurs, from the idea stage to business development (Pindado et al., 2023). Fish to primary school, which accounts for 30.52% of all entrepreneurs. Entrepreneurs with a Diploma educational background are the least, followed by those who have never attended school (Jayani Hadya Dwi, 2019b).

These conditions highlight a critical gap: despite economic growth and a growing workforce, Indonesia continues to lag in innovation and entrepreneurship capacity. The challenges stem not only from structural barriers such as limited access to resources and weak support systems (Aulia et al., 2023), but also from educational approaches that emphasize theory over practice (Agustina et al., 2024). As entrepreneurship is a key driver of job creation, innovation, and national competitiveness (Samad, 2023), addressing these gaps is urgent.

2. LITERATURE REVIEW

2.1 Theoretical and Conceptual Background

Prior studies have examined the interconnections between innovation, creativity, and entrepreneurship education, but findings reveal both complementarities and inconsistencies. For instance, Kahn (2022) emphasized that while innovation and entrepreneurship are often used interchangeably, they differ in orientation—innovation focusing on novelty and entrepreneurship on opportunity exploitation. This distinction suggests that educational strategies must address both dimensions separately to be effective. Several empirical studies have confirmed the positive role of creativity and innovation in shaping entrepreneurial intention. Akhter et al. (2022) found that creativity and innovation explained 75% of the variance in students' digital entrepreneurship intentions in Bangladesh, whereas Paliwal et al. (2022) reported a weaker mediating effect of creativity in India. Such mixed results suggest that contextual factors (e.g., culture, education systems) may moderate these relationships. In China, Lv et al. (2022) highlighted the challenges of innovation and entrepreneurship education in technical universities. Using an analytical approach and data from more than 2,500 respondents, they developed a performance evaluation method of innovation and entrepreneurship education (MPEIE), which combines specific (such as patents, funds, and publications) and non-specific (such as satisfaction) indicators. Mawson et al. (2023) proposed a conceptual framework for building a competency development-based Entrepreneurial Mindset (EM). They emphasized the complementary roles of cognitive, emotional, and behavioral dimensions in creating sustainable entrepreneurial competencies. Rodrigues (2023) provided a pedagogical perspective through a case study in Portugal. He found that experiential and project-based learning are highly effective in developing entrepreneurial competencies, especially when combined with technologies such as simulation and gamification. In the context of the role of educators, Syed et al. (2024) explored the contribution of entrepreneurship educators in the UAE. Interviews with 11 educators revealed that they face structural challenges such as limited curriculum and institutional support, despite playing a key role in student development. While there is broad agreement that entrepreneurship education, creativity, and EM foster innovation, inconsistencies remain. For example, studies in Asia often report stronger links between

entrepreneurship education and entrepreneurial intention (Wardana et al., 2020; Wang et al., 2022), while research in Europe and the U.S. stresses the mediating role of psychological factors such as inspiration and motivation (Jiatong et al., 2021; Kwapisz et al., 2022). These contrasting findings indicate a gap in understanding how contextual and educational systems shape the entrepreneurship–innovation nexus, particularly in developing economies like Indonesia.

2.1 Empirical Review and Hypothesis

Drawing on these studies, EM emerges as a foundational construct enabling students to think creatively, take calculated risks, and pursue innovation (Mawson et al., 2023; Kwapisz et al., 2022). Creativity functions as the generative force for novel ideas, while innovation represents their practical application (Akhter et al., 2022). Entrepreneurship education is expected to influence both EM and creativity, thereby enhancing innovation capacity (Wang & Huang, 2021; Jiatong et al., 2021).

Most prior studies have employed quantitative approaches such as regression analysis and Structural Equation Modelling (SEM), typically using Likert-scale surveys to capture perceptions of entrepreneurship education, EM, creativity, and innovation. Although these studies span diverse contexts (U.S., China, India, Bangladesh, Indonesia, Portugal, and UAE), few have critically examined how these relationships operate in Indonesia's unique context of relatively low innovation capacity and entrepreneurial performance. This gap underpins the present study.

Hypothesis is a temporary conjecture of the research results obtained. Based on the theory and theoretical framework that has been described, a hypothesis can be formulated:

- H1 : There is a direct positive influence between entrepreneurship education entrepreneurship education affects Entrepreneurial Mindset
- H2 : There is a direct positive influence between entrepreneurship education Entrepreneurship education has an effect on Creativity
- H3 : There is a direct positive influence between entrepreneurial mindset affects the ability to innovate
- H4 : There is a direct positive influence between Creativity effect on the Ability to Innovate
- H5 : There is a direct positive influence between entrepreneurship education affects the ability to innovate
- H6 : There is a direct positive influence between entrepreneurial mindset and innovation ability. Mindset affects the Ability to Innovate

3. RESEARCH METHODOLOGY

This study uses Structural Equation Modeling with Partial Least Squares (SEM-PLS) because it works well for looking at complex models with many different ideas and how they connect, as is the case here. Compared to another type of SEM called covariance-based SEM (CB-SEM), SEM-PLS has fewer rules about how the data should look and is better at handling data that isn't perfectly normal, especially when there aren't very large numbers of participants (Hair et al., 2019). Also, SEM-PLS focuses on predicting outcomes and explaining how much variation exists, which makes it a good fit for this research that aims to explore how entrepreneurship education, entrepreneurial mindset, creativity, and innovation relate to each other. Using just regular regression methods wouldn't fully show how these ideas affect each other at the same time, but SEM-PLS can look at both how the ideas are measured and how they connect together. These strengths make SEM-PLS the right choice for this study.

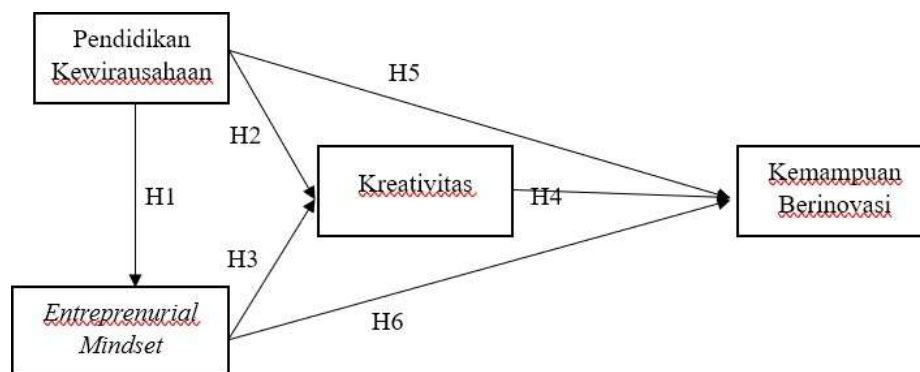


Figure 1. Conceptual Model of the Study

Source: Authors (2025)

3.1 Population and Sample

This research was conducted at the Jakarta State University for students who participated in the Merdeka Entrepreneurship Program. The research was conducted from July to completion. Researchers found interesting issues to research, namely entrepreneurship education, Entrepreneurial Mindset, Creativity and Ability to Innovate in students who take part in the independent entrepreneurship program.

Population can be defined as an area that is usually formed by objects or subjects that have certain properties and characters determined by the researcher (Sugiyono, 2016). For the purpose of this study, the population sample was taken from all students enrolled in the independent entrepreneurship program organized by the State University of Jakarta, with a total population of 480. The sample is part of the population that acts as a source of data for research (Sugiyono, 2016). In this study, the Taro Yamane Formula was applied with a confidence level of 95% and an error rate of 5%. The determination of the sample size was carried out by utilizing the Taro Yamane formula (Yamane, 1967).

Table 1 Population Sample

No	University	Amount
1	Institut Bisnis dan Komunikasi Swadaya	2
2	Institut Ilmu Sosial dan Manajemen STIAMI	12
3	Sekolah Tinggi Ilmu Ekonomi Indonesia Jakarta	27
4	Sekolah Tinggi Ilmu Kesehatan RS Husada	1
5	Sekolah Tinggi Manajemen Asuransi Trisakti	14
6	STKIP Kusumanegara	6
7	Universitas Asa Indonesia	3
8	Universitas Esa Unggul	1
9	Universitas Garut	1
10	Universitas Global Jakarta	29
11	Universitas Gunadarma	59
12	Universitas Halim sanusi	1
13	Universitas Islam 45	14
14	Universitas Lampung	1
15	Universitas Ma'soem	1
16	Universitas Muhammadiyah Jakarta	3
17	Universitas Muhammadiyah Prof Dr Hamka	46
18	Universitas Negeri Jakarta	195
19	Universitas Negeri Surabaya	3
20	Universitas Padjadjaran	1
21	Universitas Pamulang	1
22	Universitas Pancasila	25
23	Universitas Pendidikan Indonesia	1
24	Universitas Respati Yogyakarta	1
25	Universitas Singaperbangsa Karawang	7
26	Universitas Sultan Ageng Tirtayasa	5
27	Universitas Teknologi Muhammadiyah Jakarta	30
28	Universitas Terbuka	2
29	Universitas Yarsi	1
30	Universitas Yatsi Madani	7

Source: Authors (2025)

3.4 Data Analysis Technique

Data analysis in this study was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, with SmartPLS 4.0 software. PLS-SEM was chosen because it is effective for complex models with many hidden variables and smaller data sets. Based on hair et al, (2019), the study used three main steps: examining the outer model, examining the inner model, and conducting mediation analysis.

1. Outer Model Evaluation This stage aimed to test the reliability and validity of measurement constructs. It included: Convergent Validity: Measured by Average Variance Extracted (AVE), with a threshold of ≥ 0.5 . Discriminant Validity: Assessed using the Fornell-Larcker criterion and cross-loading values. Reliability

Testing: Conducted using Cronbach's Alpha and Composite Reliability (CR), with a threshold of ≥ 0.7 (Hair et al., 2019).

2. Inner model testing (path coefficients and significance). This stage tested the structural path relationships between latent variables: Path Coefficients: Significance was assessed through bootstrapping with 5,000 subsamples. R-Square (R^2): Determined the explanatory power of the model on endogenous variables. Effect Size (f^2): Assessed the magnitude of predictor variable effects. Predictive Relevance (Q^2): Measured through blindfolding to ensure model predictability (Hair et al., 2019).
3. Mediation testing to examine the role of creativity as a mediating variable. The mediation effect of creativity was analyzed using the indirect effect path analysis. The Variance Accounted For (VAF) formula was used to determine the strength of mediation:
4. VAF > 80% = full mediation VAF 20-80% = partial mediation VAF < 20% = no mediation All analyses confirmed that the model was statistically robust, with significant path coefficients and valid mediation relationships, supporting the hypotheses proposed in the conceptual framework.

4 RESULTS AND DISCUSSION

4.1 The Outer Model Prediction

A. Convergent Validity Test

The calculation of the loading factor and the results obtained a loading factor value above 0.70. Therefore, the indicator has met the convergent validity criteria and has the required validity according to the general guidelines used based on previous trials. For a more detailed explanation, please refer to the following table.

Table 2 Convergent Validity Test

Latent Variable	Manifest Variable	Outer Loading	Validity	Outer Weight
Entrepreneurship Education	X1.1	0.665	Not Valid	0,136
	X1.2	0.695	Valid	0,129
	X1.3	0.755	Valid	0,145
	X1.4	0.503	Not Valid	0,105
	X1.5	0.788	Valid	0,167
	X1.6	0.700	Valid	0,126
	X1.7	0.800	Valid	0,192
	X1.8	0,785	Valid	0,185
	X1.9	0,757	Valid	0,179
Entrepreneurial Mindset	X2.1	0,696	Valid	0,145
	X2.2	0,803	Valid	0,173
	X2.3	0,751	Valid	0,159
	X2.4	0,696	Valid	0,135
	X2.5	0,741	Valid	0,145
	X2.6	0,782	Valid	0,177
	X2.7	0,678	Not Valid	0,140
	X2.8	0,721	Valid	0,138
	X2.9	0,682	Not Valid	0,156
Creativity	Y.1	0,719	Valid	0,127
	Y.2	0,759	Valid	0,146
	Y.3	0,834	Valid	0,150
	Y.4	0,808	Valid	0,153
	Y.5	0,807	Valid	0,144
	Y.6	0,661	Not Valid	0,108
	Y.7	0,789	Valid	0,150
	Y.8	0,796	Valid	0,171
	Y.9	0,735	Valid	0,146
Ability to Innovate	Z.1	0,848	Valid	0,388
	Z.2	0,849	Valid	0,376
	Z.3	0,865	Valid	0,407

Source: Authors (2025)

1. Reliability Test

The instrument reliability test aims to ensure that the measurement results remain consistent even though they are carried out at various times, places, and different groups of people. Construct reliability is assessed based on two different criteria: composite reliability and Cronbach's alpha, which measures

internal consistency. A construct is considered reliable if the composite reliability value is greater than 0.7 and the Cronbach's alpha value is greater than 0.6 (Hair et al., 2019). The following are the results of the reliability calculations for the composite reliability and Cronbach's alpha in this study:

Table 3 Reliability Test

	Cronbach's alpha	Composite reliability (rho a)	Composite reliability (rho c)	Decision
Entrepreneurship Education	0.885	0.899	0.908	Reliable
Entrepreneurial Mindset	0.889	0.893	0.911	Reliable
Creativity	0.913	0.918	0.929	Reliable
Ability to Innovate	0.814	0.816	0.890	Reliable

Source: Authors (2025)

2. Average Variance Extracted (AVE) Test

Table 4 Average Variance Extracted (AVE) Test

	Average variance extracted (AVE)	AVE Value Limit	Decision
Entrepreneurship Education	0.524	0,5	Fulfilled
Entrepreneurial Mindset	0.528	0,5	Fulfilled
Creativity	0.598	0,5	Fulfilled
Ability to Innovate	0.736	0,5	Fulfilled

Source: Authors (2025)

3. Discriminant Validity Test

Discriminant validity tests whether a measurement instrument accurately measures the construct it is intended to measure, rather than another construct. Instrument validity is determined not only by convergent validity but also by discriminant validity. Discriminant validity testing can be seen from the cross-loading value and the construct root AVE (Ghozali, 2015).

Discriminant validity was tested using the heterotrait-monotrait ratio (HTMT). This method was chosen because of its superior ability to detect discriminant validity issues compared to traditional methods. According to Henseler et al. (2015) criteria, the HTMT value obtained must be less than 0.85 for discriminant validity to be considered fulfilled. The HTMT value for each pair of constructs was calculated through analysis with SmartPLS software. From the analysis results, all pairs of constructs had HTMT values below 0.85, so it can be concluded that discriminant validity has been fulfilled in this measurement model.

Table 5 Heterotrait-monotrait ratio (HTMT) Test

	Entrepreneurship Education	Entrepreneurial Mindset	Creativity	Ability to Innovate
Entrepreneurship Education				
Entrepreneurial Mindset	0.811			
Creativity	0.668	0.816		
Ability to Innovate	0.653	0.718	0.833	

Source: Authors (2025)

B. Inner Model Test

According to Ghozali (2015), a structural model, also called an internal model, shows the relationships between hidden concepts by examining the results of coefficient calculations and their significance. The internal model can be examined using R-squared for the main concepts, t-test results, and the significance of coefficients for the paths in the model. PLS is a type of SEM that focuses on predicting outcomes and is variance-based. Therefore, several measures have been developed to indicate how well a model is accepted, such as R-squared, Q-squared, SRMR (Hair et al., 2019), and the Goodness-of-Fit Index (GoF Index) (Henseler, 2013).

1. R Square Analysis

The coefficient of determination, or R-square, is used to determine the extent to which an independent variable explains changes or variations in the dependent variable in a regression model. Based on research by Hair et al (2019), R-square values can be grouped into three levels: strong if R-square $\geq$ 0.75, moderate if between 0.50 and 0.75, and weak if R-square less than 0.50.

Table 6 R Square Analysis

	R-square	R-square adjusted
<i>Entrepreneurial Mindset</i>	0.556	0.554
Creativity	0.551	0.550
Ability to Innovate	0.546	0.542

Source: Authors (2025)

The coefficient of determination, or R-square, is used to determine the extent to which an independent variable explains changes or variations in the dependent variable in a regression model. Based on research by Hair et al. (2019), R-square values can be grouped into three levels: strong if R-square ≥ 0.75 , moderate if between 0.50 and 0.75, and weak if R-square less than 0.50.

2. Q Square Analysis

Q² (Q-square) analysis was performed using the blindfolding technique using SmartPLS. The Q² value reflects how well the model can predict endogenous constructs. If the Q² value is greater than 0, it means there is relevance in the prediction. Q² (Q-square) is one of the validation methods in the PLS-SEM model that functions to show the suitability of the model in terms of predictive relevance. Q² shows how accurate the prediction is by measuring the ability of changes in independent variables to project the dependent variable. A Q² value greater than 0 indicates that the model has relevant predictive ability, which means the model can predict the dependent variable well. Based on the opinion of Hair et al. (2019), the Q² value can be classified as follows:

Table 7 Q Square Analysis

	Q²predict
Entrepreneurial Mindset	0.259
Creativity	0.161
Ability to Innovate	0.199

Source: Authors (2025)

According to Hair et al. (2019), the Q² value is categorized as follows:

- Q² value > 0 and < 0.25: low.
- Q² value > 0.25 and < 0.50: medium.
- Q² value > 0.50: high.

3. Model Fit Analysis (SRMR)

Model Fit is a measure to evaluate the extent to which the model developed is able to adjust to the available data. One metric that is often applied in model assessment is SRMR (Standardized Root Mean Square Residual), which analyzes the alignment between the estimated model and the expected model.

Table 8 Model Fit Analysis (SRMR)

	Saturated model	Estimated model
SRMR	0.072	0.073
d_{ULS}	2.401	2.488
d_G	1.188	1.188
Chi-square	1.474.409	1.469.273
NFI	0.715	0.716

Source: Authors (2025)

4. F Square Analysis

The following are the results of the calculation of the F Square value obtained:

Table 9 F Square Analysis

	Entrepreneurship Education	Entrepreneurial Mindset	Creativity	Ability to Innovate
Entrepreneurship Education		1.251		0.045
Entrepreneurial Mindset			1.229	
Creativity				0.514
Ability to Innovate				

Source: Authors (2025)

Based on the F test results above, it states that:

- The influence between Entrepreneurship Education variables on Entrepreneurial Mindset (1.251) > (0.35) → Has a very large influence
- The influence between Entrepreneurial Mindset variables on Creativity (1.229) > (0.35) → Has a very large influence
- The influence between Creativity variables on the Ability to Innovate (0.514) > (0.35) → Has a large influence

- d. The influence between Entrepreneurship Education variables on the Ability to Innovate ($0.045 < 0.15$) → Has a small influence

The results of hypothesis testing can be tabulated as follows:

Table 10 Hypothesis

HYPOTHESIS		Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Description
H1	Entrepreneurship -> Entrepreneurial Mindset	0.034	21.713	0.000	Supported
H2	Education Entrepreneurship -> Ability Innovate	0.089	2.044	0.041	Supported
H3	Entrepreneurial Mindset -Creativity>	0.046	15.984	0.000	Supported
H4	Creativity->Ability Innovate	0.082	7.455	0.000	Supported

Source: Authors (2025)

- There is an influence of Entrepreneurship Education on Entrepreneurial Mindset. This is because the value of $t_{count} > t_{table}$ ($21.713 > 1.96$) or P values < 0.05 ($0.000 < 0.05$), so H_0 is rejected and H_a is accepted (Hair et al., 2019).
 - There is an effect of Entrepreneurship Education on the Ability to Innovate. This is because the value of $t_{count} > t_{table}$ ($2.044 > 1.96$) or P values > 0.05 ($0.041 > 0.05$), so H_0 is rejected and H_a is accepted (Hair et al., 2019).
 - There is an influence of Entrepreneurial Mindset on Creativity. This is because the t value $> t_{table}$ ($15.984 > 1.96$) or P values < 0.05 ($0.000 < 0.05$), so H_0 is rejected and H_a is accepted (Hair et al., 2019).
 - There is an influence of Creativity on the Ability to Innovate. This is because the value of $t_{count} > t_{table}$ ($7.455 > 1.96$) or P values < 0.05 ($0.000 < 0.05$), so H_0 is rejected and H_a is accepted (Hair et al., 2019).
5. Test of Mediating Variables

Direct, indirect and total effects are taken to determine the coefficients of direct, indirect, and total effects which ultimately can be known whether there is an influence of the mediating variable or not. Seen in the output Indirect Effects and Total Effects. The output results are as follows:

Table 11 Test of Mediating Variables

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
PK -> EM -> K	0.554	0.560	0.047	11.717	0.000
EM -> K -> KB	0.455	0.460	0.071	6.372	0.000
PK -> EM -> K-> KB	0.339	0.344	0.055	6.169	0.000

Source: Authors (2025)

Based on the results of the specific indirect effect analysis shown in Table 4.2, it can be concluded that all indirect effect paths in this research model showed statistically significant results.

First, the $PK \rightarrow EM \rightarrow K$ path has an original sample value of 0.554, with a t-statistic of 11.717 and a p-value of 0.000. This indicates that the PK variable has a significant indirect effect on K through EM. The high value of the t-statistic confirms that this relationship is highly statistically significant.

Second, the $EM \rightarrow K \rightarrow KB$ path has an original sample value of 0.455, with a t-statistic of 6.372 and a p-value of 0.000. This means that the EM variable has a significant indirect effect on KB through K. Furthermore, the $PK \rightarrow EM \rightarrow K \rightarrow KB$ path has an original sample value of 0.339, with a t-statistic of 6.169 and a p-value of 0.000. These results indicate that PK also has an indirect effect on KB through two mediators, EM and K, and that this effect is statistically significant.

4.2 Discussion

Hypothesis 1: Entrepreneurship Education affects Entrepreneurial Mindset

The results of this study indicate that Entrepreneurship Education has a significant positive influence on students' Entrepreneurial Mindset. This finding is supported by Daspi et al. (2023) which states that good entrepreneurship education can shape an entrepreneurial mindset by improving opportunity identification skills, adaptive thinking, and decision making in complex conditions. Learning that emphasizes real-life experiences has also been shown to form a strong entrepreneurial mindset. Rodrigues (2023) added that the pedagogical approach used in entrepreneurship education plays an important role in building entrepreneurial character in students.

Through the experiential learning method, students not only learn theory but also experience the entrepreneurial process firsthand, which affects their mindset deeply. This supports the results of this study which show that improvements in entrepreneurship education programs have a direct impact on the formation of Entrepreneurial Mindset. This relationship answers the first research question, which is that Entrepreneurship Education is able to significantly encourage the formation of Entrepreneurial Mindset among students. This proves that the entrepreneurship curriculum in the Merdeka Entrepreneurship Program plays an important role in shaping entrepreneurial attitudes and mentality in participants.

Hypothesis 2: Entrepreneurial Mindset affects Creativity

This study shows that an entrepreneurial mindset has a significant impact on creativity. Kwapisz et al. (2021) argue that an entrepreneurial mindset is the foundation of creative thinking because it trains students to take risks, think openly, and find solutions to challenges. Mawson et al. (2023) also added that strong EM facilitates the development of innovative and original new ideas.

When students have an Entrepreneurial Mindset, they tend to see problems as opportunities and think creatively in facing challenges. This makes EM an important foundation in the creativity development process. Students with high EM not only absorb knowledge but also process and transform that knowledge into innovative ideas. This finding also answers the third question in the research, that Entrepreneurial Mindset does have a major contribution to increasing student creativity. Thus, the systematic formation of an entrepreneurial mindset in educational institutions can be a catalyst for the development of student creativity.

Hypothesis 3: Creativity affects the Ability to Innovate

Creativity is proven to have a positive and significant effect on the ability to innovate students. This is in line with the findings of Akhter et al. (2022), which states that creativity is the main input in the innovation process, both in the form of new ideas, products, and processes. Ferreira-Neto et al. (2023) also emphasized that students who have a high level of creativity tend to be more able to translate ideas into applicable innovations. In the context of student entrepreneurship programs, creativity is an important key so that business ideas do not just stop at the conceptual stage, but can be realized into real solutions. Creativity also increases the courage to experiment and make innovative decisions. Therefore, creativity is a direct link between learning and innovative implementation. The answer to the fourth research question proved to be valid, which is the creativity drives innovation. Therefore, creativity should be a focus in entrepreneurship education so that students not only have ideas but also the ability to execute those ideas into innovative solutions.

Hypothesis 4: Entrepreneurship Education affects the Ability to Innovate

The results of the analysis show that Entrepreneurship Education has a direct effect on the Ability to Innovate, although not as great as the indirect effect through Entrepreneurial Mindset and Creativity. Paliwal et al. (2022) stated that entrepreneurship education is indeed able to encourage student innovation, especially when combined with experiential training and an applicable curriculum. This kind of education creates a conducive environment to foster ideas and turn them into innovations. Entrepreneurship education provides a foundation of skills, including problem solving, opportunity identification, and risk evaluation, that strongly support innovation. Although the direct effect is not as large as the mediating effect, it is still important because it encourages students to think critically about their business environment. This makes entrepreneurship education an early foundation in the development of student innovation. Thus, the fifth question in this study is answered that Entrepreneurship Education contributes directly to the Ability to Innovate, although its effectiveness is higher when accompanied by intermediaries such as mindset and creativity.

5. CONCLUSION

This study analysed the effects of Entrepreneurship Education and Entrepreneurial Mindset on students' innovative ability, with Creativity as a mediating variable in the Merdeka Entrepreneurship Program at Universitas Negeri Jakarta. The findings provide several important conclusions.

First, Entrepreneurship Education has a positive and significant effect on students' Entrepreneurial Mindset. In practical terms, this shows that high-quality entrepreneurship programs not only deliver knowledge but also shape students' way of thinking—encouraging them to take initiative, embrace risks, and recognize opportunities.

Second, Entrepreneurial Mindset significantly influences Creativity. Students who develop this mindset are better equipped to generate new ideas and solutions, confirming the importance of building not only technical skills but also psychological resilience and adaptive thinking.

Third, Creativity strongly drives Innovation Ability. Creative students can transform ideas into valuable products and services, reinforcing the need for learning environments that support experimentation and problem-solving.

Finally, while Entrepreneurship Education directly enhances Innovation Ability, its effect becomes more powerful when mediated by Entrepreneurial Mindset and Creativity. This indicates that effective entrepreneurship education must go beyond theoretical instruction and actively foster mindset and creativity to maximize students' innovation potential. Practical Implications that can be listed such as:

- **For Educators:** These findings emphasize the need to design entrepreneurship curricula that are experiential, project-based, and innovation-oriented. Providing students with opportunities such as business incubators, mentoring, and real-world projects will strengthen both their mindset and creativity.
- **For Students:** The results highlight the need to implement experiential and project-based learning approaches, such as business simulations, start-up projects, and design thinking workshops. Embedding creativity exercises and reflective practices in the curriculum will help cultivate both mindset and innovation skills in students.
- **For Policymakers:** The findings support the expansion of programs like Merdeka Entrepreneurship through stronger institutional backing, funding for incubators, and industry-university partnerships. Policy initiatives that integrate entrepreneurship across disciplines and provide access to resources (e.g., seed funding, mentorship) will accelerate innovation capacity at the national level.
- **For Practitioners:** Entrepreneurs and industry partners can collaborate with universities to provide mentorship, internships, and real-world problem-solving opportunities. Such engagement ensures that students not only gain theoretical understanding but also practical insights into entrepreneurial challenges and innovation practices.
- **Policy Recommendations:** The results highlight the importance of supporting entrepreneurship education as a strategic investment in human capital. Policies that encourage collaboration between universities, industry, and government—such as funding for start-up incubators, grants for student ventures, and integration of entrepreneurship across disciplines—can accelerate innovation capacity. Strengthening the Merdeka Entrepreneurship Program with institutional support, resource allocation, and clear evaluation mechanisms will further enhance its effectiveness in preparing graduates to contribute to national economic growth.

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