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Analysis of the Effect of Entrepreneurship Education on Entrepreneurial Intentions with Entrepreneurial Motivation and Opportunity Recognition as Intervening Variables

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ABSTRACT

Entrepreneurship is pivotal in advancing social and economic development, particularly in enhancing community living standards. A strategic approach is needed to foster entrepreneurship growth. This research aims to analyze the influence of entrepreneurship education on entrepreneurial intention, with entrepreneurial motivation and opportunity recognition as intervening variables. Conducted using a quantitative method, questionnaires were distributed to 221 students from Universitas Muhammadiyah Surakarta and 'Aisyiyah University of Surakarta in November 2023. The relationships between variables were analyzed using smart partial least squares (SPLS). The results indicate that: (1) entrepreneurial motivation positively influences opportunity recognition; (2) entrepreneurship education positively influences entrepreneurial motivation; (3) entrepreneurship education does not influence entrepreneurial intention; (4) entrepreneurship education positively influences opportunity recognition; (5) opportunity recognition positively influences entrepreneurial intention; (6) entrepreneurial motivation positively influences entrepreneurial intention; (7) entrepreneurial motivation mediates the influence of entrepreneurship education on opportunity recognition; (8) entrepreneurial motivation mediates the influence of entrepreneurship education on entrepreneurial intention; (9) opportunity recognition does not mediate the influence of entrepreneurial motivation on entrepreneurial intention; (10) opportunity recognition does not mediate the influence of entrepreneurship education on entrepreneurial intention; (11) entrepreneurial motivation and opportunity recognition do not mediate the influence of entrepreneurship education on entrepreneurial intention.

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1. INTRODUCTION

Entrepreneurship plays a crucial role in the growth and development of a country [1]. Entrepreneurship has the ability to create jobs, increase productivity, and drive innovation [2]. Enhancing individuals' interest and intention to become entrepreneurs is essential for sustainable economic growth.

Entrepreneurship education has been recognized as a vital factor in preparing individuals to enter the business world [3]. It equips them with the necessary skills, knowledge, and attitudes to become successful entrepreneurs (Soepatini et al., 2020). Several studies have indicated that entrepreneurship education influences students' tendencies to start businesses [2]. However, there are differing outcomes regarding its effectiveness in identifying business opportunities.

In addition to entrepreneurship education, psychological factors such as entrepreneurial motivation and opportunity recognition are crucial in determining an individual's intention to start a business [4].

Entrepreneurial motivation, defined as the drive or desire to start a business, significantly influences planning and actions toward new ventures [5]. Higher entrepreneurial motivation increases the likelihood of planning and taking concrete steps to start a business [6]. Opportunity recognition, or the capacity to identify potential business prospects, is also positively correlated with the intention to launch a new business [7].

Given the mixed findings in the literature, this study aims to analyze the relationship between entrepreneurship education and entrepreneurial intention, with a focus on the often-overlooked psychological factors. The study is conducted at Universitas Muhammadiyah Surakarta and Universitas 'Aisyiyah Surakarta.

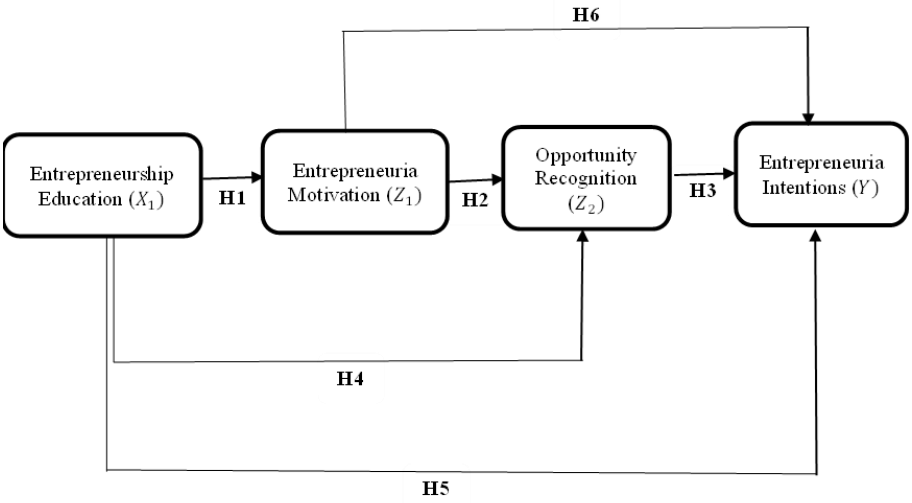

Figure 1. State of the Art

2. RESEARCH METHOD

This correlational research aims to determine the relationship between entrepreneurship education (X) and entrepreneurial intention (Y), with entrepreneurial motivation (Z1) and opportunity recognition (Z2) as intervening variables. A quantitative approach was employed, involving students from Universitas Muhammadiyah Surakarta and Universitas 'Aisyiyah Surakarta who have taken entrepreneurship courses. A sample size of 220 respondents was determined using a representative sample calculation method. Data were collected through questionnaires and analyzed using Smart PLS. Smart PLS was chosen over other structural equation modeling (SEM) techniques due to its robustness in handling complex models and small to medium sample sizes, making it suitable for the exploratory nature of this study.

3. RESULTS AND ANALYSIS

3.1. Evaluation of the Outer Model

Validity, reliability, and multicollinearity tests are used in this work to assess the outer model. The evaluation of the outer model is conducted to ensure that the instruments used are appropriate and effective for measurement purposes.

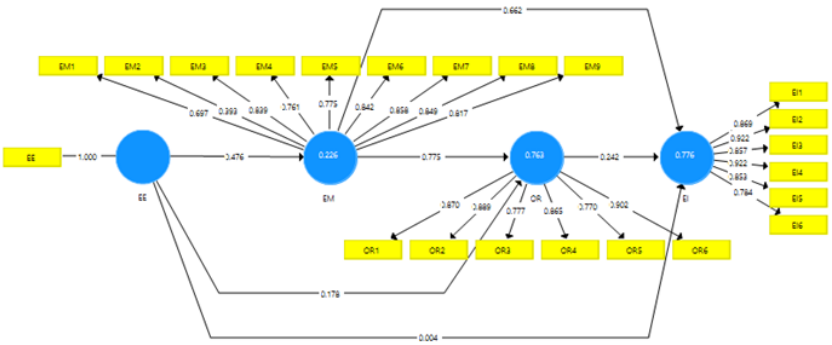

Figure 2. Outer Modle

3.1.1. Validity Test

The validity test, based on convergent validity, indicates that most indicators have outer loadings > 0.7, thus confirming the appropriateness of the instruments [8]. Below are the outer loadings for each variable indicator in this study:

Table 1. Convergent Validity

Variable	Indicator	Outer Loadings	Description
EE	EE1	1.000	Valid
EM	EM1	0.697	Not Valid
	EM2	0.393	Not Valid
	EM3	0.839	Valid
	EM4	0.761	Valid
	EM5	0.775	Valid
	EM6	0.842	Valid
	EM7	0.858	Valid
	EM8	0.849	Valid
	EM9	0.817	Valid
OR	OR1	0.870	Valid
	OR2	0.889	Valid
	OR3	0.777	Valid
	OR4	0.865	Valid
	OR5	0.770	Valid
	OR6	0.902	Valid
EI	EI1	0.869	Valid
	EI2	0.922	Valid
	EI3	0.857	Valid
	EI4	0.922	Valid
	EI5	0.853	Valid
	EI6	0.784	Valid

Out of the test results shown in the above table, indicator EM 1 and EM2, has an outer loading value less than 0.7. However, most of the indicators show outer loadings values > 0.7. Therefore, it may be said that the study's instruments are legitimate.

3.1.2. Discriminant Validity

Discriminant validity testing is used to indicate the appropriateness or validity of each indicator by ensuring it correlates highly with its construct through convergent validity, with an Average Variance Extracted (AVE) value > 0.5. Below are the AVE values for each research variable:

Table 2. Discriminant Validity

Variable	Average Variance Extracted (AVE)	Description
Entrepreneurship Education	1.000	Valid
Entrepreneurial Motivation	0.595	Valid
Opportunity Recognition	0.717	Valid
Entrepreneurial Intention	0.755	Valid

Discriminant validity testing shows that each variable's AVE value is greater than 0.5, indicating valid measures, with entrepreneurship education at 1.000, entrepreneurial motivation at 0.595, Opportunity recognition at 0.717, and entrepreneurial intention at 0.755.

3.1.3. Reliability Test

Table 3. Reliability Test

Variable	CroEIach's Alpha	Composite Reliability	Description
Entrepreneurship Education	1.000	1.000	Valid
Entrepreneurial Motivation	0.909	0.928	Valid
Opportunity Recognition	0.921	0.938	Valid
Entrepreneurial Intention	0.935	0.949	Valid

The following are the variables' Cronbach's alpha values: entrepreneurship education at 1.000, entrepreneurial motivation at 0.909, Opportunity recognition at 0.921, and entrepreneurial intention at 0.935. The reliability test results demonstrate that all research variables have Cronbach's alpha and composite reliability values greater than 0.7, confirming the reliability of the instruments.

3.2. Inner Model Evaluation

A structural model called the inner model is employed to forecast the causes of various variables [9]. An example of the inner model evaluation utilizing the SmartPLS 3.0 software may be found below.

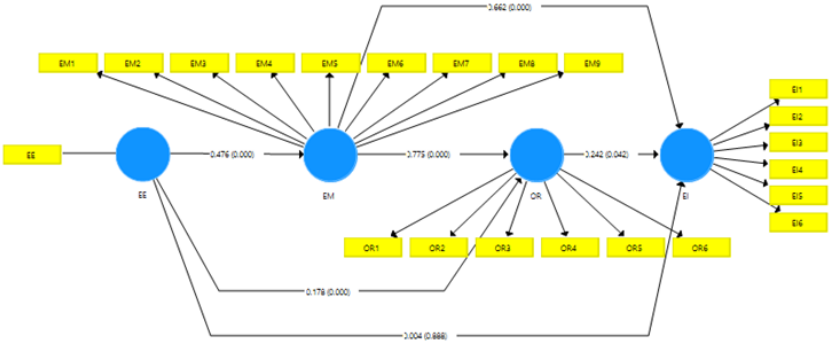

Figure 3. Inner Modle

3.2.1. R Square (R2)

Table 4. R square

Variable	R Square	R Square Adjusted
Entrepreneurial Motivation	0.226	0.223
Entrepreneurial Intention	0.776	0.773
Opportunity Recognition	0.763	0.761

Based on the results of the test table, the R square value is used to see the extent of the influence of entrepreneurial education intentions on entrepreneurial motivation, which has a value of 0.226 and is considered strong. This means that 22.6% of the entrepreneurial motivation variable is explained by the entrepreneurial education variable. The remaining 77.4% is explained by other variables outside the model.

The next R square value is used to see the extent of the influence of entrepreneurial education and Opportunity recognition on entrepreneurial intention, which has a value of 0.776 and is considered strong. This means that 77.6% of the entrepreneurial intention variable is explained by the entrepreneurial education and Opportunity recognition variables. The remaining 22.4% is explained by other variables outside the model.

Looking at the extent of the influence of entrepreneurial motivation on Opportunity recognition, it has a value of 0.763 and is considered strong. This means that 76.3% of the Opportunity recognition variable is explained by the entrepreneurial motivation variable. The remaining 23.7% is explained by variables outside the model.

3.2.2. Predictive Relevance (Q^2)

Q-Square is a useful metric for evaluating how effectively the model and its parameter estimations produce the observed values. A model is considered predictively relevant if its Q-square value is between 0 and $Q^2 < 1$. The study's Q2 values are as follows:

Table 5. Predictive Relevant

Variable	Q^2
EM	0.132
EI	0.564
OR	0.537

In the table above, the Q^2 value for Entrepreneurial Motivation is 0.132, the Q^2 value for Entrepreneurial Intention is 0.564, and the Q^2 value for Opportunity Recognition is 0.537. Therefore, it can be said that the model is predictively relevant.

3.2.3. Normed Fit Index (NFI)

The Normed Fit Index (NFI) produces values between 0 and 1. An NFI value of more than 0.1 indicates that the model is deemed acceptable or good. The model fit and acceptability are better the closer the NFI value is approaching 1. Here are the NFI values for this study:

Table 6. Normed Fit Model

Model Fit	Saturated Model	Estimated Model	Description
NFI	0.794	0.794	Accepted

The values of the NFI (Normed Fit Index) range from 0 to 1 based on the test results shown in the above table, with NFI > 0.1 in both the saturated model and the estimated model, each having a value of 0.794. This indicates that the model has good or acceptable fit.

3.3. Hypothesis Testing

3.3.1. Direct Effect (Path Coefficient)

When a t-statistic is greater than 1.96 or the p-value is less than 0.05, research hypotheses are deemed acceptable. In the event that the t-statistics > 1.96 or the p-value < 0.05 signify a significant effect. The path coefficient test yielded the following results:

Table 7. Direct Effect (Path Coefficient)

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
EM -> OR	0.775	0.779	0.036	21.476	0.000
EE -> EM	0.476	0.481	0.032	15.013	0.000
EE -> EI	0.004	0.004	0.025	0.147	0.883
EE -> OR	0.178	0.175	0.032	5.555	0.000
OR -> EI	0.242	0.244	0.121	2.009	0.045
EM -> EI	0.662	0.663	0.114	5.790	0.000

Considering the test findings shown in the above table, the original sample values and p-values show the direct effects between variables. An original sample value of 0.775 and p-values of 0.000 < 0.05 are found in the analysis of the direct influence of entrepreneurial motivation on opportunity recognition, showing a positive and significant effect. Therefore, H_1: Entrepreneurial Motivation has a positive and significant effect on Opportunity Recognition is accepted.

An original sample value of 0.476 and p-values of 0.000 < 0.05 are found in the analysis of the direct effect of entrepreneurial education on entrepreneurial motivation, showing a positive and significant effect. Therefore, H_2: Entrepreneurial Education has a positive and significant effect on Entrepreneurial Motivation is accepted.

The direct impact of entrepreneurial education on entrepreneurial intention is analyzed, and the results indicate no significant effect, with an initial sample value of 0.004 and p-values of 0.000 < 0.05. Therefore, H_3: Entrepreneurial Education does not have a significant effect on Entrepreneurial Intention is rejected. This rejection can be attributed to several factors, such as the indicators of Entrepreneurial Education in this study consisting of five questions, but two of them having limited scope [10]. Specifically, the question "PKM Entrepreneurship funded by the University" showed that only a few students were funded, leading to a limited scope [11]. Additionally, the question "PKM Entrepreneurship funded by Dikti" also had a narrower and more limited respondent coverage [12]. Therefore, the value or results from the Entrepreneurial Education indicators were quite low, affecting the entrepreneurial intentions of students at Muhammadiyah University of Surakarta and ‘Aisyiyah University of Surakarta.

Furthermore, several previous studies, such as those conducted by (Wardani & Surabaya, 2021), (83 Pengaruh et al., 2021), and (Jassin et al., 2022), have looked into the same theory on how entrepreneurial education affects the desire to start their own business. All this research came to the same conclusion: entrepreneurial inclination is not significantly influenced by entrepreneurial education.

An original sample value of 0.178 and p-values of 0.000 < 0.05 are found in the analysis of the direct effect of entrepreneurial education on opportunity recognition, showing a positive and significant effect. Therefore, H_4: Entrepreneurial Education has a positive and significant effect on Opportunity Recognition is accepted.

An original sample value of 0.242 and p-values of 0.003 < 0.05 are found in the analysis of the direct influence of Opportunity Recognition on Entrepreneurial Intention, showing a positive and significant effect. Therefore, H_5: Opportunity Recognition has a positive and significant effect on Entrepreneurial Intention is accepted.

An original sample value of 0.662 and p-values of 0.003 < 0.05 are found in the analysis of the direct relationship between entrepreneurial motivation and entrepreneurial intention, showing a positive and significant effect. Therefore, H_6: Entrepreneurial Motivation has a positive and significant effect on Entrepreneurial Intention is accepted.

3.3.2. Indirect Effect

The criterion for analyzing the indirect effect is by looking at the specific indirect effect values, which indicate whether the values are positive or negative. If the probability value (P-values) is < 0.05, it is significant and indicates a successful mediation or an indirect effect. If the P-values are > 0.05, it is not significant and indicates no mediation or a direct effect. The following are the indirect effect analysis results for this study:

Table 8. Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
EE -> EM ->EI	0.315	0.319	0.058	5.455	0.000
EM -> OR -> EI	0.188	0.191	0.096	1.944	0.052
EE -> EM -> OR -> EI	0.089	0.092	0.047	1.894	0.059
EE -> OR -> EI	0.043	0.042	0.022	1.962	0.050
EE -> EM -> OR	0.368	0.374	0.029	12.821	0.000

The results of the EE-EM-OR analysis indicate that the original sample value was 0.368, and the P-value was 0.000 < 0.05, indicating that the result is positively significant. H7: Entrepreneurial motivation mediates the influence of entrepreneurial education on Opportunity recognition.

The results of the EE-EM-EI analysis indicate that the original sample value was 0.315, and the P-value was 0.000 < 0.05, indicating that the result is favorably significant. H8: Entrepreneurial motivation mediates the influence of entrepreneurial education on entrepreneurial intention.

The original sample value was 0.188, and the P-value was 0.052 > 0.05, indicating that the indirect effect analysis (EM -> OR -> EI) was not significant. It can be inferred from the facts and experiments that this presumptive hypothesis is either rejected or has little bearing. H9: Opportunity recognition does not mediate the influence of entrepreneurial motivation on entrepreneurial intention.

With an original sample value of 0.043 and a P-value of 0.050 > 0.05, the indirect effect analysis (EE -> OR -> EI) result is deemed not significant. It can be inferred from the facts and experiments that this presumptive hypothesis is either rejected or has little bearing. H10: Opportunity recognition does not mediate the influence of entrepreneurial education on entrepreneurial intention.

The original sample value was 0.089, and the P-value was 0.059 > 0.05, indicating that the indirect impact analysis (EE -> EM -> OR -> EI) was not significant. It can be inferred from the facts and experiments that this presumptive hypothesis is either rejected or has little bearing. H11: Entrepreneurial motivation and Opportunity recognition do not mediate the influence of entrepreneurial education on entrepreneurial intention.

4. CONCLUSION

The study finds that entrepreneurial motivation positively influences opportunity recognition, and entrepreneurship education positively affects entrepreneurial motivation. While entrepreneurship education does not directly influence entrepreneurial intention, it positively affects opportunity recognition, which in turn influences entrepreneurial intention. Entrepreneurial motivation mediates the relationship between entrepreneurship education and both opportunity recognition and entrepreneurial intention. However, opportunity recognition does not mediate the relationship between entrepreneurial motivation and entrepreneurial intention, nor does it mediate the relationship between entrepreneurship education and entrepreneurial intention. These findings highlight the complex interplay between education, motivation, and opportunity recognition in shaping entrepreneurial intentions.

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