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Opportunity Recognition and Green Entrepreneurial Intention: The Moderating Effect of Entrepreneurship Education

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Abstract: Increasing the entrepreneurial intentions of university students a being crucial issue. The purpose of this study was to determine the effect and analyze the moderator of entrepreneurship education on the relationship between opportunity recognition and green entrepreneurial intentions. This research applied an explanatory survey and questionnaires distributed to 195 students of Economic Education Siliwangi University in Tasikmalaya. The collected data were analyzed using structural equation modeling (SEM). The results in this study show that opportunity recognition positively impacts students' green entrepreneurial intention. This study also indicates the role of entrepreneurship education in moderating the relationship between opportunity recognition and green entrepreneurial intention. The implication of the research is to support the formulation of entrepreneurial education initiative that can promote students in entrepreneurial projects either in the present or in the future.

Keywords: Entrepreneurship Education, Green Entrepreneurial Intention, Opportunity Recognition.

INTRODUCTION

In the 21st century, many business activities target high profits and trigger adverse impacts such as environmental pollution, unawareness of excessive consumption of natural resources, global warming, and reduction of biodiversity (Nuringsih & Puspitowati, 2017; Uslu et al., 2015). Environmental problems can be minimized by reducing the rate of economic growth or creating environmentally-friendly economic activities. This phenomenon encourages the emergence of the Green Economy concept's (Wikaningtyas et al., 2019).

The green economy is a new paradigm and part of a sustainable development strategy that prioritizes the balance of economic, social, and environmental values (Wikaningtyas et al., 2019). The concept of green economies helps solve environmental problems such as natural resources are scarce and social welfare (Himel et al., 2016). Green Entrepreneurship is considered a significant main idea, helps solve sustainable development problems, and increases the main movements in the economy (Ebrahimi & Mirbargkar, 2017; Farinelli et al., 2011; O'Neill & Gibbs, 2016).

Entrepreneurship is trusted to be the primary pillar of strength in economic growth by creating new businesses and new jobs (Karimi et al., 2016; Minniti et al., 2005). However, low entrepreneurial intention and employment opportunities are limited, which will result in unemployment and a decline in welfare (Fragoso et al., 2020; Mila, 2013; Tulenan, 2018). The results of the BPS survey in 2019 stated that the population working in university education decreased by 0.06 percent, and university graduates were in the fourth position with the highest number of

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unemployed. The causes of increased unemployment include skills that are not under what is needed (Fragoso et al., 2020), expected income, higher status, and limited job opportunities (Astriani & Nooraeni, 2020; Indayani & Hartono, 2020; Mila, 2013; Tulenan, 2018). The factor of higher income and status expectations is due to the mindset of students after graduation that they hope to work as employees, where they work on the initiative and strength of others (Asih et al., 2020; Indarti & Rostiani, 2008; Mila, 2013). Moreover, various studies stating that the student does not have the desire to become entrepreneurs because they have not been able to stand alone and take risks (Mila, 2013).

Entrepreneurship intention can be encouraged through entrepreneurship education (Fietze & Boyd, 2017; Saeed et al., 2015). Entrepreneurship-based education programs are necessary because they contribute to developing entrepreneurial attitudes, abilities, and skills to increase entrepreneurial intentions (Piperopoulos & Dimov, 2015). Entrepreneurship intention can be encouraged through Entrepreneurship Education. Entrepreneurship-based education programs are necessary because they contribute to developing entrepreneurial attitudes, abilities, and skills to increase entrepreneurial intentions. Many researchers research to find answers on how to intensify one's entrepreneurial intentions. Several researchers state that entrepreneurial intentions can be affected by opportunity recognition (Al-Jubari et al., 2019; Baručić & Umihanić, 2016; Camelo-Ordaz et al., 2016; Hassan et al., 2020; Kang & Yang, 2016; Karimi et al., 2016; Mahmood et al., 2019; Nurhayati & Machmud, 2019; Ryu & Kim, 2020; Sakti et al., 2020), and entrepreneurship education (Anwar et al., 2021; Doğan, 2016; Hassan et al., 2020; Jena, 2020; Karimi et al., 2016; Marshall et al., 2008; Mwiya, 2014; Rauch & Hulsink, 2015; Zhang et al., 2014; Zhu et al., 2017).

Universities have a role in encouraging students to become entrepreneurs and changing the mindset of students from looking for work to being job creators (Asih et al., 2020; Hassan et al., 2020; Mila, 2013; Said & Iskandar, 2020; Widiyarini, 2018). Therefore, changing the mindset of students will be easy to realize ideas and start a business (Asih et al., 2020). This entrepreneurship option has received significant attention in its role as a driver of economic growth (Said & Iskandar, 2020; Shah et al., 2020).

Siliwangi University is a state university located in Tasikmalaya city of West Java. Siliwangi University, as an educational institution, has visions, missions, and goals. The vision of Siliwangi University is to produce excellent graduates who have national insight and entrepreneurial spirit at the national level in 2022. One of the goals is to organize education to produce graduates who are nationally minded and have an entrepreneurial spirit and produce graduates who have the knowledge, skills, national insight, and entrepreneurship in their respective scientific fields. Based on the vision, mission, and objectives expected to foster entrepreneurial interest in students and ready to build a career as an entrepreneur by armed with the knowledge they have learned during their studies, especially students of economic education who have studied entrepreneurship.

The results interview from 54 students of economic education regarding their mindset after graduation, of which 40 percent chose to become employees, 29 percent chose to become a teacher, 22 percent wanted to become entrepreneurs, and the rest continued their studies. Students' interest in entrepreneurship is

insufficient, especially to become green entrepreneurs. This phenomenon is not consistent with the vision and mission of Siliwangi University, which is to produce graduates who have a national perspective and are entrepreneurial. Therefore, entrepreneurship education is here to stimulate students to have the intention and spirit of entrepreneurship.

Previous research has discussed entrepreneurship education for students in general. Entrepreneurship education has long been considered one of the main factors in growing and developing entrepreneurial passion, spirit, and behavior (Kourilsky & Walstad, 1998). Entrepreneurship education is considered an effective instrument for internalizing perceptions of self-efficacy, entrepreneurial intention, and entrepreneurial competence (Rahmadani et al., 2018). In addition, the ability to identify opportunities and innovations to create new businesses can be formed by education (Cliff et al., 2006; Cooper & Park, 2008), primarily through entrepreneurship education (Kourilsky & Esfandiari, 1997; Kourilsky & Walstad, 1998). Arenius and De Clercq (2005) said that the effect of entrepreneurship education positively affects opportunity recognition. The statement support research from Hassan et al. (2020); Manesh and Rialp-Criado (2019), which stated that the effect of entrepreneurship education affects opportunity recognition on entrepreneurial intentions.

However, the discussion about opportunity recognition on green entrepreneurial intention after participating in Entrepreneurship Education is still limited. Some researchers reveals that opportunity recognition affects green entrepreneurship intention (Ataman et al. 2018; Jiang et al. 2020; Polas et al. 2020; Ramayah et al., 2019), while some have found negative effects (HUGO, 2020; Karimi et al., 2016). Even Jiang et al. (2020); Nuringsih et al. (2017); Polas et al. (2020) remarked that entrepreneurship education strengthens students' green entrepreneurial intentions. In their study, Karimi et al. (2016) explained that Entrepreneurship Education does not affect the ability to recognize opportunities and entrepreneurial intentions, but opportunity recognition affects entrepreneurial intentions. Furthermore, Ye et al. (2020) also found that the interaction between opportunity factors on switching intent to green entrepreneurship is relatively weak. Overall, the objective of this study is to examine the interface between opportunity recognition and green entrepreneurial intentions while the relationship by entrepreneurship education.

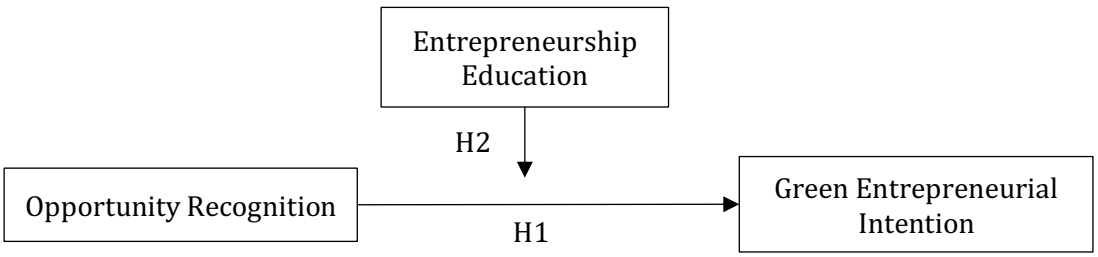

Figure 1. Hypothesized Conceptual Framework

Accordingly, follow the hypothesis will be explored in this study:

1. There is a positive impact of opportunity recognition on entrepreneurial intention.

2. Entrepreneurship education positively moderates the relationship between opportunity recognition and green entrepreneurial intention.

METHODS

The research location does at Siliwangi University in Tasikmalaya City. Siliwangi University was chosen as the location because it is one of the State Universities in Tasikmalaya. This research classifies as an explanatory survey with a quantitative approach. The population was students of economic education, and the sampling technique used purposive sampling. The sample criteria used are active students in college who have taken entrepreneurship courses and determination of sample size using the formula of Slovin with a standard error of 5 percent. There 195 students who can fill out the questionnaire and according to the specified number of samples. Filling out the questionnaire via Google Form and students are directed to fill out the questionnaire based on their actual situation. This study measures green entrepreneurial intention in students with the independent variable opportunity recognition and moderated by entrepreneurship education. This study uses social knowledge theory to test how Entrepreneurship Education can improve student opportunity recognition skills so that they have the desire to become green entrepreneurs.

Questionnaire Development

Data collection techniques using a questionnaire with a scale of measurement is Likert ranging from 1 to 5. The questionnaire to measure opportunity recognition follows Kuckertz et al. (2017), where there are four dimensions: alert, searching, gathering information, communicating, and problem-solving. Measuring green entrepreneurial intention follows Shirokova, Osiyevskyy, and Bogatyreva (2016). There are four dimensions of measurement: desires, preferences, plans, and behavior expectancies. Measuring entrepreneurship education follows Lee et al. (2005), where there are four dimensions*:* the intention of venture creation and confidence, knowledge and ability for venture creation, the intention of overseas venture creation with teamwork, and recognition of the importance of entrepreneurship education.

The questionnaire items from all variables are 25 statement items and three additional items to describe the respondent's characteristics such as name, gender, and year of generation. In addition, to ensure the validity and reliability of the questionnaire statement items, the questionnaire will be tested first before being distributed. Validity is a measure that shows the level of validity of an item, and reliability is an item instrument that is reliable enough to be used as a data collection tool because it is already good (Arikunto, 2013). To ensure the validity and reliability of the questionnaire statement items to assess the suitability of the questionnaire for research, the test was carried out by distributing it to two expert lecturers from the Indonesian Education University, and suggestions were accepted and adapted accordingly. Furthermore, the questionnaire was distributed to 20 students to ensure the value of the validity and reliability of the questionnaire statement items. Validity and reliability testing using IBM SPSS 22, which invalid

questionnaires will remove from this research. The results of the validity test there are two items discarded, and 23 statement items obtained used by the study. The reliability results obtained are opportunity recognition (0.810), green entrepreneurial intention (0.864), and entrepreneurship education (0.787) above Cronbach's Alpha (0.6), meaning that the questionnaire can use for research.

RESULTS & DISCUSSION

Characteristics of the Sample

In general, the description of the research sample shows the characteristics of the respondents. The number of research samples used was 195 people. The explanation of description characteristics of respondents based on demographics is in Table 1.

Table 1. Characteristics of The Sample

		Total	%
Gender	Male	40	20.5
	Female	155	79.5
Year of Study	2019	56	28.72
	2018	57	29.23
	2017	60	30.77
	2016	22	11.28

This characteristic description refers to Hassan et al. (2020) and Ramayah et al. (2019). This study does not include age but replaces it with force year. Table 1 shows the grouping of respondents by gender, that male respondents are 22.95% and female 77.05%. Meanwhile, students year of study was dominated in 2017 with the percentage of 30.77% and the lowest was in the last of year their study.

Measurement Model: Validity, Reliability and Fit Indices

Model set up to examine the convergence of each item with each contract is adequate or not. Validity and reliability testing to check the variable constructs can be used or not in structural equation modeling analysis (Haryono, 2016). Table 2 shows the loading factor (λ) values of manifest variables OR, EE, and GEI greater than 0.5, meaning that the manifest variable is declared valid. The Construct Reliability (CR) values of the three variables > 0.7 and variance extracted (AVE) > 0.5, meaning that OR, EE, and GEI have good construct reliability. The model is declared feasible for hypothesis testing, meaning that the model can be analyzed by structural equation modeling.

Based on Table 3, produces df of 195 with a Chi-Square value of 156,672 < 228.58 and P-Value of 0.00 < 0.05 indicates the good fit of the model. Furthermore, the RMSEA test yielded a value of 0.075 ≤ 0.90 means a fit model with data. AGFI = 0.862 who value is close to the cut-off value of 0.90 AGFI 80 means the marginal fit category. While the test GFI = 0.904, TLI = 0.901, and CFI = 0.920 with a cut-off value of > indicating a fit model with data. The chi-square value in the goodness of fit model test states that the constructed variable can be used for hypothesis analysis and is strengthened by the RSMEA value.

Table 2. Fit Model Validity and Reliability

Latent Variable	Manifest Variables	λ	λ²	CR	VE
Opportunity Recognition (OR)	Alert	0.735	0.540	0.834	0.502
	Searching	0.700	0.490		
	Gathering Information	0.752	0.566		
	Communicating	0.638	0.407		
	Problem Solving	0.735	0.540		
Entrepreneurship Education (EE)	Intention of venture creation and confidence	0.638	0.407	0.800	0.512
	Knowledge and ability for venture creation	0.940	0.884		
	Intention of overseas venture creation with teamwork	0.698	0.487		
	Recognition of the importance of entrepreneurship education	0.519	0.269		
Green Entrepreneurial Intention (GEI)	Desire	0.750	0.563	0.838	0.569
	Behavior Expectancies	0.588	0.346		
	Preferences	0.803	0.645		
	Plans (Y4)	0.850	0.723		

Note(s): λ = Loading Factor, CR = Construct Reliability, VE = Variance Extracted

Table 3. Goodness of Fit Model

No	*Goodness of Fit Index*	Cut-off Value	Outcome	Meaning
1	Chi Square	< 228.58 (5%; 195)	156.672	Good Fit
2	Significant Probability	≥ 0.05	0.000	Bad Fit
3	RMSEA	≤ 0.90	0.075	Good Fit
4	GFI	≥ 0.90	0.904	Good Fit
5	AGFI	≥ 0.90 /0.90 ≤AGFI< 0.80	0.862	Marginal Fit
8	TLI	≥ 0.90	0.901	Good Fit
9	CFI	≤ 2.00	0.920	Good Fit
10	CMIN DF	≥ 0.90	2.146	Good Fit

The evaluation measurement on the model in Table 4 shows the maximum Mahalanobis (d^2) value < X^2, thus the multivariate no cases of data outliers. The value of the determinant of sample covariance matrix is away from the value 0 or > 1, we conclude that there are no multicollinearity and singularity problems.

Table 4. Measurement Evaluation of Model

Mahalanobis distance (d2)			*Determinant of Sample Covariance Matrix*	*Conditioner Number*
Max	**Min**	**X^2**		
29.794	12.600	34.528	14.224	262798.033

Hypothesis Testing

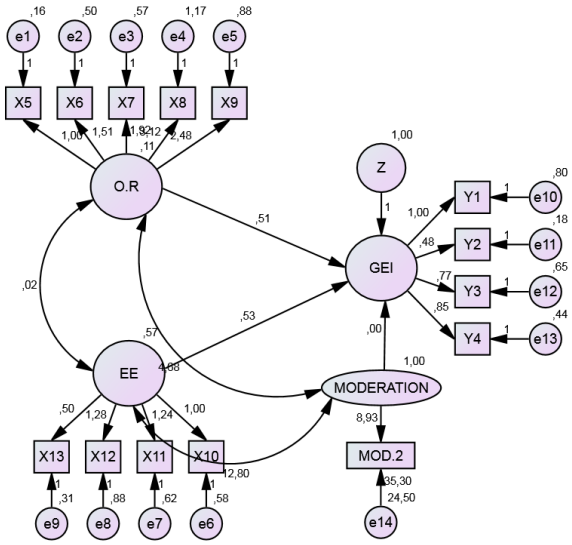

Figure 2. Final Test Model

Structural equations based on Figure 2 is provided in Equation 1.

$$\mathbf{GEI = 0.507*OR + 0.532*EE + 0.003*OR*EE;\ R^2 = 0.203} \quad \mathbf{(1)}$$

The results of the structural equation show that the positive role of Entrepreneurship Education (EE) moderates the relationship between Opportunity Recognition (OR) and Green Entrepreneurial Intention (GEI). That means that Entrepreneurship Education strengthens the relationship between opportunity recognition and green entrepreneurial intention.

Table 5. Final Result Analysis SEM

Variable	SR	SRW	S.E	C.R	P	R^2
Standardized direct effect						
GEI ← OR	0.508	0.215	0.205	2.479	0.013	0.050
Interaction effect (moderating effect)						
GEI ← EE *OR	0.000	0.003	0.001	1.978	0.048	0.203

Hypothesis Testing 1: There is a positive impact of opportunity recognition on green entrepreneurial intention.

The path coefficient value in Table 5 is 0.508 (> 0), indicating that opportunity recognition affects green entrepreneurial intention. The significant value of the critical ratio is 2.479 > 1.960, and the probability is 0.013 > (0.05), so the null hypothesis rejected while at alternative accepted. Opportunity Recognition has a positive and significant effect on Green Entrepreneurial Intention. The impact of Opportunity Recognition on Green Entrepreneurial Intention showed in Table 5, where the R^2 value show 5% impact entrepreneurial self-efficacy on green entrepreneurial intention. The remaining 95% influenced by other variables that not describe in this model.

Hypothesis Testing 2 : Entrepreneurship education positively moderates the relationship between opportunity recognition and green entrepreneurial intention.

The path coefficient value in Table 5 is 0.003 (> 0), which indicates that the moderating role of Entrepreneurship Education strengthens the relationship between opportunity recognition and green entrepreneurial intention. The significant value of the critical ratio is 1.978 > 1.960, and the probability is 0.048 > 0.05, so the null hypothesis rejected while at alternative accepted. That means that the role of entrepreneurship education moderates positively and significantly on the relationship between opportunity recognition and green entrepreneurial intention. The impact of entrepreneurship education in the relationship between opportunity recognition and green entrepreneurial intention shown in Table 5, where the R^2 value shows 20.30% Entrepreneurship education moderates the relationship between opportunity recognition and green entrepreneurial intention. The remaining 79.7% influenced by other variables that not describe in this model.

The Impact of Opportunity Recognition on Green Entrepreneurial Intention

The findings of this study show that opportunity recognition has a positive and significant effect on green entrepreneurial intention. A positive value coefficient means increased opportunity recognition, which increases green entrepreneurial intention. The results of the study by Eckhardt and Shane (2003); Hills and Singh (2004) support the results. The ability of opportunity recognition to strengthen entrepreneurial intentions critically influences the decision to start a new business. The results of this study are similar to some researchers who stated that there is an influence of opportunity recognition on entrepreneurial intentions (Baručić & Umihanić, 2016; Hassan et al., 2020; Kang & Yang, 2016; Ryu & Kim, 2020; Sakti et al., 2020). The results of Wikaningtyas et al. (2019) strengthen the findings of research results where opportunity recognition has a significant effect on green entrepreneurial intention. Jiang et al. (2020) also found that green recognition substantiates green entrepreneurial intention. Individuals who have high green recognition have a great desire to become green entrepreneur.

Students who have high opportunity recognition abilities will be able to start new businesses (Baručić & Umihanić 2016; Ryu & Kim 2020), especially in the field of green entrepreneurship (Kang & Yang, 2016; Polas et al., 2020; Ramayah et al., 2019), this is due to the high entrepreneurial intention of students. That means that good opportunity recognition abilities encourage students to have the desire to become entrepreneurs, especially green entrepreneurs. Students will have the ability to (1) Alert, so they will be careful in making choices. (2) Searching, able to conduct market research to identify business opportunities. (3) Gathering Information, collecting information related to obtaining knowledge and information about business opportunities, or seeking new ideas about products or services. (4) Communicating, able to create cooperation with friends, customers, or entrepreneurs. (5) Problem Solving, able to see business opportunities based on the problems perceived by customers.

Entrepreneurship Education Moderates the Relationship Opportunity Recognition and Green Entrepreneurial Intention

The research findings indicate that entrepreneurship education moderates positively and significantly the relationship between opportunity recognition and green entrepreneurial intention. The coefficient value shows entrepreneurial education strengthens the correlation between opportunity recognition and green entrepreneurial intention. The results of this study agree with Chang et al. (Sakti et al., 2020) that well-designed entrepreneurship education can improve abilities that help students recognize and obtain information to increase opportunity recognition abilities. The results of this study reinforced by Hassan et al. (2020a) that entrepreneurship education strengthens the influence of opportunity recognition on entrepreneurial intentions. Entrepreneurship education helps improve opportunity recognition skills. Accordingly, before making an innovation decision identifying a new opportunity is significant not to cause financial loss (Wei et al., 2019).

Entrepreneurship education helps students improve recognition opportunities (Arenius & Clercq, 2005) encourage students to have entrepreneurial intentions (Al-Jubari et al., 2019; Zolfaghari Ejlal Manesh & Rialp-Criado, 2019), especially into green entrepreneurship. It means that entrepreneurship education can trigger motivation for business creation, provide knowledge about entrepreneurship, teach cooperation in establishing a business, and make aware of leading things in establishing a new business. Therefore, entrepreneurship education will teach things about opportunity recognition which is very useful for starting a new business. Students can be alert, searching, gathering information, communicating, and problem-solving to find business opportunities, especially green entrepreneurs.

CONCLUSION

The findings of this study show that opportunity recognition has a positive and significant impact on students' green entrepreneurial intention. coefficient of positive value means high opportunity recognition hence the high green entrepreneurial intention. Additionally, entrepreneurship education moderates positively and significantly the relationship between opportunity recognition and green entrepreneurial intention students. The coefficient value shows the moderating role of entrepreneurship education in strengthening the relationship between opportunity recognition and green entrepreneurial intention. This research implies that the opportunity recognition is found to increase students' green entrepreneurial intention. It implicates that student who can recognize opportunities can search, collect information, communicate, and solve problems well they realize starting a new business. Moreover, Entrepreneurship Education, students can improve their entrepreneurial skills and skills so that they have the desire to become an entrepreneur and are ready to set up a new business. This study also has some limitations; first, this research study only used a sample of students from one university. This limitation has paved the way for further research by increasing the sample size and adding many universities. The second limitation is

that the sample is only economics education students who have taken entrepreneurship courses, leaving students from other backgrounds. Therefore, it can be considered as future research by including students from other study programs. This study solely using one cognitive variable to describe the intention of green entrepreneurship even though there are many more contextual and cognitive factors such as entrepreneurial self-efficacy and entrepreneurial behavior that can be used in further research studies.

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