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Determinant of Sustainable Entrepreneurial Intention : Mediating Role of Entrepreneurial Self-Efficacy

Rizka Andriyati, Dewi Kusuma Wardani*, Feri Setyowibowo
Economic Education Department, Faculty of Teacher Training and Education,
Universitas Sebelas Maret, Indonesia.
***Corresponding Author. Email: dewikusuma@staff.uns.ac.id**

Abstract: This study aims to analyze the effect of entrepreneurial education and sustainability orientation in influencing sustainable entrepreneurial intention by testing the mediating effect of entrepreneurial self-efficacy in predicting sustainable entrepreneurial intention. This study used a quantitative approach with 306 UNNES and UNS economics education students' years of 2020 and 2021 as samples. Data was obtained by distributing an online questionnaire (Google Form). Data was analyzed using the SEM-PLS technique. The analysis's results show that there is a significant positive effect between entrepreneurial education and sustainability on entrepreneurial self-efficacy. Entrepreneurial self-efficacy can mediate the relationship between entrepreneurial education and sustainability orientation in terms of sustainable entrepreneurial intentions. The findings also confirm that sustainable entrepreneurial intention can be formed through the formation of cognition stimulated when students take entrepreneurial education and individual personalities, which can be reviewed from a sustainability orientation.

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Introduction

Creating economic growth while seeking solutions to environmental degradation has raised questions about the difficulty of realizing the "Sustainable Development Goals" (Hummels & Argyrou, 2021). Environmental degradation is the result of centuries of industrial economic development, with limited attention to environmental and social externalities. One attempt to overcome this dichotomy is to implement "sustainable entrepreneurship (Hummels & Argyrou, 2021)". Sustainable entrepreneurship is emerging as an important concept that links the importance of economic profitability with environmental preservation and social justice (Jebsen et al., 2023). Sustainable entrepreneurship plays a key role in the progress and transition towards a circular economy, the integration of external dynamic skills, and human resource management. It is considered a solution to environmental degradation (Sreenivasan & Suresh, 2023).

Given the important role of sustainable entrepreneurship, higher education interventions are required to increase entrepreneurs who contribute to sustainability by instilling a sustainable entrepreneurial mindset (Wagner et al., 2021). It is based on the argument that universities are key to the diffusion of sustainability and knowledge appropriateness in business creation (Ratten & Jones, 2021). Universities need to implement pro-environmental programs, for example, by adopting UI Green Matric indicators to create student awareness and attitudes toward dealing with environmental issues. In Indonesia, according to UI Green Matric in 2023, there will be 126 out of 4,523 universities categorized as sustainable universities. Among these universities, the top 10 have the most sustainable

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universities rankings according to UI Green Matric, eight of which are non-educational universities and two of which are educational universities. It attracts the attention of researchers as well as being one of the novelties in this study because existing research has mostly explored non-education fields such as science (Rogayan & Nebrida, 2019), engineering (Barba-Sánchez & Atienza-Sahuquillo, 2018), also business and management (Jebsen et al., 2023).

The two universities are Universitas Negeri Semarang and Universitas Sebelas Maret. Both universities implement sustainable university programs by claiming to be conservation universities and green campuses. One of the education departments at these two universities is the economics education department. This department explicitly has a vision that, in addition to creating a graduate profile as an educator, it is also expected that graduates will be able to become entrepreneurs. However, based on the tracer study data in 2023, it is known that the number of UNNES and UNS Economic Education graduates who have chosen to become entrepreneurs in the last three years is still small (5%), and there are even no graduates who are engaged in sustainable businesses. The data indicates that the possible cause of the low sustainable entrepreneurial behavior of students is their low entrepreneurial intention. In addition, this finding indicates a phenomenon gap where pro-environmental universities or sustainable universities that have internalized sustainability values should be able to produce graduates who become sustainable entrepreneurs, which is it can be seen from the high and low entrepreneurial intentions of their students.

Over the past few years, research related to sustainable entrepreneurship has grown rapidly across multiple disciplines. Most existing research addresses the internal and external factors that drive sustainable entrepreneurial intentions for individuals (Agu et al., 2021; Arru, 2020; Romero-Colmenares & Reyes-Rodríguez, 2022). Nonetheless, the literature studying entrepreneurial behavioral intentions in the sustainability dimension is still in its infancy (Arru, 2020). Moreover, existing studies adopt the original constructs of the Theory Planned of Behavior/TPB model in predicting sustainable entrepreneurial intentions (Fatoki, 2020; Vuorio et al., 2018). Meanwhile, there are several disadvantages to this model: 1) There is an imperfect relationship between intention and actual behavior (Kolvereid & Isaksen, 1966). 2) The application of this theory requires the control of others, or the role of others is very influential on the components of this theory.

Whereas, before entrepreneurial intention arises, individuals must have belief in their ability to establish a new business. In addition, behavior can change at any time, so it is critical to provide the foundation for the establishment of behavior by understanding the components that drive entrepreneurial intention based on personal factors and cognitive development. Therefore, this study uses Social Cognitive Theory (SCT) (Bandura, 1999) as the grand theory as well as being a novelty in this study. This theory is more explicit than the TPB on dimensions related to beliefs, where it adds outcome expectations as an explanatory factor for entrepreneurial action (Nwosu et al., 2022). SCT believes that entrepreneurial behavior is the result of a reciprocal and bidirectional interaction of three components: environmental inputs, personal factors, and outcome expectations (Nwosu et al., 2022). However, this study only focuses on the personal and cognitive shaping aspects that underlie the formation of sustainable entrepreneurial intentions.

Entrepreneurial intention is considered the best predictor of entrepreneurial action because, without entrepreneurial intention, there will be no next step (Santos & Liguori, 2019). Related to sustainable entrepreneurship, Agu et al. (2021) define sustainable entrepreneurial intention as a mental state that shows one's belief and commitment to build a new business in the future by integrating economic, social, and environmental values. One

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important factor that influences sustainable entrepreneurial intention is entrepreneurial self-efficacy (Rodríguez Gutiérrez et al., 2019). Entrepreneurial self-efficacy is an individual's belief in his or her entrepreneurial ability to achieve growth targets while taking into account environmental safety, especially one's belief that his or her business can bring about environmental changes for the better in terms of social, economic, and environmental aspects (Guo, 2022). Entrepreneurial self-efficacy is an important cognitive element before entrepreneurial intention because individuals with high levels of entrepreneurial self-efficacy tend to successfully carry out the entrepreneurial process and face all challenges in building a new business (Hassan et al., 2020).

Another cognitive personal factor that significantly drives sustainable entrepreneurial intention is entrepreneurial education (Diepolder et al., 2021). Entrepreneurial education will equip students with knowledge and skills that will help them identify opportunities and allocate resources so that they have enough confidence to set up a new business (Li et al., 2022). However, another argument was found in the research of Abina et al., 2015 and Ambarriyah & Fachrurrozie (2019) found that entrepreneurial self-efficacy was not able to mediate the relationship between entrepreneurial education and environmentally sound entrepreneurial intentions. On the other hand, sustainable entrepreneurship is increasingly recognized among younger generations, such as Generation Y and Generation Z, as evidenced by the high awareness of the importance of the concept of sustainability and the emergence of a strong entrepreneurial spirit (Dreyer & Stojanová, 2022).

Another cognitive personal factor that is also considered in measuring sustainable entrepreneurial intentions is sustainability orientation. Sustainability orientation reflects personal attitudes and traits that underlie environmental protection and social responsibility (Soo Sung & Park, 2018). Meanwhile, Wagner et al. (2021) define sustainability orientation as individuals with entrepreneurial intentions that aim to manage the triple bottom line (economic, social, and environmental). Individuals who have a sustainability orientation have a deep concern for the environment and will have a high tendency to see entrepreneurial opportunities resulting from sustainable economic behavior and have better self-confidence, which will ultimately stimulate them to carry out sustainable entrepreneurial activities (Meek & Sullivan, 2018). Fatoki (2020) found that sustainability orientation has a positive impact on sustainable entrepreneurial intentions. Appealingly, St-Jean & Labelle (2018) found the opposite, that sustainability orientation has a significant negative effect on sustainable entrepreneurship intention.

Based on the background description above, this study aims to analyze the effect of entrepreneurial education and sustainability orientation in influencing sustainable entrepreneurial intention through testing the mediating effect of entrepreneurial self-efficacy in predicting sustainable entrepreneurial intention.

Research Method

This study used a quantitative research approach. The population of this study were Economics Education students of Universitas Negeri Semarang and Universitas Sebelas Maret year of 2020 and 2021, totaling 1,311 students. This study used a proportionate stratified random sampling technique using the Slovin formula, so that a research sample of 306 students was obtained. Data collection was carried out from December 2023 to January 2024 by distributing questionnaires online (Google Form). In developing the research questionnaire, we adopted measurement items from various literature (DeNoble et al., 1999; Fatoki, 2020; Linan & Chen, 2009; Qazi et al., 2020) and used Sugiyono (2019) Likert scale, which has been modified to have only 4 points (from "strongly disagree" to "strongly agree").

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We eliminated the "neutral" option because the category has a double meaning that can be interpreted as not giving an answer, neutral, or undecided (Kriyantono, 2012). The data analyzed using SEM-PLS approach with the Smart PLS (v.4.1.) analysis tool through three stages: outer model, inner model, and hypothesis testing (Hair et al., 2019).

Results and Discussion

Outer Model

The outer model evaluation is carried out to confirm the reliability and validity (convergent validity and discriminant validity) of the construct and its dimensions (Hair et al., 2019). Convergent validity analyses based on the loading factor. All items in this research (36 items) are valid for measuring the object of research because the loading factor value is > 0.70 and the AVE value of each variable is > 0.50 (Abdillah & Hartono, 2015).

Table 1. Convergent Validity

Constructs	Items	Loading Factor	CR	AVE	Conclusion
Entrepreneurial Education			0.898	0.764	
Know what (entrepreneurial knowledge)	EE1	0.857			Valid
Know why (values and motives)	EE2	0.896			Valid
Know how (*social interaction*)	EE3	0.854			Valid
Know how (*entrepreneurial skill and abilities*)	EE4	0.889			Valid
Sustainability Orientation			0.852	0.68	
Propensity to innovate	SO1	0.842			Valid
Altruism	SO2	0.817			Valid
Extraversion	SO3	0.79			Valid
Proactive	SO4	0.85			Valid
Entrepreneurial Self-Efficacy			0.896	0.703	
Develop new products and market opportunities	ESE1	0.842			Valid
Developing an innovative environment	ESE2	0.862			Valid
Overcoming unexpected challenges	ESE3	0.829			Valid
Initiate relationships with investor	ESE4	0.853			Valid
Develop critical human resources	ESE5	0.806			Valid
Sustainable Entrepreneurial Intention			0.898	0.712	
Entrepreneurial readiness	SEI1	0.841			Valid
The main purpose of being entrepreneur	SEI2	0.868			Valid
Make various efforts to start a business	SEI3	0.843			Valid
Deciding to create a business in the future	SEI4	0.858			Valid
Thinking very seriously about running a business	SEI5	0.807			Valid

Furthermore, a discriminant validity test is carried out to see the correlation between constructs based on cross-loading or the Fornell-Larcker criterion. The discriminant validity test results show that the model has good discriminant validity because the cross-loading value of each variable is> 0.70 (Abdillah & Hartono, 2015). In addition, the root AVE value of each variable is higher than the correlation (Ghozali, 2014)

Table 2. Discriminant Validity

	EE	ESE	SEI	SO
EE1	0.857	0.647	0.589	0.619
EE2	0.896	0.692	0.659	0.679
EE3	0.854	0.674	0.691	0.686

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	EE	ESE	SEI	SO
EE4	0.889	0.661	0.642	0.681
ESE1	0.656	0.842	0.673	0.638
ESE2	0.687	0.862	0.697	0.632
ESE3	0.599	0.829	0.622	0.619
ESE4	0.607	0.853	0.666	0.634
ESE5	0.657	0.806	0.595	0.618
SEI1	0.657	0.652	0.841	0.635
SEI2	0.642	0.638	0.868	0.603
SEI3	0.716	0.652	0.843	0.624
SEI4	0.568	0.665	0.858	0.545
SEI5	0.535	0.668	0.807	0.553
SO1	0.632	0.684	0.583	0.842
SO2	0.698	0.635	0.646	0.817
SO3	0.549	0.497	0.492	0.79
SO4	0.625	0.63	0.58	0.85

Table 3. Fornell-Larcker Criterion

	EE	ESE	SEI	SO
EE	0.874			
ESE	0.765	0.839		
SEI	0.739	0.777	0.844	
SO	0.762	0.749	0.702	0.825

The reliability test results show that each variable is reliable because the Cronbach's alpha and composite reliability values are > 0.7, so it can be said that each variable in this study is reliable (Abdillah & Hartono, 2015).

Table 4. Reliability

Variable	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
EE	0.897	0.898	0.928
ESE	0.894	0.896	0.922
SEI	0.898	0.898	0.925
SO	0.844	0.852	0.895

Inner Model/Structural Model

The structural model in SEM-PLS is evaluated using the path coefficient test, t value, and R squared (R2) test. Hair et al. (2019) divided the R square value into three categories, namely strong if 0.75, moderate if 0.50, and weak if 0.25. Table 5 shows that the R2 value for the entrepreneurial self-efficacy variable is 0.651 and the sustainable entrepreneurial intention variable is 0.604. It indicates that 65% of the distribution of entrepreneurial self-efficacy variables and 60% of the distribution of sustainable entrepreneurial intention variables can be explained by the independent variables in the study. Thus, this research model are moderate in providing an overview of the variables that influence sustainable entrepreneurial intentions.

Table 5. R-square Test Result

	R-square	R-square adjusted
ESE	0.651	0.649
SEI	0.604	0.603

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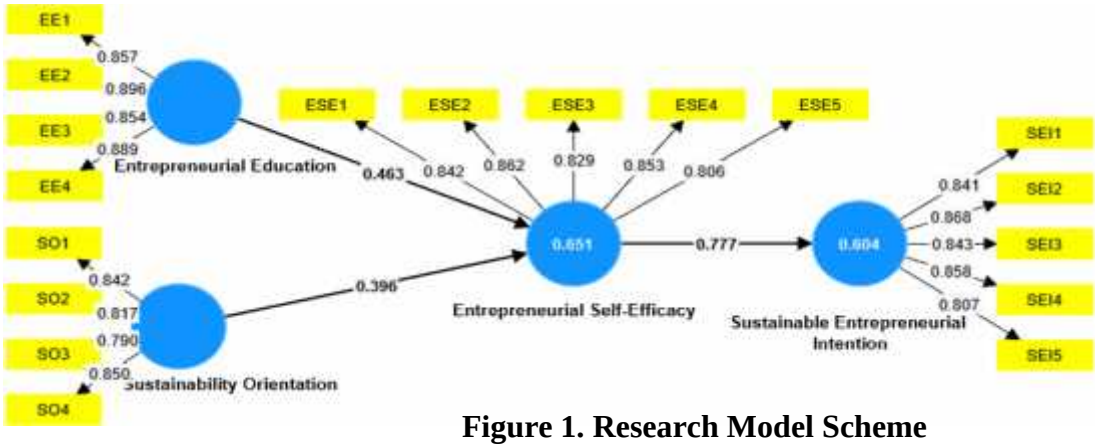

Figure 1. Research Model Scheme

Hypothesis Testing

Hypothesis testing in the SEM-PLS model uses the bootstrapping method by looking at the t-statistic value and p-value. The significance level used is 0.05; if the t-statistic value is more than t-table (> 1.96) and p value < 0.05, the hypothesis is accepted (Ghozali, 2014).

Table 6. Path Coefficients

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Hypotheses Notes
EE -> ESE	0.463	0.462	0.062	7.53	0.00	Accepted
SO -> ESE	0.396	0.399	0.058	6.854	0.00	Accepted
ESE -> SEI	0.777	0.778	0.023	33.467	0.00	Accepted
EE -> ESE -> SEI	0.360	0.359	0.052	6.937	0.00	Accepted
SO -> ESE -> SEI	0.308	0.310	0.045	6.909	0.00	Accepted

Discussions

This study relies on social cognitive theory to examine sustainable entrepreneurial intention with predictor variables of entrepreneurial education (EE) and sustainability orientation (SO) and the mediating effect of entrepreneurial self-efficacy (ESE). The mediating variable of entrepreneurial self-efficacy is used to investigate the mechanism underlying the formation of entrepreneurial intention from personal cognitive aspects and how this variable is able to bridge other variables in the formation of sustainable entrepreneurial intention. This study shows how entrepreneurial self-efficacy has a very significant impact on sustainable entrepreneurial intention. Data processing results show the original sample value of 0.777 with a p-value of 0.000 (<0.05). It means that there is a significant positive effect of entrepreneurial self-efficacy (77.7%) on sustainable entrepreneurial intentions. The results of this study are in line with research (Guo, 2022). Entrepreneurial self-efficacy has been associated with green entrepreneurship and is defined as a person's belief in their ability to achieve economic growth targets by considering environmental safety and a strong belief that their business can bring about good change. Entrepreneurial self-efficacy is the dominant determinant of entrepreneurial intention, which is the hallmark of sustainable entrepreneurship (Jain et al., 2019). The intensity and strength of sustainable entrepreneurial intentions largely depend on green ESE and the intention owner's capabilities (Alvarez-Risco et al., 2021). A person who has a good confidence system, which is the core of his or her intelligence regarding sustainable entrepreneurship, will have a positive impact on his or her future business operations, from resource

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management to management. Entrepreneurial self-efficacy is a personal factor that comes from self-beliefs obtained through previous cognitive, social, and practical experiences. As stated by Bandura (2012), self-efficacy affects individual mindsets in improving or reducing one's performance and increasing one's confidence in completing all tasks, especially those related to entrepreneurship. Given the important role of entrepreneurial self-efficacy in fostering sustainable entrepreneurial intentions, this study also investigates the determinants that affect entrepreneurial self-efficacy so that it becomes a link in the formation of sustainable entrepreneurial intentions.

First, this study examines the direct effect of entrepreneurial education on entrepreneurial self-efficacy and the mediating effect of entrepreneurial self-efficacy in connecting the effect of entrepreneurial education with sustainable entrepreneurial intention. The results of hypothesis testing show that entrepreneurial education has a significant positive effect on entrepreneurial self-efficacy, with a p-value of 0.000 (<0.05) and an original sample value of 0.463. This indicates that there is a positive effect of entrepreneurial education of 46.3% on entrepreneurial self-efficacy. The results of this study are consistent with research (Jena, 2020). Then the mediating effect of entrepreneurial self-efficacy on entrepreneurial education and sustainable entrepreneurial intentions obtained an original sample value of 0.360 with a p-value of 0.000 (<0.05). This can be interpreted as indicating that there is a positive effect of entrepreneurial education by 36% on sustainable entrepreneurial intentions through entrepreneurial self-efficacy. This finding is in line with research (Nowiński et al., 2019). In addition, this result is linear with the existing reality because Semarang State University and Sebelas Maret University have internalized sustainability values in the curriculum both implicitly and explicitly. Explicitly, internalization is done in the implementation of entrepreneurial education. At Semarang State University, sustainable entrepreneurial education is integrated into a special course called "sustainable entrepreneurship," which can be taken by students majoring in economic education in semester 3. Competencies taught in this course include education for sustainability, green entrepreneurship, social entrepreneurship, customer adoption on the marketing side, product innovation for sustainability, and green business strategies for small and medium enterprises. Meanwhile, at Sebelas Maret University, the content of sustainability values is given implicitly in entrepreneurship learning and regular learning. Entrepreneurial education that internalizes the concept of sustainability can provide a view of the plans and goals that students want to achieve when establishing a sustainable business, equip students on how they should act to run a business in accordance with the concept of sustainability, and determine techniques and strategies so that the sustainable business built can be successful. Entrepreneurial education can increase student knowledge, increase self-confidence, or entrepreneurial self-efficacy, which in turn will increase perceptions of feasibility in entrepreneurship so that it can foster entrepreneurial intentions. Entrepreneurial self-efficacy is very important because it determines a person's perseverance, resilience, and dedication when faced with problems and challenges, as well as how the person completes the tasks required in starting a new venture. Vuorio et al. (2018) highlight the positive role of entrepreneurial education in fostering the realization of entrepreneurial self-efficacy towards sustainable entrepreneurial intentions, where higher education interventions can enhance a sustainable entrepreneurial ecosystem. Entrepreneurial self-efficacy is part of sustainability-oriented entrepreneurial education that stimulates students' desire and cognition to engage in sustainable entrepreneurship (Agu et al., 2021).

Second, review the direct effect of sustainability orientation on entrepreneurial self-efficacy and the mediating effect of entrepreneurial self-efficacy in connecting the effect of

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sustainability orientation with sustainable entrepreneurial intention. Hypothesis testing shows that sustainability orientation and entrepreneurial self-efficacy have a significant positive effect; this can be seen from the original sample value of 0.396 with a p-value of 0.000 (<0.05). This means that there is a positive effect of sustainability orientation (39.6%) on entrepreneurial self-efficacy. The higher the sustainability orientation that individuals have, the higher their self-efficacy to build sustainable entrepreneurship. The results of this study are similar to research (St-Jean & Labelle, 2018). While the mediating effect of entrepreneurial self-efficacy on sustainability orientation and sustainable entrepreneurial intentions obtained an original sample value of 0.308 with a p-value of 0.000 (<0.05), This can be interpreted as indicating that there is a significant positive effect of sustainability orientation (30.8%) on sustainable entrepreneurial intentions through entrepreneurial self-efficacy. Individuals who have a high sustainability orientation have a strong desire to engage in actions that change the state of society for the better. As postulated in SCT, which establishes two direct precedents in influencing career intentions and actions, namely self-efficacy and outcome expectations (St-Jean & Labelle, 2018) in this study, self-efficacy is operationalized in entrepreneurial self-efficacy and sustainable entrepreneurial intentions as outcome expectations. Sustainability orientation itself is the set of values, attitudes, and personal traits that underlie environmental protection and social responsibility (Soo Sung & Park, 2018). Semarang State University and Sebelas Maret University stimulate and encourage students' sustainability orientation through the implementation of programs such as the tree planting movement during the new student orientation period, appeals for conservation behavior such as bringing their own drink containers in the university area to be refilled, setting emission-free days every 2 months, and structuring university spaces that promote environmental friendliness.

Sustainability orientation in this study is measured using four indicators: the tendency to innovate, altruism, extraversion, and proactivity. Individuals who have at least four of these personality traits are shown to have a good level of ESE. Innovation is at the core of sustainable development (Cheng, 2019). The propensity to innovate is a key component of the early entrepreneurial process, especially in intention formation, as an entrepreneur needs to come up with new ideas and identify sustainability-oriented opportunities. The propensity to innovate is an element that allows individuals to be more receptive to environmental changes, able to generate visions of flexibility and adaptiveness in generating solutions to economic, social, and environmental problems. The tendency to innovate will increase the individual's intrinsic motivation towards environmental sustainability, which indirectly affects his or her self-confidence and fosters sustainable entrepreneurial intentions (Cheng, 2019). Second, individuals with altruism, experts conclude that sustainable entrepreneurial intentions are activated by altruistic values, where these values guide their desires and beliefs to carry out sustainability activities (Kraus et al., 2018). Third, extroversion personality traits: individuals with high levels of extroversion will be more open to social aspects and more interested in doing activities related to social obligations. These individuals have higher social sensitivity, so they tend to be enthusiastic about engaging in social and environmental activities. Furthermore, proactive personality traits have a positive impact on entrepreneurial intentions and behavior through their alertness to opportunities. In essence, individuals with a sustainability orientation will proactively innovate by continuously developing and promoting ideas and solutions to economic, social, and environmental needs, where this is done not solely for personal gain but for the common good. Sustainability orientation in this study is measured using four indicators: the tendency to innovate, altruism, extraversion, and proactivity. Individuals who have at least four of these personality traits are shown to have a

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Conclusion

The conclusions in this study include several points, namely (1) The results of hypothesis testing in SEM PLS found that all the research hypotheses was accepted, entrepreneurial self-efficacy has a significant positive effect on sustainable entrepreneurial intention; (2) Both entrepreneurial education and sustainability orientation have a significant positive effect on entrepreneurial self-efficacy; (3) Entrepreneurial self-efficacy is able to mediate the relationship between entrepreneurial education to sustainable entrepreneurial intention and sustainability orientation to sustainable entrepreneurial intention; (4) These findings confirm that sustainable entrepreneurial intention is a deliberate action that can be derived from individual cognition and personality as postulated in Social Cognitive Theory. The formation of cognition can be stimulated through the provision of education, while the individual's personality can be reviewed based on the individual's sustainability orientation. (5) This finding also confirms that college intervention is indispensable in the formation of sustainable entrepreneurial intention.

Recommendation

A pedagogical approach is proven to increase SEI so that lecturers can adapt sustainability-oriented entrepreneurship education learning frameworks, such as creating a learning space that should allow the student to identify and solve economic, social, and environmental problems. Then, students need to get in touch with the world outside the university, such as through service-learning projects with NGO's, to increase their social sensitivity or sharpen its sustainability orientation.

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