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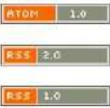
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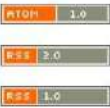
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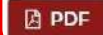
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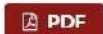
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Sustainable Entrepreneurship Activities: A Pathway to Foster Intentions in Sustainability

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ABSTRACT

Objective: Aligning with the role of entrepreneurship education in higher education institutions (HEIs), the purpose of this study is to develop a model of sustainable entrepreneurship activities and analyze the relationship of these variables to sustainability education and sustainable entrepreneurial intentions. The application of sustainable entrepreneurial activities is to develop the thinking in Schlange's (2006) study in order to prepare knowledge for entrepreneurs in a sustainable era.

Methodology: The respondents were entrepreneurship students in Jakarta, Indonesia. A total of 193 students were involved as respondents using purposive sampling technique while the data processing used Smart-PLS.

Finding: The result proves the indicators are valid and reliable in reflecting these variables. It shows sustainable entrepreneurship activity and sustainable education affect the formation of sustainable entrepreneurial intention. Sustainable education mediates the formation of intention among students at the HEIs.

Conclusion: The sustainable entrepreneurship activity as an instrument to be tested on respondents who have sufficient knowledge about SDGs. This result relates with the theory of planned behavior commonly used to examine the testing of entrepreneurial intentions. It is useful to determine the relevance of the triple bottom line theory. This study can transform the thoughts of Schlange as a pathway in understanding SDGs.

Keywords: Sustainable Entrepreneurship Activity; Sustainable Education; Sustainable Entrepreneurial Intention.

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INTRODUCTION

The entrepreneurship sector acts as the backbone of a country's economy. In carrying out entrepreneurial activities, it is faced with achieving sustainable development goals (SDGs) so that entrepreneurs are directed to create a vision of sustainability in the future (Filho et al., 2022). This transformation encourages a shift in economic behavior so that entrepreneurs must spur their creativity and innovation in creating value. This process is not limited to achieving economic goals, but involves social and environmental goals. In line with these challenges, entrepreneurs are agents of change in dealing with sustainability issues and providing benefits to people and nature.

Sustainability awareness is especially important in developing countries, such as the BRICS countries (Brazil, Russia, India, China, and South Africa) including Indonesia. The pressure to save energy, be eco-friendly, and develop efficiently is becoming increasingly evident to support high economic growth rates and intensive trade (Ren et al., 2022; Fanea-Ivanovici & Barber, 2022). Moreover, the goal of innovation is to achieve economic growth without ignoring societal welfare and environmental sustainability. This context forms the three domains or triple bottom lines theory introduced by Elkington through the concept of eco-efficiency (Kessler, 2013), so these dimensions are most commonly accepted as a sustainability model (Correia, 2019). The terms triple bottom line and sustainability are interchangeable to be implemented as sustainable entrepreneurship (Frederick, O'Connor, & Kuratko, 2016). This is relevant to Indonesia's *Asta Cita* so the challenges of green economy, poverty, environmental, and culture are realized through a sustainable entrepreneurship approach.

At the individual level, applying the concept of sustainability is not easy, so there are limitations in balancing economic and socio-environmental values. This thinking must be understood by aspiring entrepreneurs even though the primary orientation focuses on profit as the main bottom line. Prioritization is needed as described in the convergent process model (Belz & Binder, 2017) that the entrepreneurial process is sustainable through the double bottom line to the triple bottom line according to the entrepreneur's readiness. This needs to be based on knowledge about sustainable entrepreneurial activities for business actors.

The formation of knowledge is related to quality education in higher education institutions (HEIs) so that understanding sustainable entrepreneurial activities needs to involve educated prospective entrepreneurs as participants. SDGs literacy as knowledge for students to transform in entrepreneurship (Nuringsih, Edalmen, Nuryasman, 2023). Therefore, this study aims to build a sustainable entrepreneurship activity (SEA) instrument based on Schlange's (2006) ideas. In the regional context, the areas of entrepreneurial activity include input, transformation, and output, where each implementation harmonizes the goals of economy, ecology, and society/ethics. The next goal is to test its influence on sustainability education and sustainable entrepreneurial intention (SEI). Mentioned by Lüthje & Franke (2003), intention is the best predictor of individual behavior so that through the intention, we get a picture of behavior among prospective business actors in perceiving sustainability issues.

Aligning with this mechanism, entrepreneurship education plays an important role in transforming students' entrepreneurial intentions in a sustainable context. Empirically, there is controversy from the results of previous studies. As an illustration, the study of Fanea-Ivanovici & Barber (2022), analyzing sustainability education with the results did not prove a significant effect on sustainable entrepreneurial intention. Likewise, attitude on sustainability has not been able to mediate sustainable entrepreneurial intention. Pascucci et al., (2021) identified the subjective norm has a negative effect on sustainable entrepreneurial intention. In the context of

theory of planned behavior (TPB), university support represents subjective norms so that it is necessary to encourage an educational approach to touch more on the sustainability icon. Students experience limitations when perceiving intensity in sustainable entrepreneurship.

On the contrary, Makuya & Changalima (2024) proved that entrepreneurship education has a significant positive effect on these intentions. Sargani et al., (2020) put sustainability norm as a determinant of sustainable entrepreneurial intention with the results as expected. The same approach was found in (Mehraj et al., 2023). Amankwah & Sesen (2021) identified a significant positive effect of university education support on green entrepreneurial intention (GEI) and its moderating effect on green behavior. Regarding circular economy, a prior study (Nuringsih & Nuryasman, 2022) found weak significance on GEI with environmental citizenship behaviors. By considering a series of studies, the concept of SEA is raised as a determinant to form intentions by involving sustainable education as a mediator.

Related to the entrepreneurial learning process, the research problem emphasizes the direct and indirect influences in shaping intentions. This rethinks Schlange's (2006) argument to map entrepreneurial activity as a supply chain management approach relevant to the SDGs. Students' understanding of SEA as a basic mechanism makes it easier for HEIs to prepare sustainability-oriented entrepreneurship learning. Pilot testing is formed (Nuringsih & Edalmen, 2024) so that the development of the intention involves sustainable education as a mediating influence of SEA on SEI. The involvement of SEA is a research gap from previous studies so that it makes novelty in SEI studies in the context of entrepreneurial students. This result is a pre-condition for the description of students in perceiving entrepreneurial activities in Jakarta. The contribution is as information in building a learning curriculum in synergy with the SDGs. To prepare business students to build a vision of creating sustainability. This is an extension of the responsibility of HEIs (SDGs-4) in reaching out other goals of sustainability.

LITERATURE REVIEW

Sustainable Entrepreneurship

Transforming entrepreneurship into sustainable entrepreneurship as a commitment to sustainable development. According to the Brundtland Commission defined the "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987). Sustainability is reflected through the triple bottom line (TBL) theory by emphasizing eco-efficiency which includes the 3Ps of people, planet, profit or prosperity (Kessler, 2013). This framework is designed to motivate business leaders to consider these domains in value creation and potential risks.

Sustainable entrepreneurship is defined as the process of discovering, evaluating, and exploiting existing economic opportunities in the face of market failure (Dean & McCullen, 2007). Choi & Gray (2008) underline its achievement through double bottom line or triple bottom line. Hockerts & Wustenhagen (2010) touch on transformation of a sector toward environmentally and socially sustainable conditions. Schaltegger & Wagner (2011) emphasize innovation to create economic-social values. Majid & Koe (2012) add cultural preservation as the fourth pillar of sustainable entrepreneurship. The development of the domain has begun to include cultural and ethical aspects to become the quintuple bottom line (Racelis, 2014). These opinions represent the definition of sustainable entrepreneurship.

Sustainable Entrepreneurial Intention

The formation of entrepreneurial intention as a predictor of behavior at the individual level (Liu et al., 2019). Entrepreneurial intention as a foundation for building new business activities to create prosperity through a constructive approach with society (Pascucci et al., 2021). In general, Bird (1988) defines “the state of mind directing a person's attentions and actions toward a specific object (goal) or a path in order to achieve something”. According to Ajzen (1991), “intention is the indication of how hard people are willing to try or how much an effort they are planning to exert, in order to perform a behavior”. The context of intention presents the theory of planned behavior (TPB) which explains that intention shapes a person's behavior while intention is determined by attitude toward the behavior, subjective norms, and perceived behavioral control. Armitage & Conner (2001) identified through “desire, self-prediction, and behavior, while Linan & Chen (2006) derived to be indicator.

As an adaptation to sustainability, (Ajzen, 2020) expands on green behavior so that the concept of intention is transformed into SEI. In line with the achievement of SDGs, studies on SEI are increasingly extensive in various countries according to the context of the problem, including study in Saudi Arabia (Abdelwahed, 2022). In China Sargani et al., (2020) developed the TPB in the context of sustainability with the results of sustainability norm as a determinant of SEI. Peng et al., (2021) identified three dimensions of TPB as mediating environmental value on SEI to build a sustainable venture. Hussain et al., (2021) placed subjective norms as moderating self-efficacy on SEI with the results having a negative effect on intentions. However, in the directly has a significant effect on intention. Mehraj et al. (2023) proved the influence of the TPB on SEI. Other studies pointed entrepreneurial culture (Zahrani 2022), sustainable culture (Bapoo et al., 2022), ecological values & social responsibility (Wang et al., 2021). For testing this model, it is considered through sustainable education and SEA as its determinants.

Sustainable Entrepreneurship Activity

Schlange (2006) introduced the idea of sustainable entrepreneurship activity in a regional context. Entrepreneurial activity is divided into three including input, transformation, and output where the activity aligns with sustainability, namely economy, ecology and society/ethics. As a form of alignment with the SDGs, the SEA model forms three dimensions. The SEA model builds sustainable supply chain management (SSCM) to support sustainable business activities or as sustainability driven entrepreneurs. The SEA is as a proxy for SSCM. This mechanism is explored in the following studies.

Habib, Bao, & Ilmudeen (2020) identified green supply chain management (GSCM) has a positive influence on economic, environmental, and social performance. Guo, Wang, & Chen (2020) pointed the role of supply chain learning to foster green innovation, while Hejazi, Batati, & Bahurmuz (2023), SCM practices have a significant effect on corporate sustainability performance. Wiredu et al., (2023), GSCM practices have an impact on corporate environmental performance and competitive advantage. Mugoni, Kanyepe, & Tukuta (2024), SSCM practices have a positive impact on environmental performance. Gelmez, Özceylan, & Mrugalska (2024), GSCM impacts on green innovation, environmental performance, and competitive advantage. Anin et al., (2024) supports the impact GSCM with green purchasing and environmental performance. These studies show the transformation of SCM to support sustainable performance so as a proxy in understanding SEA. The details of the Schlange's model is summarized as follows:

Table 1. Sustainable Entrepreneurship Activity

Entrepreneurial Activity		Description
Economy Area:		
Procurement	Input	Use of input factors from regional suppliers
Persistence	Transformation	Clear perspective for economy development in the long term
Growth potential		Economy growth objectives, investment and innovation orientation
Mission		Sustainability orientation is an integral part of company value system
Indentification		Employee share a common understanding of sustainability objective
Cooperation	Ouput	Lasting relationship with local & regional partner support credibility
Ecology Area:		
Transport	Input	Use of ecologically sound transport systems
Energy	Transformation	Alternative sources of energy and efficient use of energy consumed
Residuals		Minimizing resource throught, avoidance of residual and waste materials
Emissions		Minimizing emission level, exclusion of toxicity
Production process		Methods of productions management are envitonmentally sound
Product	Ouput	Adoption of ecological product life cycle perspective
Society/Ethics:		
Equality of right	Input	Addressing gender and generation issue, job for handicapped people
Participation	Transformation	Shared establishing of business objective, support of community activities
Personnel		Active development of employee' competence, fair rewarding schemes
Workplace		Offering safe and hazard free jobs healthprograms for employee
Regional integration		Exchange with regional economy and local/regional culture activities
Communication	Ouput	Honest and transparent information of the public about business activities

Source: summarized from Schlange (2006)

This knowledge supports students in understanding its practices in sustainable business so that it is strengthened through sustainable education to form students' intentions in sustainable entrepreneurship. Entrepreneurship learning can direct SSCM in entrepreneurial practices to form intentions. Based on these arguments, this research proposes H1-H2:

H1: Sustainable entrepreneurship activity has an impact on sustainable education.

H2: Sustainable entrepreneurship activity has an impact on sustainable entrepreneurial intention.

Sustainable Education

Sustainable education integrates entrepreneurship education into sustainable development. It is necessary to unite entrepreneurship education with sustainable development. The sustainable education process is “a development approach to meet the needs of the present without ignoring or sacrificing the abilities, efficiency and values of future generations, especially in meeting the needs of life in the future” (Iyer, 2015). According to Fanea-Ivanovici & Barber (2022), efforts to integrate sustainability into the academic curriculum are a hope to build literacy that is relevant to sustainable issues. Study Uvarova, Mavlutova, & Atstaja (2021) stated entrepreneurship education must strongly introduce important themes in the SDGs agenda including eco-friendly business and circular economy. The role of universities is very important in preparing a sustainability-oriented curriculum.

Previous studies, Makuya & Changalima (2024) proved that entrepreneurship education has a significant positive effect. Mehraj et al., (2023) proved the same effect on SEI. In the context of green business, Nuringsih & Nuryasman (2022) found that entrepreneurship education has a significant positive effect on green entrepreneurial intention. Amankwah & Sesen (2021) identified a significant positive effect on university education support. In contrast,

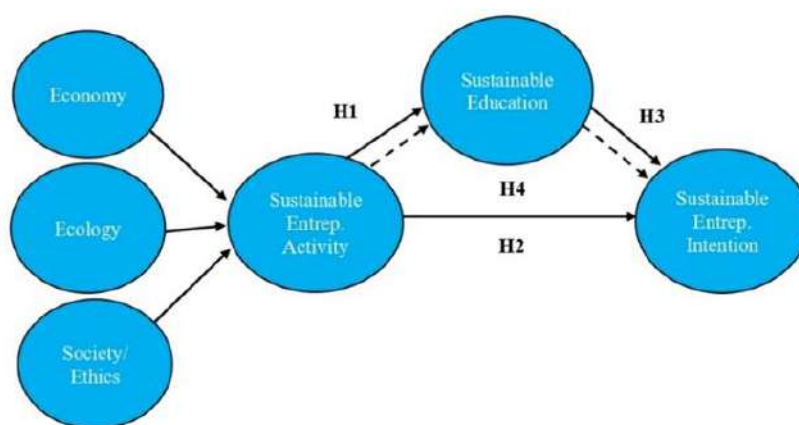
Fanea-Ivanovici & Barber (2022) showed that sustainability education had no significant effect on SEI. Aligning with TPB, entrepreneurship education as university support represents subjective norms in shaping entrepreneurial intentions. Align with the theory of triple bottom line, this intention is transformed into sustainability. Anghel & Anghel (2022) mentioned the need to synergize learning between entrepreneurship, economics, and ecology to shape a mindset in sustainable business. Previously, Iyer (2015) emphasized that sustainable education integrates entrepreneurship education with sustainable development so that it is certain to mediate the SEI. Based on these arguments, this research proposes H3-H4:

H3: Sustainable education has an impact on sustainable entrepreneurial intention.

H4: Sustainable education mediates the influence of sustainable entrepreneurship activity on sustainable entrepreneurial intention

The conceptual framework as follow:

Figure 1. The Conceptual Framework



METHOD

The research design uses a quantitative approach to test sustainable entrepreneurial intention as a dependent variable by involving sustainable entrepreneurship activity as a dependent variable and sustainability education as a mediating variable. The population in this study were students of the Management Program, Faculty of Economics and Business, Tarumanagara University. This study employed a purposive sampling method because the research objective required respondents with specific characteristics and experiences related to the phenomenon investigated. Purposive sampling enables researchers to select information-rich participants who possess relevant knowledge and involvement in entrepreneurial and sustainability-related activities. Therefore, this sampling technique was considered appropriate to ensure that collected data accurately represented the theoretical constructs examined in this study. The sample selection technique used purposive sampling with the following criteria: students have taken courses in entrepreneurship, operational management, introduction to economics, and received SDGs literacy including sustainable entrepreneurship.

The data collection technique used a questionnaire with a 5-point Likert scale between 1 (strongly disagree) to 5 (strongly agree). It was created in Google Forms and distributed via WhatsApp groups. Data collection was December 2024. The sample size suggested by Hair et al. (2014) was between five and ten times the number of indicators. A total of 193 respondents

were considered to meet the minimum sample size criteria. The total indicator of 30 items includes sustainable entrepreneurship activity (SEA) with eighteen indicators (Schlange, 2006), while sustainability education (SE) developed from (Fanea-Ivanovici & Barber, 2022) and sustainable entrepreneurial intention (SEI) constructed from (Pascucci et al., 2021; Linan & Chen, 2006) with six indicators. The measurement is constructed reflectively against variables. The SEA is analyzed in a second order between indicators, dimensions, and variables.

Data processing used Smart-PLS to determine the linkages between variables. The validity testing based on convergent validity and average variance extracted (AVE) with a standard value above 0.50. Reliability testing uses Cronbach's alpha, composite reliability and Rho_A. Hock & Ringle (2006) stated in an exploratory study, the minimum criteria produce a composite reliability of 0.60. The value of the variance inflation factor (VIF) is stated as good with criteria below five (Garson, 2016). It ensures there are no multicollinearity between indicators, dimensions and constructs. Inner model testing uses structural regression for hypothesis testing with a significance of 5 percent. Model fit specifications are based on standardized root mean square residual (SRMR) to identify differences in observed correlations and correlation matrices. It is considered to be in the range of 0.10-0.08 (Hu & Bentler, 1998). Test results may show SRMR values that tend to differ from those standards. Further details are provided in the discussion section.

RESULTS AND DISCUSSION

Results

A total of 193 students meet the criteria as respondents consists of female students 56 percent and male students of 44 percent. 85 percent of participants do not have a business, 10 percent starting a business, and 5 percent have a business in culinary, fashion, interior, healthy food and service sectors. 15 percent of participants were actively involved in social-environmental activities e.g., mangrove conservation, eco-labeling, social services, and social organizations. It needs to be optimized through institutional cooperation with stakeholders.

Table 2-3 show outer loading values are above 0.50 so that they meet convergent validity. Low factor loading on ECO-4 & ECO-5. Reliability testing includes Cronbach Alpha, Composite Reliability, and Rho-A with values above 0.70. The SEA indicator is declared valid and reliable in three dimensions but there are still limitations in the AVE score. Sustainability education and sustainable entrepreneurial intention are declared valid and reliable with AVE above 0.50.

The SEA indicator was developed based on Slange's (2006) study, which reinforces the methodological rationale as follows: Referring to Chin (1998), the construct in this study is a latent construct that is multidimensional and conceptual; therefore, variations in respondents' answers are a phenomenon that may occur. The construct validity was evaluated by considering both theoretical aspects and construct reliability. In addition, indicators with relatively low loading values were not immediately eliminated, as each indicator makes a theoretical contribution to representing the construct's dimensions. Statistically eliminating an indicator has the potential to reduce the conceptual scope of the construct developed from the SEA model. Hair et al. (2019) noted that although the AVE value was below the recommended threshold of 0.50, the construct was retained because the composite reliability value indicated an adequate level of internal consistency. This indicates that the indicators used can consistently represent the construct, so that construct validity does not depend solely on the AVE value.

Table 2. Convergent Validity, Reliability, VIF, and Mean Value on SEA

Indicator	Factor Loading	Alpha Cronbach	Composite Reliability	Rho-A	AVE	VIF	Mean
ECO-1	0.722	0.753	0.830	0.763	0.452	1.615	4.088
ECO-2	0.776					1.689	4.218
ECO-3	0.655					1.317	4.415
ECO-4	0.576					1.217	4.093
ECO-5	0.702					1.403	4.202
ECO-6	0.577					1.285	4.212
ECOL-1	0.712	0.809	0.863	0.818	0.514	1.593	4.104
ECOL-2	0.625					1.433	4.047
ECOL-3	0.685					1.489	4.311
ECOL-4	0.760					1.830	4.539
ECOL-5	0.808					1.956	4.368
ECOL-6	0.699					1.428	4.332
SO-1	0.644	0.793	0.853	0.796	0.492	1.325	4.197
SO-2	0.744					1.564	4.228
SO-3	0.683					1.458	4.228
SO-4	0.687					1.488	4.425
SO-5	0.739					1.534	4.389
SO-6	0.705					1.651	4.233
SEA	-	0.885	0.902	0.888	0.341	-	-

Note: ECO: Economy; ECOL: Ecology; SO: Society; SEA: Sustainable entrepreneurship activity;

Table 3. Convergent Validity, Reliability, VIF, and Mean Value on SE and SEI

Indicator	Factor Loading	Alpha Cronbach	Composite Reliability	Rho-A	AVE	VIF	Mean
SE-1	0.733	0.852	0.890	0.860	0.576	1.726	4.295
SE-2	0.817					2.162	4.254
SE-3	0.815					2.117	4.264
SE-4	0.693					1.619	4.601
SE-5	0.711					1.666	4.456
SE-6	0.777					1.876	4.249
SEI-1	0.768	0.816	0.867	0.822	0.522	1.780	4.150
SEI-2	0.733					1.558	4.280
SEI-3	0.771					1.705	4.166
SEI-4	0.625					1.402	3.793
SEI-5	0.720					1.612	4.259
SEI-6	0.708					1.546	4.285

Note: SE: Sustainability education; SEI: Sustainable entrepreneurial intention

Moreover, the VIF is below five, indicating that there is no high correlation between indicators. At the dimensional level, the following VIF scores are produced: Economy-SEA (1.582), Ecology-SEA (1.672), and Social-SEA (1.706). VIF scores on SE-SEI (2.119), SEA-SE (2.119), and SEA-SE (1.000). These values indicate that there is no high correlation in the measurement model of indicators, dimensions, and variables. The mean of most indicators is above four, but the SEI-4 indicator produces a mean of 3.793. The results show that most respondents were able to perceive positively with a range of 4-5. The SEI-4 indicator indicates that respondents are hesitant or tend to be neutral with a perception in the range of 3-4.

The SRMR value (0.113) is slightly above the general threshold of 0.10, indicating that the model has not yet demonstrated an optimal level of fitness. However, in the context of PLS-SEM, this value needs to be understood more comprehensively because PLS-SEM is more

oriented toward prediction and theory development, rather than merely evaluating model fit in absolute terms—provided that the indicators of construct validity and reliability, as well as the model’s predictive power, have been met.

Table 4. Hypothesis Testing

Path	Original Sample	Sample Mean	Stand. Deviation	T-statistic	P-value
SEA -> SE	0.727	0.731	0.043	16.768	0.000
SEA -> SEI	0.439	0.441	0.074	5.903	0.000
SE -> SEI	0.364	0.365	0.070	5.185	0.000
SEA -> SE -> SEI	0.264	0.266	0.053	5.025	0.000

Note: SEA: Sustainable entrepreneurship activity; SE: Sustainability education; SEI: Sustainable entrepreneurial intention

Based on **Table 4**, hypothesis testing (SEA->SE) produces an original sample of 0.727 with a t-statistic of 16.768 and a p-value of 0.000. While (SEA->SEI) with an original sample of 0.439, a t-statistic of 5.903, and a p-value of 0.000. In (SE->SEI) produces an original sample of 0.364 with a t-statistic of 5.185 and a p-value of 0.000. The H1-H3 are accepted with a significance of 5 percent. The last hypothesis proves the mediation effect (SEA->SE->SEI) with the original sample 0.264, t-statistic 5.025, and p-value 0.000 so that H4 is accepted at 5 percent.

The algorithm produces three R^2 , namely SEA (1.000), SE (0.528), and SEI (0.557). For adjusted R^2 SE (0.526) and SEI (0.553). These values indicate that SEA and SE contribute 55.30 percent to SEI, while SEA contributes 52.60 percent to SE. It indicates that 47.40 percent of SE is influenced by other factors, while SEI is 44.70 percent. Three dimensions contribute to SEA with the results as follows: ECO->SEA (0.358); ECOL->SEA (0.410); SOC->SEA (0.425) with a significance of 5 percent. It indicates that dimentions contribute strongly to forming sustainable entrepreneurship activity.

Table 5. Indirect Effect and Specific Indirect Effect

Path	Original Sample	T-Statistics	P-Values
Indirect Effect:			
ECO -> SE	0.260	10.654	0.000
ECO -> SEI	0.252	10.208	0.000
ECOL -> SE	0.298	13.422	0.000
ECOL -> SEI	0.288	13.429	0.000
SOC -> SE	0.309	12.706	0.000
SOC -> SEI	0.299	12.476	0.000
Specific Indirect Effect:			
ECO -> SEA -> SE	0.260	10.654	0.000
ECOL -> SEA -> SE	0.298	13.422	0.000
SOC -> SEA -> SE	0.309	12.706	0.000
ECO -> SEA -> SEI	0.157	5.125	0.000
ECOL -> SEA -> SEI	0.180	5.753	0.000
SOC -> SEA -> SEI	0.186	5.855	0.000
ECO -> SEA -> SE -> SEI	0.095	5.100	0.000
ECOL -> SEA -> SE -> SEI	0.108	4.912	0.000
SOC -> SEA -> SE -> SEI	0.112	4.671	0.000

Note: ECO: Economy; ECOL: Ecology; SO: Society; SEA: Sustainable entrepreneurship activity; SE: Sustainability education; SEI: Sustainable entrepreneurial intention

Table 5 shows the three dimensions of SEA provide a real contribution to SE and SEI. It is identified through the indirect effect of the three dimensions on SE and SEI. The involvement of SEA indirectly provides a significant contribution to SEI. In the context of specific indirect effects, three dimensions provide a significant influence on SEA, SE, and SEI with a p-value of 0.000. The proven significance of the longest path shows the strength of the perception of the triple bottom line in fostering intentions in sustainable entrepreneurship.

Discussion

The study can build an instrument for SEA with better results than previous research. The synergy between entrepreneurship learning and SDGs provides knowledge to students to understand the meaning of sustainable entrepreneurship and form intentions. The results can implement Schlange's (2006) thinking into an instrument for SEA while proving its potential to encourage sustainable education and student intentions in sustainability. The eighteen indicators, divided into three dimensions in the SEA model, yielded high factor loadings (above 0.50). The implications of this model, as shown in **Table 1**, indicate that all items were well perceived by the participants; thus, the SEA model proposed by Slange (2006) can be used to drive or stimulate the mindset of educated entrepreneurs. Sustainable Entrepreneurship Activities are entrepreneurial activities that are not limited to creating economic value but also consider the creation of social value and environmental conservation. This concept is rooted in the triple bottom line approach developed by John Elkington. In line with Johnson & Schaltegger (2020), this approach positions entrepreneurs as agents of change capable of solving social and environmental problems through business innovation.

These findings represent a novel contribution that identifies a key parameter in sustainable business activities, thereby expanding upon previous theories of sustainable entrepreneurship, such as those by Dean & McCullen (2007); Choi & Gray (2008); Hockerts & Wustenhagen (2010); and Schaltegger & Wagner (2011). This model also enriches and complements the findings of previous studies, such as Belz & Binder (2017) with their Convergent Process Model. Matzembacher et al. (2019) emphasize the process of sustainable entrepreneurship from idea generation to impact measurement. The success of sustainable entrepreneurship depends on the entrepreneur's ability to integrate economic value and sustainability from the early stages of the business. This is further supported by the findings of Johnson & Schaltegger (2020) on the Multilevel Causal Mechanism Framework, as well as Huang et al. (2023), who highlight the need for an entrepreneurial ecosystem to foster sustainable entrepreneurship. Sustainable Entrepreneurship Activities are linked to both sustainable business performance and sustainable entrepreneurial intention.

The hypothesis can be accepted with the argument that the most important factor is that students gain sufficient literacy about SDGs and implementation in entrepreneurship. When an educational institution will implement SDGs, changes to the curriculum based on sustainable development must be made. Strengthening knowledge is provided through supporting courses such as economics, entrepreneurship, management, and ecology. Collaboration with across study programs can support the learning process in GSCM. This picture is visualized by the significance of sustainable education in mediating the effect of SEA with this intention.

The results are in accordance with the TPB's framework. Educational institutions as a social norm play a role as support for students in understanding sustainability. University as role models in the practice of SDGs through entrepreneurship learning. As a reinforcement of learning involves multi stakeholders. Indicators are declared valid and reliable in measuring SEA showing their suitability with the concept of eco-efficiency or the theory of TBL. This

result is also evidence of the alignment of TPB (Ajzen, 1991) with (Ajzen, 2020) in the context of green behavior. This shows their stronger inclination for sustainable entrepreneurship.

The TBL framework is implemented in strategic activities through the development of SSCM (Loviscek, 2021). The role of SEA relates to SSCM as shown by prior studies (e.g., Hejazi, Batati, & Baharmuz, 2023; Habib, Bao, & Ilmudeen, 2020; Wiredu et al., 2023; Gelmez, Özceylan, & Mrugalska, 2024). This logic shows that SEA influences sustainable education and shapes intention to become a sustainable entrepreneur. The synchronization of operational management with the concept of sustainability is as a reinforcement of SCM learning. Agreeing with Uvarova, Mavlutova, & Atstaja (2021), entrepreneurship education introduces important themes in the SDGs agenda including eco-friendly business and circular economy. Both as a milestone to realize green education to become a green campus. This influence is in accordance with Makuya & Changalima (2024), Mehraj et al., (2023), Amankwah & Sesen (2021) who prove the influence of entrepreneurship education on SEI. Entrepreneurship education is a gateway to learning about business and its negative impact on environmental sustainability.

The measurement of sustainability education was developed through Fanea-Ivanovici & Barber (2022) by comparing Iyer's (2015) statement. These are as follows: (1) providing education, guest lectures, and best practices on environmental conservation, (2) developing a learning curriculum that adopts the SDGs, (3) encouraging research to achieve the SDGs, (4) encouraging religious, racial, and gender tolerance, (5) having a commitment to preserving culture, and (6) holding SDG seminars or workshops. The indicators are mostly valid with the highest value in the second indicator and the lowest in the fourth indicator. The measurement of sustainable entrepreneurial intentions developed through Pascucci et al, (2021) by comparing Linan & Chen (2006) includes: (1) ready to become an entrepreneur who is aligned with SDGs, (2) running a business with concern for the environment, (3) trying to find opportunities from SDGs, (4) starting a business by considering SDGs, (5) thinking seriously about realizing a sustainable business, and (6) someday will develop a business in accordance with SDGs. All indicators are valid with the highest value in the third and the lowest in the fourth. This model proves the role of SEA and its dimensions toward SE and forms SEI so that this mechanism is a pathway to foster intentions in sustainability.

CONCLUSION

Entrepreneurship learning based on sustainability education can overcome the knowledge gap about sustainable entrepreneurship among students. The implementation of these results is to answer the challenges of *Asta Cita*. As a foundation for building a sustainability mindset so that prospective entrepreneurs understand to face the pressures of energy saving, environmentally friendly, and efficient development in supporting economic growth. Since the MDGs to the SDGs have increasingly demanded the implementation of the TBL. The mechanism of this study illustrates a readiness in achieving SDGs through entrepreneurial learning practices

The results show a significant influence on relationships between sustainable entrepreneurship activity, sustainable education, and sustainable entrepreneurial intention. The relationship is formed directly and indirectly through sustainable education in mediating the influence of sustainable entrepreneurship activity on sustainable entrepreneurial intention. These results can transform Schlange's (2006) thinking with respondents from business students.

The implication as an information for preparing an educational curriculum. Preparing students to build a vision to create sustainability in the future. It is as an expansion of HEIs' responsibilities by covering SDGs-1 (no poverty); SDGs-2 (zero hunger); SDGs-8 (economic growth & decent work); SDGs-12 (responsible consumption & production); SDGs-13 (climate change); SDGs-14 (life below water); SDGs-15 (life on land). This is achieved through research, community service, student/lecturer exchanges, certification of student competence, and other strategic programs. The HEIs' readiness accelerates the achievement of realizing SDGs becomes an advantage for institutions.

As a suggestion, it is necessary to improve education by involving support from stakeholders. It is necessary to optimize through multi-helix model including regional governments, ministry of education and culture, NGOs, CSR or student exchanges with campuses abroad. Through this mechanism, insights, experiences, networks, and skills in running a sustainable business will be gained. The learning through the "Kampus Merdeka" is still worth maintaining or increasing its reach in the context of accelerating SDGs-oriented learning at HEIs.

Future research can develop business student in the city of Jakarta. The selection aims to support the sustainability of Jakarta as a Global City. Cultural sustainability needs to be developed as Jakarta's identity so that the sustainable entrepreneurship dimension becomes the fourth bottom line or quintuple bottom line to be related to sustainability studies in Jakarta. This aspect will be the orientation of our further study.

Author Contribution:

Kartika Nulingsih contributed to the writing of the manuscript and served as the corresponding author, while Edalmen contributed to data collection and analysis

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