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DEVELOPMENT OF INSTRUMENTS FOR SUSTAINABLE ENTREPRENEURIAL ACTIVITIES: IN THE PERCEPTIONS OF ENTREPRENEURSHIP STUDENTS

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ABSTRACT

As appreciation for achieving the SDGs agenda, a study was carried out to produce sustainable entrepreneurship activity instruments. This process adopts a model previously prepared by Schlange in 2006 with using a triple bottom line framework. The sustainable entrepreneurship activity construct consists of three dimensions including economic, ecological and social activities with totally 18 indicators. This study involved 99 entrepreneurship students as respondents with the overall results of the indicators meeting the Cronbach's Alpha and composite reliability criteria, however the results of the convergent and discriminant validity tests were not completely valid. The results show that sustainable entrepreneurship has not been perceived ideally by respondents. There is a need to increase education, especially regarding ambiguous indicators. The implications of these results are applied to curriculum development as a value for universities in appreciating the goals of sustainable development.

Keywords: *sustainable entrepreneurship activity, triple bottom line framework, SDGs.*

1. INTRODUCTION

Sustainability is a certainty to maintain the future of the earth as a better place for human life with their biodiversity and local cultural wisdom. These issues were implemented through the millennium development goals (MDGs) which were transformed into sustainable development goals (SDGs) to create a vision for achieving a sustainable future (Filho et al., 2022) and measuring the SDGs progress (Pascucci et al., (2022). This reality has an impact on shifting economic behavior, including entrepreneurial activity. It is as human capital in generating value e.g., creating decent jobs, increasing purchasing power, realizing community welfare, and economic growth. The role as an agent of change to realize human welfare is mandatory.

As an acceleration of the SDGs, a green economy is present to adapt to climate change by considering three substances such as low carbon, resource-saving, and socially inclusive (UNEP, 2011). The entrepreneurial model must touch on the aspects of ecology and social involvement (Gevrenova, 2015), recycling, newest energy, or organic food (Uslu, Hancıoğlu, and Demir, 2015), and involve a heuritical approach (Romanowski and Gnusowski, 2019; Racelis, 2014) for collaborating with stakeholders to support the entrepreneurial development in lining with sustainability issues.

This challenge presents a green entrepreneurship approach (e.g., Lotfi, Yousefi, and Jafari (2018); Sudyasjayanti (2018); Nuringsih and Nuryasman (2021); Amankwah and Sesen (2021); Wang et al., (2015); Prabowo, Ikhsan, and Yuniarty (2022). This study is an effort to understand entrepreneurs' concern with environmental issues. Furthermore, the transformation becomes sustainable entrepreneurship (e.g., Bapoo et al., (2020); Sargani et al., (2020); Peng, Zhou, and

Sadowski (2021); Hussain et al., (2021); Zahrani (2022); Fanea-Ivanovici and Barber (2022); Pascucci et al., (2022); Abdelwahed (2022); Gunawan and Lubis (2023); Makuya and Changalima (2024). These various studies illustrate changes in mindset in sustainability issues. This process is a commitment to sustainable development.

Aligning with this transformation, entrepreneurial orientation is not limited to innovation to achieve economic growth (profit) but is pro-active with issues of societal welfare (people) and environmental sustainability (planet). This is the triple bottom lines (TBL) initiated by Elkington (Kessler, 2013), while the terms triple bottom lines and sustainable are interchangeable. The implementation process is not easy so it faces limitations in placing a balanced portion between economic and social-environmental values. Moreover, Hoogendoorn et al., (2017) stated in building sustainable entrepreneurship faces institutional obstacles e.g., financial, administrative, and information when starting a business compared to regular entrepreneurship. This is one of the reasons why there is a lack of enthusiasm in implementing the model. This situation as mentioned by Loviscek (2021) that after a long journey the triple bottom line was considered a failure by its initiator. Therefore, the higher education institutions play an important role in appreciating the triple bottom line model and then following up in a learning process oriented towards these three pillars.

For these reasons, an approach is needed through the convergent process model (Belz and Binder, 2017) that the process towards sustainable entrepreneurship goes from double bottom lines to triple bottom lines. This process is a suggestion for entrepreneurs who are capable and committed to sustainability issues. Meanwhile, prospective entrepreneurs need education to support literacy about the process of sustainable entrepreneurship. However, this transformation needs to be based on knowledge as signs of sustainable entrepreneurial activity. Conceptually, Schlange (2006) describes these activities so that this knowledge needs to be passed on to entrepreneurs. It is the responsibility of stakeholders to educate entrepreneurs or prospective entrepreneurs, including higher education institutions. This knowledge must be possessed by educated entrepreneurial candidates. This stage is an ontological aspect that sustainable entrepreneurship is a reality that must be realized by producers and consumers.

In line with the entrepreneurial learning process, the problem of this study emphasizes the limited knowledge of students as educated entrepreneurial candidates regarding sustainable entrepreneurial activities. For this reason, studies need to be carried out to bridge the knowledge and practice gap by focusing on building sustainable entrepreneurship activity instruments. The essence of this process is as an epistemology for evaluating, determining norms or benchmarks when understanding entrepreneurial activity and as a critique of deviations between conceptual or knowledge and perception in entrepreneurial thinking.

Eventually, the benefits of this study will be as information for building a sustainability-oriented learning curriculum so that students have an adequate knowledge base in understanding sustainable entrepreneurial activities. This is in line with Iyer (2015) that sustainable education 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. This value is an ethic to support its role in the future as an agent of economic change. This is as axiology that states benefits of sustainable entrepreneurship as a link in realizing the SDGs agenda in 2030.

2. RESEARCH METHOD

The research stages are as follows: First, research design with a quantitative description to explore sustainable entrepreneurial activity. Second, the population in this study are students of the management study program, Faculty of Economics & Business, Tarumanagara University who have taken entrepreneurship courses. The sample selection technique used random sampling with a total of 99 respondents. Third, the design of the sustainable entrepreneurship activity instrument refers to Schlange's (2006) study which was developed into a questionnaire with a Likert scale of 1 (strongly disagree) – 5 (strongly agree).

Fourth, the reliability testing measures the accuracy of the concept measurement scale using Cronbach's alpha and composite reliability. Hock & Ringle (2006) in exploratory research produced a minimum composite reliability of 0.60, while according to Henseler et al., (2012) for confirmatory research the minimum criterion is 0.70. Validity testing tests the accuracy of the measuring instrument in revealing the symptoms being measured. Convergent validity uses standard loading factors above 0.50, while discriminant validity uses cross-loadings with the consideration that the loading value on the target construct must be greater than on other constructs. Data processing using Smart-Pls.

3. RESULTS AND DISCUSSIONS

Respondent Profiles and Description of Respondents' Perception

By gender, it includes male (44.40%) and female (55.60%) respondents. Regarding business ownership, 10% have a business, 19.30% are starting a business, while 70.70% do not have a business. As many as 40.40% of respondents were involved in social activities or environmental campaigns, while 59.60% of respondents were not involved in these activities. This description serves as the background of the respondents so that it influences their perception of sustainable entrepreneurship activity.

Furthermore, the description of respondents' perception is as follows: in the dimension of economic activity, the majority of respondents gave their option in agree and strongly agree. A small percentage of respondents gave neutral answers in the range of 8-10 percent. For the ecological activity dimension, the majority of respondents chose to agree and strongly agree or only a small portion gave a neutral statement (e.g., Ecol-1, Ecol-2, Ecol-3, Ecol-5, and Ecol-6). Moreover, on the Ecol-4 respondents gave more varied choices, in disagreeing and strongly disagreeing. Different from the previous dimension, in the social activity dimension respondents gave varied answers. On the SO-3 and SO-5 indicators, respondents gave the choice of agree and strongly agree with a small number being neutral. However, on the SO-1, SO-2, SO-4, and SO-6, respondents gave varying choices, disagreeing and strongly disagreeing.

Construction of Sustainable Entrepreneurial Activity

Figure 1 depicts the construction of sustainable entrepreneurial activity (SEA) designed using a second-order approach covering 3 dimensions, namely economic activity (D1), ecological activity (D2), and social activity (D3). Each dimension is described reflectively into 6 indicators including input, process and output. The first indicators e.g., ECO-1, Ecol-1, and SO-1 are input measurement, the last indicators e.g., ECO-6, Ecol-6, and SO-6 are output measurement, while the others are process measurement.

The basis for building this construct uses the results of a study from Schlange in 2016 which was developed with the current study and considered using the triple bottom lines framework. Model illustration as follows.

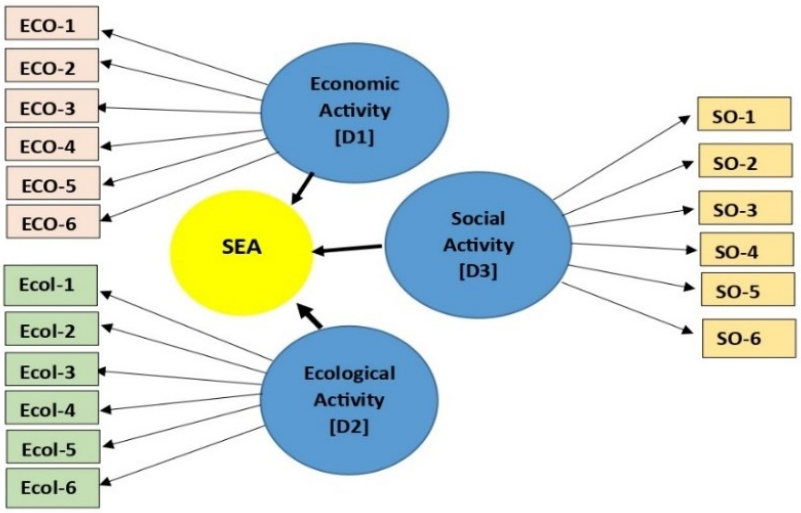

Figure 1. The Construct of Sustainable Entrepreneurial Activity
Source: Developed from Schlange (2006)

This model teaches about running a continuous business from upstream to downstream. As an illustration, the input aspect emphasizes procurement, transportation, and equality of rights. The three represent activities in each domain. On the other hand, the output aspect emphasizes cooperation, product and communication with emphasis placed on each domain.

Validity and Reliability Testing

The translation of indicators into instruments as well as the results of testing the validity and reliability of sustainable entrepreneurship activity indicators can be seen in the table below.

Table 1. Testing of Economic Activity Indicators
Source: processed from primary data (2023)

Indicators		***Description***	***Outer Loading***
Procurement	ECO-1	To ensure local economic development, we must collaborate with local and regional suppliers	0.656
Persistence	ECO-2	Entrepreneurial activities contribute to economic development in the long term	0.366
Growth potential	ECO-3	Entrepreneurship aims to create economic growth through investment and innovation	0.890
Mission	ECO-4	Sustainable entrepreneurial orientation as company value system	0.390
Indentification	ECO-5	Sharing with employees regarding sustainable company goals	0.363
Cooperation	ECO-6	Establish long-term relationships with local or regional partners to support company credibility	0.648
Composite Reliability: 0.736		Cronbach α: 0.734	AVE: 0.344

The reliability results are acceptable because the composite reliability and Cronbach's Alpha values meet the criteria above 0.60. Composite reliability is better used to test internal consistency or construct reliability compared to Cronbach's Alpha.

The outer factor loading value still varies with a validity level below the 0.50 criterion. The results of convergent validity testing on the economic activity dimension show three indicators with outer factor loading above 0.50 (ECO-1, ECO-3, and ECO-6) while the other three indicators are below these criteria (Table 1). Likewise, in the ecological dimension only two indicators (Ecol-2 and Ecol-3) are valid while the others are below 0.50 (Table 2). However, in the social dimension, only SO-1 produces factor loadings of less than 0.50, while the other four indicators produce factor loadings above 0.50 (Table 3). The outer loading on the social dimension indicator meets the criteria so it is more complete.

Table 2. Testing of Ecological Activity Indicators
Source: processed from primary data (2023)

Indicators		***Description***	***Outer Loading***
Transport	Ecol-1	Using an efficient transportation system and environmentally friendly	0.458
Energy	Ecol-2	Using alternative energy sources to be efficient	0.862
Residuals	Ecol-3	Minimize residue by recycling	0.743
Emissions	Ecol-4	Minimize waste or air pollution	0.261
Production process	Ecol-5	Using production management methods which is eco-friendly	0.490
Product	Ecol-6	Implement the product life cycle consistently eco-friendly	0.391
Composite Reliability: 0.718		Cronbach α: 0.862	AVE: 0.328

Table 3. Testing of Social Activity Indicators
Source: processed from primary data (2023)

Indicators		***Description***	***Outer Loading***
Equality of right	SO-1	Overcoming gender and generational issues and providing employment opportunities for those with special needs	0.452
Participation	SO-2	Setting business goals with the community and providing support to the community	0.706
Personnel	SO-3	Actively develop employee competencies and provide fair rewards	0.755
Workplace	SO-4	Offers jobs and provides employee health and safety protection programs	0.891
Regional integration	SO-5	Carrying out regional economic exchanges as well appreciate local culture	0.603
Communication	SO-6	Providing honest and transparent information to the public about business activities	0.652
Composite Reliability: 0.840		Cronbach α: 0.798	AVE: 0.476

Regarding the average variance extracted (AVE) in the three dimensions, it cannot meet the criteria because all three have a value of less than 0.50. This value is related to achieving goodness of fit. Therefore, this instrument is considered to have relatively weak accuracy for measuring concepts. The results of discriminant validity testing through cross-loadings take into account that the cross-loading value on the target construct must be greater than the loading value on other constructs. The results look as follows.

Table 4. Result of Discriminant Validity
Source: processed from primary data (2023)

Dimension	***Indicators***	***Sustainable Entrepreneurship Activity***		
		Economic	***Ecological***	***Social***
Economy Activity	ECO-1	0.656	0.419	0.361
	ECO-2	0.366	0.340	0.352
	ECO-3	0.890	0.450	0.458
	ECO-4	0.390	0.418	0.371
	ECO-5	0.363	0.288	0.235
	ECO-6	0.648	0.361	0.333
Ecological Activity	Ecol-1	0.225	0.458	0.476
	Ecol-2	0.424	0.862	0.446
	Ecol-3	0.376	0.743	0,385
	Ecol-4	0.157	0.261	0.274
	Ecol-5	0.358	0.490	0.393
	Ecol-6	0.278	0.391	0.439
Social Activity	SO-1	0.280	0.380	0.452
	SO-2	0.408	0.232	0.706
	SO-3	0.388	0.348	0.755
	SO-4	0.400	0.415	0.891
	SO-5	0.326	0.428	0.603
	SO-6	0.346	0.211	0.652

Discriminant validity test results to explain the limitations of convergent validity test results. Previously identified 10 indicators considered valid for measuring three dimensions. However, based on discriminant validity, it is known that 14 indicators can be maintained in measuring indicators in these 3 dimensions, while the other indicators have relatively low loading factor.

In the end, 14 indicators were maintained with the following groupings: (1) the economy domain contains 5 indicators: ECO-1, ECO-2, ECO-3, ECO-5, and ECO-6. (2) the ecological domain consists of 3 indicators: Ecol-2, Ecol-3, and Ecol-5. (3) the social domain includes 6 indicators including SO-1, SO-2, SO-3, SO-4, SO-5, and SO-6. Conceptually, the indicators are derived from Schlange (2006) which are suitable as knowledge for entrepreneurs. This study is a roadmap for an initial understanding of eco-entrepreneurship which then develops into sustainable entrepreneurship.

Aligning with the study of Schlange, the triple bottom line framework emphasizes eco-efficiency attached to the aspects of people, planet, and profit (Kessler, 2013). This framework motivates business actors to identify value, invest, calculate, manage and predict between value creation and potential destruction. In the context of people, the entrepreneur or owner must pay attention to human rights and intra-generational and inter-generational equality. Employees are treated as human resources, build customer relationship management and focus on total quality management. Moreover, in a planetary context, attention must be paid to issues of stratospheric ozone depletion, climate change, and species loss due to economic activity. Finally, in a profit context, profits are generated by building value and protecting the interests of human resources, social, cultural and natural resources.

The results of the study show the reality that knowledge related to sustainable entrepreneurship is not yet fully perceived as ideal by students. Long efforts are required to produce value. It is necessary to improve learning practices on indicators with low or ambiguous validity such as ECO-4 (mission), Ecol-1 (transportation), Ecol-4 (emissions), and Ecol-6 (product). These four indicators are related to the real issue of the green economy, such as low carbon, resource-saving,

and socially inclusive. The use of the result is in accordance with Iyer (2015) as material in sustainable education that synchronizes entrepreneurship education and sustainable development.

It is in line with Loviscek (2021) that after a long journey of 25 years, the triple bottom line was considered a failure by its initiator. However, this concept is considered as a basis for developing new business models, especially in building sustainable operational management. Agree with Hoogendoorn et al., (2017) that overcoming obstacles in developing sustainable entrepreneurship starts from higher education institutions. From here, collaboration can be built with stakeholders to ensure that institutional barriers can be eliminated, such as financial, administrative support and information on starting a business. Ontologically, sustainable entrepreneurship is a reality that must be realized by producers and consumers. In the context of evaluated epistemology, respondents' responses to sustainable entrepreneurial activities show a gap between the concept and the realization of perceptions.

These results serve as information for curriculum development oriented towards sustainability so that it becomes an ethic for carrying out the role as an agent of economic change. Indonesia is a country rich in cultural and biological diversity, so in maintaining prosperity for future generations, it is very important to apply sustainability aspects in entrepreneurial or business activities. Moreover, supported by collectivism-oriented local cultural wisdom, it is a solid foundation for carrying out social activities. This benefit represents the axiological aspect that sustainable entrepreneurship is a link in the chain of realizing the SDGs agenda.

4. CONCLUSIONS AND SUGGESTIONS

A sustainable entrepreneurial activity instrument was produced based on Schlange (2006). All indicators meet the reliability criteria through Cronbach's Alpha and composite reliability, but not all indicators meet the validity criteria. The results of convergent and discriminant validity testing produced 14 indicators divided into 3 dimensions. The results of this study show that sustainability knowledge has not been fully perceived ideally by students. It is necessary to monitor student involvement in social activities or environmental campaigns, because involvement in these activities can stimulate a sense of humanity and environmentally.

This study is only a part of the research model, especially in instrumentation stage of sustainable entrepreneurship activities. The limitations in this study can be refined by involving respondents more massively with the development of a more complex research model. As a suggestion, it is necessary to improve learning practices on indicators that produce low factor loadings or are relatively ambiguous e.g., ECO-4, Ecol-1, Ecol-4, and Ecol-6 which relating to the green economy. As a recommendation, entrepreneurship learning can be put into practice through the program of Merdeka Belajar Kampus Merdeka (MBKM), so students can experience best practices regarding sustainable entrepreneurial activities. The next implication is applied to curriculum development as a value for universities in appreciating sustainable development goals. This achievement will be in line with the ranking in the implementation of SDGs in Indonesia so that it will contribute to the reputation of universities.

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