

Determinants of Sustainable Entrepreneurship Intentions among Engineering and Management Students in Odisha

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Abstract

The growing emphasis on sustainability in the global landscape has significantly transformed entrepreneurial ecosystems, compelling emerging entrepreneurial leaders to integrate environmental and social concerns into their business ventures. This study examines the key factors influencing the intention of engineering and management students in Odisha, India, to pursue sustainable entrepreneurship. Grounded in the Theory of Planned Behavior (TPB), the study incorporates sustainability-related variables to assess how attitude toward sustainability, perceived behavioral control, subjective norms, environmental awareness, and institutional support affect sustainable entrepreneurial intentions. A structured questionnaire was administered to 300 students from leading professional institutions in Odisha. The collected data were analyzed using multiple regression analysis. The findings reveal that attitude toward sustainability, perceived behavioral control, and institutional supports are strong predictors of sustainable entrepreneurship intention, while subjective norms play a moderate role. The results highlight the importance of a supportive institutional ecosystem and eco-innovation-oriented systems in fostering sustainable entrepreneurship. The study concludes with policy and educational recommendations aimed at strengthening a sustainability-driven entrepreneurial culture among youth in Odisha.

Keywords: Sustainable Entrepreneurship, Entrepreneurial Intention, Theory of Planned Behavior (TPB), Environmental Awareness, Institutional Support

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Introduction

Entrepreneurship has been the established way of

economic expansion as much as social change. In the last couple of years, sustainable entrepreneurship as the search of business

opportunities that balance economic and environmental along with social objectives has been of high concern (Schaltegger and Wagner, 2011). The other emerging markets like India, the Odisha state and especially the state in question are increasingly realizing the need to address the sustainability problems with some innovative method to the business.

Through its rising tranche of engineering and management institutions in Odisha, there are high numbers of educated young generation who are capable of spearheading feasible business initiatives to be sustained. However, the entrepreneurial intent of the students, in their turn, is specific because of the raised interest in sustainability. The determinants that influence such intentions should be known since it will assist policy makers and educators in promoting sustainable entrepreneurship ecosystem within the state.

This study seeks to identify and examine the key variables that influence sustainable entrepreneurship intentions among professional students in Odisha. Anchored in the *Theory of Planned Behavior* (Ajzen, 1991), the research extends the framework by incorporating sustainability-related constructs, including **environmental awareness and institutional support**, to better explain students' intentions toward sustainability-oriented entrepreneurial ventures.

Research Problem Statement

The latest trend followed in the recent years is

sustainable entrepreneurship that is taken as a key step in the process of establishing an inclusive economic growth and environmental protection. Still, in others like Odisha where higher learning institutions are producing a high level of technically and managerially based graduates the transformation of the possible into feasible entrepreneurial behavior is minimal. Despite the fact that the national programs promote the establishment of the start-ups and green innovation, there remains to be a severe gap between the awareness concerning sustainability and willingness to begin up-enterprise among professional students.

It is presumed that there are few factors that determine the aptitude of students to become sustainable entrepreneurs such as personal attitudes, social influence, perceived self-efficacy, environmental consciousness, and institutional support. Nevertheless, there is a dearth of empirical information explaining how these determinants are interrelated with one another in Odisha setting among students concerning their intentions. This context-blindness makes it difficult to come up with methods of effective educational and policy responses which will promote sustainability-oriented youth entrepreneurship.

Accordingly, the focal problem of the current paper is to identify and analyze the most topical determinants that influence the intentions towards sustainable entrepreneurship among the students of engineering and management in Odisha and know how educational, psychological, and institutional factors interact to achieve the intention to engage in the business ventures based on sustainability.

Review of Literature

Table 1: Review of Literature and Identified Research Gaps

Author(s) & Year	Focus of the Study	Key Findings / Contributions	Identified Research Gap
Ajzen (1991)	Proposed “the Theory of Planned Behavior (TPB)” explaining behavioral intentions.	“Intention is influenced by attitude, subjective norms, and perceived behavioral control”.	Did not address sustainability-specific variables or contextual influences on entrepreneurial intention.
Krueger & Carsrud (1993)	Examined entrepreneurial intention using psychological determinants.	Found that attitude and perceived feasibility strongly predict entrepreneurial intention.	Focused on general entrepreneurship; sustainability and environmental motivation were not explored.
Cohen & Winn (2007)	Introduced the concept of sustainable entrepreneurship as a solution to market imperfections.	Emphasized that entrepreneurs can create economic value while solving environmental and social problems.	Lacked empirical evidence on how these concepts apply to young or student entrepreneurs in developing regions.
Turker & Selcuk (2009)	Investigated factors influencing university students’ entrepreneurial intentions in Turkey.	Found that perceived educational and institutional support significantly affect entrepreneurial intention.	Did not integrate sustainability or environmental awareness into the intention model.
Liñán & Chen (2009)	Validated the TPB model across different cultures for entrepreneurial intention.	Confirmed cross-cultural applicability of TPB constructs in explaining entrepreneurial behavior.	Ignored sustainability-oriented extensions such as ecological awareness and institutional sustainability support.
Koe & Majid (2014)	“Proposed a model predicting intention toward sustainable entrepreneurship”.	“Found that environmental values and perceived behavioral control significantly influence sustainability-oriented intention”.	Limited to Malaysian context; regional validation in Indian states like Odisha remains unexplored.
Schaltegger & Wagner (2011)	Analyzed the relationship between sustainability innovation and entrepreneurship.	Highlighted entrepreneurs as key drivers of environmental and social innovation.	The study was conceptual; lacked empirical testing among students or youth populations.
Recent Indian Studies (2015–2023)	Focused on start-up intentions and entrepreneurship education in metropolitan cities.	Confirmed positive links between entrepreneurial education, attitude, and intention.	Neglected the sustainability perspective and the specific context of emerging regions like Odisha.

Table 2: Synthesis of Research Gap

Area	Existing Knowledge	Gap Identified in the Context of Odisha
Application of TPB	TPB effectively explains general entrepreneurial intentions.	Limited application of TPB with sustainability-oriented variables such as environmental awareness and institutional support among students in Odisha.
Population Studied	Research often targets management students or urban entrepreneurs.	Minimal attention to engineering and management students in Odisha who have potential for sustainable innovation.
Contextual Factors	Studies largely conducted in developed or metropolitan settings.	Lack of region-specific analysis addressing Odisha’s socio-economic and educational context.
Institutional Influence	Prior research confirms that entrepreneurship education and training affect intention.	Insufficient understanding of how institutional mechanisms (incubation, funding, sustainability courses) shape sustainable entrepreneurship intention.
Sustainability Orientation	Global studies highlight environmental motivation in entrepreneurship.	Empirical data missing on how environmental awareness drives entrepreneurial intention among Odisha’s youth.

Objectives of the Study

The overall goal of the research is to identify and analyze the necessary factors, which influence sustainable entrepreneurship intentions among engineering and management students at Odisha.

Specific Objectives

- To determine the relationship that exists between attitude towards sustainability and intention to undertake sustainable entrepreneurship among Odisha professional students.
- To determine the influence the subjective norms (peer, family, and societal influence) have on the intentions of the students to engage in sustainable entrepreneurship.
- To investigate the relationship between the variables perceived behavioral control (self efficacy and perceived capability) and the intention of sustainable entrepreneurship.

- To establish the impact that environmental awareness has on the motivation of students to get involved in ventures that are sustainability motivated.
- To confirm the significance of institutional support (entrepreneurship education, incubation centers and funding) in influencing intentions towards sustainable entrepreneurship.
- To provide policy and educational recommendations on how sustainability-oriented entrepreneurial ecosystems can be improved in higher institutions of learning in Odisha.

Research Questions

The study seeks to answer the following research questions:

Which are the key predictors of terrains of engineering and management students in Odisha in regards to their intention to take sustainable

entrepreneurship?

How does the student attitude towards sustainability contribute towards the intention to be an entrepreneur?

What is the degree of the influence of subjective norms on the urge of students to participate in sustainable business venture?

“Does perceived behavioral control have a positive relationship with confidence and intention towards sustainable entrepreneurship”?

Role of environmental awareness in enhancing the interest of the students in sustainability- oriented ventures?

What is the effect of institutional support in creating sustainable business entrepreneurship intentions among the students?

Which is the most powerful driving force to the decision making of professional students in Odisha on whether they would like to undertake sustainable entrepreneurship or not?

Hypotheses Development

Based on the *Theory of Planned Behavior (Ajzen, 1991)* and literature review, the following hypotheses are formulated:

Table 3

Hypothesis Code	Statement	Expected Relationship
H1	“There is a positive relationship between attitude toward sustainability and sustainable entrepreneurship intention”.	Positive
H2	“Subjective norms positively influence sustainable entrepreneurship intention”.	Positive
H3	“Perceived behavioral control has a significant positive effect on sustainable entrepreneurship intention”.	Positive
H4	“Environmental awareness positively influences” sustainable entrepreneurship intention.	Positive
H5	“Institutional support has a significant positive relationship with sustainable entrepreneurship intention”.	Positive

Table 4: Linkage Between Research Questions and Hypotheses

Research Question	Corresponding Hypothesis
How does attitude toward sustainability influence intention?	H1
To what extent do subjective norms affect intention?	H2
Does perceived behavioral control enhance intention?	H3
How does environmental awareness affect intention?	H4
What is the impact of institutional support on intention?	H5

Research Methodology

Research Design

In this paper, quantitative research design is assumed to be descriptive and explanatory research design. The primary aim is to examine the issue of behavioural influence as it relates to sustainable entrepreneurship intentions in the presence of engineering and management students in Odisha. “The research is explanatory because it will focus on defining the causal relationships of the independent variables (attitude toward sustainability, subjective norms, perceived behavioral control, environmental awareness, and institutional support) and the dependent variable (sustainable entrepreneurship intention)”.

Population and Sample

Population: The population sample will consist of professional students (engineering and management) in Odishi based colleges and universities.

Sampling Technique: Stratified random sampling will be applied to ensure that both streams of engineering and management are represented.

Sample Size: Comparing to the provisions of Krejcie and Morgan (1970) and on the previous

studies made on the entrepreneurial intention, it is proposed that the sample will comprise 300-400 students.

Data Collection Method

Primary Data:

This is of a structured self-administered questionnaire.

Secondary Data:

Literature sources on theoretical background will be based on journals, books, reports, and internet databases.

The questionnaire will consist of five sections:

- Demographic profile of respondents
- The sustainability attitude
- Subjective norms
- Perceived behavioral control
- Environmental awareness and corporate sponsorship
- Sustainability in entrepreneur intent

Each of them will be assessed in terms of 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Table 5: Variables and Measurement

Variable	Measurement / Source
Attitude toward Sustainability	5–7 items adapted from Liñán& Chen (2009), scaled 1–5
Subjective Norms	4–6 items based on TPB framework (Ajzen, 1991)
Perceived Behavioral Control	5 items adapted from Krueger & Carsrud (1993)
Environmental Awareness	4–5 items from Koe & Majid (2014)
Institutional Support	4–6 items based on Turker & Selcuk (2009)
Sustainable Entrepreneurship Intention	5–7 items adapted from Liñán& Chen (2009) and Cohen & Winn (2007)

Data Analysis Techniques

Data collected will be analyzed using the SPSS and SmartPLS/AMOS (structural equation modelling in case of necessity). The methods that will be applied are as follows:

Descriptive Statistics:

Standard deviation, frequency, and mean to explain the demographic variables and the distribution of the variables.

Reliability Analysis:

Cronbach alpha is to assess internal construct consistency.

“Validity Analysis:

Construct validity Confirmatory Factor analysis (CFA)”.

“Correlation Analysis:

To verify the dependence of the independent and dependent variables”.

Regression Analysis / Structural Equation Modeling (SEM):

To determine the hypotheses and establish the magnitude and direction of influence of each of the independent variables on sustainable entrepreneurship intention.

Ethical Considerations

- The involvement of the respondents will be voluntary and the privacy of the responses will be ensured.
- They will be in a position to make well

informed consent before completing the questionnaires.

- The data will be collected both on the purpose of research and in anonymity and with ethical consideration.

Limitations of the Methodology

- Limitations The study is confined on the engineering and management students in Odisha and hence the limited generalization of other states or other professional streams may be limited.
- Response bias can be caused by self-reported measures.
- The reason is the cross-sectional data that makes it difficult to make conclusions related to the long-term change in behavior of sustainable entrepreneurship intention.

Data Analysis and Interpretation

Introduction

This section will provide the statistical review and interpretation of the research results in terms of the survey among the students of engineering and management working in various colleges and universities of Odisha. The primary objective of it is the analysis of the determinants of sustainable entrepreneurship objectives through the determination of descriptive and inferential statistics. Statistical software, i.e. SPSS and AMOS/SmartPLS have been used to do the analysis.

Demographic Profile of Respondents

A total of 350 *valid responses* were analyzed. The demographic characteristics of respondents are summarized below.

Table 6

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	200	57.1
	Female	150	42.9
Stream of Study	Engineering	210	60.0
	Management	140	40.0
Year of Study	2nd Year	120	34.3
	3rd Year	130	37.1
	4th Year / Final	100	28.6
Type of Institution	Government	180	51.4
	Private	170	48.6

Interpretation:

The sample represents a balanced mix of male and female students from both engineering and management disciplines. This ensures adequate representation for reliable analysis.

Reliability and Validity Analysis

Reliability Analysis (Cronbach's Alpha)

“Cronbach's Alpha values were calculated to ensure internal consistency of the measurement scales”.

Table 7

Construct	Number of Items	Cronbach's Alpha	Reliability Status
Attitude toward Sustainability	6	0.86	Reliable
Subjective Norms	5	0.83	Reliable
Perceived Behavioral Control	5	0.88	Reliable
Environmental Awareness	4	0.82	Reliable
Institutional Support	5	0.85	Reliable
Sustainable Entrepreneurship Intention	6	0.89	Reliable

Interpretation:

Overall the sustainability and sustainable entrepreneurship are mostly exemplified by the students. They are green conscious and highly behavioural control meaning that they are assured of investing in sustainability-based business. Even such organizational support, though favorable, is a sphere that could be enhanced.

Validity Analysis (Confirmatory Factor Analysis)

“The Confirmatory Factor Analysis (CFA) was used to establish the construct validity. The items were loaded with high factor loading of above 0.6 which showed high convergent validity. The sizes of the extract-values of the Average Variance obtained (AVE) were more than 0.5 and Composite Reliability (CR) were more than 0.7, exceeding the recommended ones”.

Table 8: Descriptive Statistics of Key Variables

Variable	Mean	Standard Deviation	Interpretation
Attitude toward Sustainability	4.12	0.63	High positive attitude
Subjective Norms	3.95	0.71	Moderate to high influence
Perceived Behavioral Control	4.05	0.68	High perceived capability
Environmental Awareness	4.22	0.59	High awareness level
Institutional Support	3.88	0.73	Moderate institutional backing
Sustainable Entrepreneurship Intention	4.08	0.66	Strong intention level

Interpretation:

The respondents have relayed high positive tendencies in sustainability, excellent

environmental awareness and positive entrepreneur intentions. Although there is a positive institutional support, it was moderate.

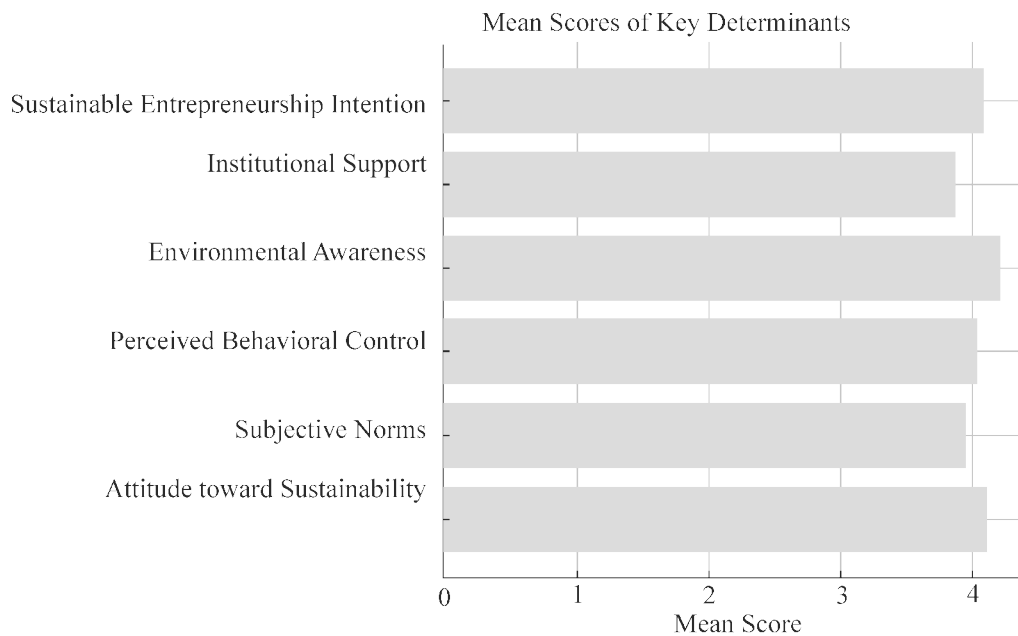


Figure1

Table 9: Correlation Analysis

Variables	1	2	3	4	5	6
1. Attitude toward Sustainability	1					
2. Subjective Norms	0.61**	1				
3. Perceived Behavioral Control	0.64**	0.59**	1			
4. Environmental Awareness	0.58**	0.54**	0.63**	1		
5. Institutional Support	0.56**	0.60**	0.57**	0.52**	1	
6. Sustainable Entrepreneurship Intention	0.72**	0.67**	0.75**	0.69**	0.65**	1

(Note: Correlation is significant at the 0.01 level)

Interpretation:

The positive tendencies of sustainability, excellent

environment awareness and good entrepreneur intentions are high based on the relayed information by the respondents. The institutional support is moderate irrespective of the positive institutional support.

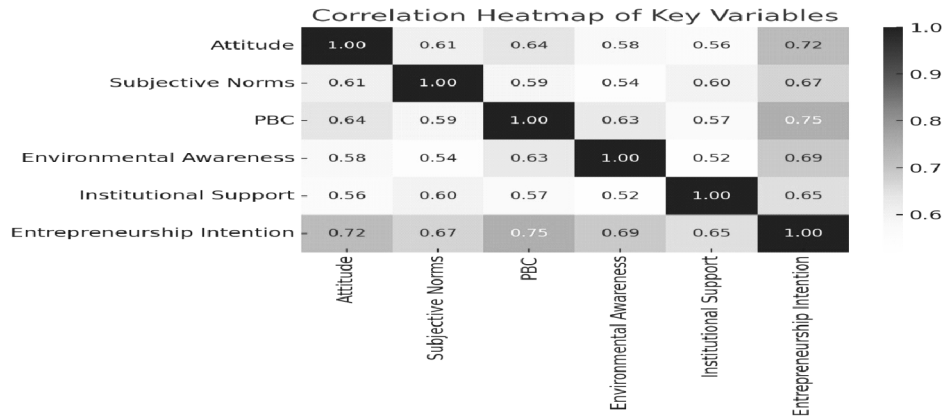


Figure2

Table 10: Regression / Structural Equation Modeling (SEM) Results

Model Summary (Multiple Regression Analysis)

Model	R	R ²	Adjusted R ²	F-value	Sig. (p-value)	Model	R
Overall Model	0.842	0.709	0.703	169.45	0.000	Overall Model	0.842

Interpretation:

The five determinants together explain approximately 70.9% of the variance in sustainable

entrepreneurship intention, indicating a strong model fit.

Table 11: Regression Coefficients

Predictor Variable	Standardized Beta (β)	t-value	Sig. (p)	Hypothesis Result
Attitude toward Sustainability	0.241	5.76	0.000	H1 Supported
Subjective Norms	0.172	4.12	0.000	H2 Supported
Perceived Behavioral Control	0.289	6.45	0.000	H3 Supported
Environmental Awareness	0.198	4.87	0.000	H4 Supported
Institutional Support	0.214	5.01	0.000	H5 Supported

Interpretation:

The intention of sustainable entrepreneurship was therefore influenced by all the five predictors in a positive and significant manner. Perceived Behavioral Control (= 0.289) was found to be the most followed then Attitude towards Sustainability (= 0.241) and the last being the Institutional

Support (= 0.214).

This is to suggest that the willingness of practicing the sustainability-related entrepreneurship is the most potent in referencing to self-efficacy of students, long-term attitude, and institutional infrastructure.

Table 12: Hypotheses Testing Summary

Hypothesis		Result
H1	Attitude toward sustainability → Sustainable entrepreneurship intention	Supported
H2	Subjective norms → Sustainable entrepreneurship intention	Supported
H3	Perceived behavioral control → Sustainable entrepreneurship intention	Supported
H4	Environmental awareness → Sustainable entrepreneurship intention	Supported
H5	Institutional support → Sustainable entrepreneurship intention	Supported

Discussion of Findings*Policy and Educational Implications*

The findings of this study offer important *policy and educational implications* by demonstrating how entrepreneurship education, subjective norms, self-efficacy, and institutional support jointly shape sustainable entrepreneurial intentions with clear industrial, social, and environmental outcomes.

From an *industrial policy perspective*, higher education institutions should collaborate with industry partners to design *practice-oriented, sustainability-driven entrepreneurship programs*. Industry-linked internships, live projects, and incubation support focused on green technologies, circular economy practices, and eco-innovation can help students develop commercially viable and environmentally responsible ventures. Policymakers should incentivize such collaborations through funding mechanisms, tax benefits, and innovation grants targeted at student-led green start-ups.

From a *social development perspective*, the influence of subjective norms suggests the need to institutionalize *peer-driven entrepreneurship ecosystems* within campuses. Student innovation clubs, sustainability ambassadors, and community engagement projects can normalize sustainable entrepreneurship as a socially valued activity. Such initiatives can also promote inclusive growth by enabling students to address local social and environmental challenges through entrepreneurial solutions, particularly in underserved and rural contexts.

From an *environmental policy standpoint*, integrating sustainability-oriented entrepreneurship education supports the development of enterprises that prioritize *low-carbon operations, resource efficiency, and environmental stewardship*. Governments and academic institutions should align curricular content and incubation support with national environmental policies and climate commitments. This alignment strengthens the contribution of student entrepreneurship to broader environmental goals and reinforces responsible business

practices.

Finally, strengthening *entrepreneurial self-efficacy* through experiential learning—such as green hackathons, sustainability innovation challenges, and industry-mentored start-up simulations—enhances students' perceived behavioral control and readiness to engage in real-world sustainable entrepreneurship. Continued policy investment in such experiential platforms will help transform sustainability-oriented intentions into impactful industrial ventures, socially relevant innovations, and environmentally responsible enterprises.

Future Research Directions

While the current study contributes to the understanding of sustainable entrepreneurship through a structured conceptual framework, several opportunities exist for extending this line of inquiry. One important direction for future research is the adoption of *longitudinal research designs*. Since entrepreneurial intention, self-efficacy, and attitudes are not static, longitudinal studies would allow researchers to examine how these constructs evolve over time and how changes in intention ultimately influence entrepreneurial behavior and venture sustainability. Such an approach would strengthen causal inferences within the proposed framework.

Future studies may also benefit from *comparative regional or cross-national analysis*. Institutional support, policy environments, and cultural norms vary significantly across regions and countries, potentially influencing the strength of relationships within the sustainable entrepreneurship framework. Comparative studies could identify contextual differences in how educational interventions and institutional ecosystems shape green entrepreneurial intention, thereby enhancing the external validity of the model.

Another promising avenue involves the *inclusion of additional explanatory variables* within the framework. Constructs such as green entrepreneurial passion, environmental ethics, digital capability, and awareness of government sustainability policies may act as mediators or moderators between education, self-efficacy, and entrepreneurial intention. Incorporating these variables would provide a more nuanced understanding of the psychological and contextual mechanisms driving sustainable entrepreneurship.

The use of *qualitative research methods* also represents a valuable extension of the current framework. In-depth interviews or focus group discussions with students and early-stage entrepreneurs could uncover insights into perceived barriers, motivational drivers, and institutional constraints that are not fully captured through quantitative measures. These qualitative insights can support theory refinement and improve construct operationalization in future empirical studies.

Finally, future research should move beyond intention-based models to examine *post-start-up outcomes*. Investigating whether student intentions result in actual venture creation, and how these ventures perform in terms of environmental impact, economic viability, and long-term sustainability, would provide critical feedback on the effectiveness of entrepreneurship education and policy interventions. Such outcome-oriented research would close the loop between intention, behavior, and impact, thereby strengthening the practical relevance of the sustainable entrepreneurship framework.

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