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Green Entrepreneurship as a Mediator: The Role of Skills, Incentives and Education in Promoting Social Change Among University Student Entrepreneurs

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Abstract

This study investigates green entrepreneurship as a mediating mechanism transforming individual capabilities and institutional support into social change outcomes among university student entrepreneurs. This study addresses the limited empirical evidence explaining how entrepreneurial skills, incentives and entrepreneurship education contribute to social change through environmentally responsible entrepreneurial behavior. Using Structural Equation Modeling with Partial Least Squares analysis of 150 registered student entrepreneurs at Universitas Sebelas Maret, Indonesia, we test seven hypotheses examining direct and mediation relationships among skills, incentives, entrepreneurship education, green entrepreneurship and social change promotion. Results demonstrate that all hypotheses are statistically supported, with skills emerging as the strongest predictor of green entrepreneurship, followed by incentives and entrepreneurship education. Green entrepreneurship exhibits a powerful influence on social change promotion, confirming its substantial capacity for societal transformation. These findings indicate that green entrepreneurship functions as a strategic mechanism that converts individual entrepreneurial resources into broader social and environmental outcomes. Mediation analysis reveals that green entrepreneurship effectively transmits antecedent influences to social change outcomes, with skills demonstrating the strongest indirect effect, followed by incentives and education. This study contributes theoretically by clarifying the mediating role of green entrepreneurship in linking individual capabilities with social change and empirically by providing evidence from university student entrepreneurs in a developing economy context. Practically, the findings offer insights for higher education institutions and policymakers to strengthen entrepreneurship programs by emphasizing hands-on skill development, supported by incentive systems, sustainability-oriented education.

Keywords: Entrepreneurial Skills, Entrepreneurship Education, Environmental Sustainability, Green Entrepreneurship, Sustainable Development.

Introduction

Universities worldwide serve as anchors for entrepreneurial green business and social change, bridging academic training with practical business work to address global sustainability challenges (1, 2). Student entrepreneurs are uniquely positioned to integrate economic and social value through green ventures, contributing to broader societal transformation.

Research has confirmed positive links between green entrepreneurship outcomes and entrepreneurial skills, institutional incentives and entrepreneurship education (3-5). However, existing studies have predominantly focused on direct relationships, leaving the underlying mechanisms through which these antecedents influence social change largely unexplored. Green entrepreneurship studies prioritizing direct relationships constitute approximately 68% of the literature, while studies examining mediation on individual-level factors and social change outcomes account for less than 15%.

Three specific gaps are identified: first, how green entrepreneurship mediates the relationship between entrepreneurial skills and social change remains empirically unresolved, despite documented evidence of entrepreneurial skills influencing venture initiation (6); second, how institutional incentives translate into social change outcomes through green entrepreneurship is insufficiently examined, despite evidence of institutional support fostering green ventures (7); and third, the mediating role of entrepreneurship

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education remains underexplored, despite its documented influence on green entrepreneurial intentions (1, 8).

This study develops and empirically tests a unified framework positioning green entrepreneurship as a mediating mechanism linking entrepreneurial skills, institutional incentives and entrepreneurship education to social change within university student populations. Its novelty lies in conceptualizing green entrepreneurship not merely as an outcome, but as a dynamic process transforming micro-level entrepreneurial assets into macro-level social change the first synthesis to examine this mediation across all three antecedent pathways simultaneously within a university context, drawing on social cognitive theory, institutional theory and social change theory.

The study pursues three objectives: (a) to examine the effects of entrepreneurial skills, institutional incentives and entrepreneurship education on green entrepreneurship; (b) to analyze the influence of green entrepreneurship on social change promotion; and (c) to investigate the mediating role of green entrepreneurship across all three antecedent-outcome relationships. Findings aim to provide actionable insights for university leaders, policymakers and educators in designing entrepreneurship ecosystems and sustainability-focused curricula.

Entrepreneurial skills influence green entrepreneurship primarily through self-efficacy mechanisms. Green entrepreneurial self-efficacy mediates between entrepreneurial skills and green entrepreneurial behavior (3), with education fostering self-efficacy as a potent predictor of green entrepreneurial intention (9). The capacity for environmentally friendly innovation represents a critical skill underpinning green venture creation (10), while institutional contexts shape the construction and application of green competencies through human resource strategies (11). These relationships support the direct positive influence of entrepreneurial skills on green entrepreneurship.

H1: Skills have a positive impact on Green Entrepreneurship

Institutional incentives stimulate green entrepreneurship through financial and regulatory mechanisms. Government subsidies, tax incentives and administrative support directly promote green technology development and venture creation (4), while formal credit availability reinforces green entrepreneurial activity in contexts of environmental demand (7). Regulatory support and institutional structures are further recognized as augmenting factors in green entrepreneurship performance (12), supporting the direct positive influence of incentives on green entrepreneurship.

H2: Incentives have a positive impact on Green Entrepreneurship

Entrepreneurship education promotes green entrepreneurship through competency develop-0ment and self-efficacy strengthening. Educational support positively impacts green entrepreneurial intent across diverse cultural settings (13), with entrepreneurship education demonstrating a consistently positive relationship with green entrepreneurial intentions regardless of demographic variation (14). Pedagogical mechanisms at the institutional level develop entrepreneurial self-efficacy as a key precursor to green entrepreneurial intention (13), affirming the positive influence of entrepreneurship education on green entrepreneurship.

H3: Entrepreneurship Education has a positive impact on Green Entrepreneurship

Green entrepreneurship contributes to social change through community engagement and dual social-environmental objectives. A positive correlation between green entrepreneurial activity and social development indicators has been demonstrated globally (2), with longitudinal evidence confirming green entrepreneurship's positive impact on systemic societal transformation (15). Sustainable entrepreneurship in green sectors has further been shown to stimulate economic growth and employment creation, reinforcing its broader social value (16).

H4: Green Entrepreneurship has a positive impact on Promoting Social Change

Green entrepreneurship functions as an intermediary mechanism channeling skills, incentives and educational inputs into sustainable social outcomes. Firm-level evidence shows green entrepreneurship boosts innovation and competitive advantage beyond individual capacity (6), while green entrepreneurial self-efficacy explains how competencies are transformed into

sustainable business outcomes (3). University entrepreneurial support mechanisms act as mediating structures across entrepreneurial intentions and behaviors (17) and participatory learning enhances environmental entrepreneurial orientations through green entrepreneurial activities (8). Social networks and collaborative creativity further mediate the connection between education and entrepreneurial outcomes (18, 19), establishing green entrepreneurship as a systematic mediating construct transforming inputs into broad social change (20, 21).

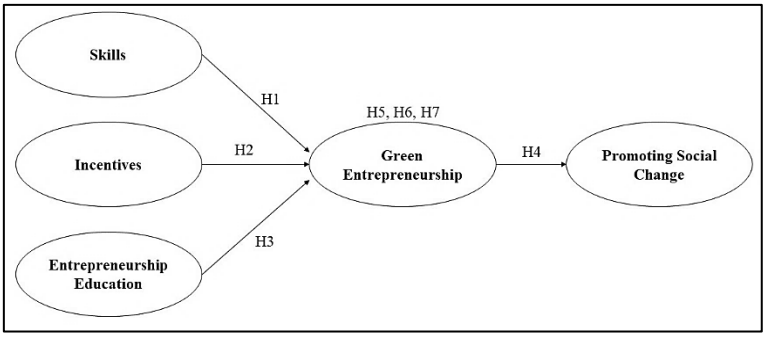

Figure 1: Conceptual Framework

H5: Green Entrepreneurship mediates the relationship between Skills and Promoting Social Change

H6: Green Entrepreneurship mediates the relationship between Incentives and Promoting Social Change

H7: Green Entrepreneurship mediates the relationship between Entrepreneurship Education and Promoting Social Change

Conceptual Framework

Figure 1 illustrates the conceptual model derived from the hypothesis, supporting the analysis of independent, mediating and dependent variables in this research.

Methodology

Research Design

This study employed a quantitative approach with an explanatory research design to examine the causal relationships among variables and investigate the mediating role of green entrepreneurship in the relationship between skills, incentives and entrepreneurship education toward promoting social change. An explanatory design framework was chosen to allow hypothesis testing and mediation analysis, not exploratory description of analysis. The author used a survey method where structured questionnaires served as the instrument for data collection.

Population and Sample Size

The population comprised all active students at Universitas Sebelas Maret, Surakarta, Central Java, Indonesia (approximate GPS coordinates: 7°33′S; 110°51′E) who owned businesses and were officially registered with the university's entrepreneurship institution. This population was chosen to ensure that the respondents had direct involvement with entrepreneurship development programmes and hands-on experience with business operations, thus improving construct relevance and internal validity.

A purposive sampling technique was applied using predefined inclusion criteria: (a) active enrollment as a student at Universitas Sebelas Maret, (b) official registration with the university's entrepreneurship institution, (c) operation of an active business for a minimum of six months and (d) voluntary consent to participate in the study. Based on these criteria, a total of 150 respondents were included in the final sample.

The adequacy of the sample size followed established recommendations for Structural Equation Modeling using the Partial Least Squares approach. It has been suggested that the minimum sample size should range between five to ten times the number of observed indicators (36). This study employed 25 indicator items representing five latent variables (Skills, Incentives, Entrepreneurship Education, Green Entrepreneurship and Promoting Social Change).

Accordingly, the minimum required sample size was 125 respondents [25 × 5], while the maximum threshold was 250 respondents [25 × 10]. The final sample of 150 respondents satisfied these requirements and provided sufficient statistical

power to estimate the proposed mediation model with stable and reliable parameter estimates.

Questionnaire Development and Measurement

The research model consisted of five latent variables measured using reflective indicators. All measurement items were adapted from established and validated instruments to ensure content validity and theoretical alignment.

Skills are regarded as entrepreneurial capacity and capabilities that student entrepreneurs have in running environmentally oriented businesses and were operationalized using five items from previous studies in relation to the following: persuasive and creative skills, ability to develop networks, ethical skills in green business, information gap closure and skill in the use of innovative thinking (13, 23).

For this study, incentives are understood as the financial and non-financial motivational support that catalyzes the emergence of green entrepreneurship and this construct was operationalized with five items relating to the need for financial incentives, recognition of green entrepreneurship, incentivized social leadership, supportive organizational culture and incentive-based advocacy for green entrepreneurial activism (24, 25).

Entrepreneurship Education pertains to a particular category of learning that encompasses various formal and informal educational experiences and knowledge that assist in developing sustainable entrepreneurship. In this case, five items were used to capture the benefits of future orientation, ethics and knowledge, problem-solving, the self-potential and the correlation of green business education and social change (23, 25, 26).

Regarding Green Entrepreneurship, this was related to student entrepreneurs' willingness and aim to establish businesses with a focus on sustainability and environmentally friendly practices. This specific variable was measured with regards to five impact expectations: innovation, self-employment, satisfaction with position and the green entrepreneurship (business) growth (27, 28).

Students' belief that green entrepreneurial practices can bring about positive social change was captured by the Promoting Social Change construct. This construct includes social change advocacy, self-advocacy, contribution of green entrepreneurship donative business practices, entrepreneurial spirit and social change and entrepreneurial gap (29-31). All items were measured on a five-part Likert scale where 1 means Strongly Disagree and 5 means Strongly Agree.

Data Collection and Analysis Procedure

Approved your ethical study protocols ensured your digital consent processes. Data from online surveys via Google Forms collected your voluntary participants. Data quality assurance provided content validity and evaluated by experts, while construct validity was assessed by SEM-PLS analysis. Data's convergent validity and outer loadings (AVE ≥ 0.50 and ≥ 0.70) were the same. Validity by the Fornell–Larker and Heterotrait–Monotrait criteria (HTMT < 0.85) (22) were also the same. Validity examined using Cronbach's Alpha, Composite Reliability and Rho_A all coefficients were checked above and the same as recommended thresholds (≥ 0.70) (22).

The analysis of the inner model of structure and hypothesis of the outer model evaluated validity and reliability of the SmartPLS v 3.0 software packages in two stages. Model fit deficits were assessed using R^2, Q^2 and f^2 effect size. Co-production of participant's attainment and predictor of root mean square residual (SRMR < 0.08) and path coefficients derived from bootstrapping. Five thousand of the 0.05 level of significance were resampled. Established procedures in mediation analysis using bootstrapping aimed at measuring the indirect effect. 95% of the confidence intervals did not include zero among contemporary mediation tests (32, 33).

Results

The empirical analysis investigated the hypothesized relationships among skills, incentives, entrepreneurship education, green entrepreneurship and promoting social change using data from 150 student entrepreneurs at Universitas Sebelas Maret. Structural Equation Modeling with Partial Least Squares (SEM-PLS) was employed to evaluate both the measurement and structural models, providing comprehensive assessment of direct effects and mediation mechanisms.

Participant Characteristics

The demographic profile of research participants revealed several noteworthy patterns that characterized the student entrepreneur sample at Universitas Sebelas Maret. Table 1 presents a comprehensive overview of participant characteristics across multiple dimensions including gender, age, academic program and geographical origin.

Of all respondents in Table 1, 80.7% of them were women, showing that female students' involvement in entrepreneurial activities at Universitas Sebelas Maret is considerable. A large portion of respondents were 20 and 21 years old (82.0%) showing that students in the second and third year of study tend to take part in entrepreneurial growing activities the most. Respondents showed good diversity with 26.7% of them coming from non-business study programmes, reinforcing the cross-disciplinary nature of student entrepreneurship. Furthermore, 44.0% of respondents were from regions outside of Surakarta, showing the regional entrepreneurial relevance of Universitas Sebelas Maret.

Convergent Validity

Convergent validity was assessed by examining the outer loading values of each indicator. Table 2 summarizes the convergent validity results for all constructs.

Table 1: Research Participant Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Female	121	80.7
	Male	29	19.3
	Total	**150**	**100.0**
Age (Years)	19	3	2.0
	20	61	40.7
	21	62	41.3
	22	18	12.0
	23	5	3.3
	24	1	0.7
	Total	**150**	**100.0**
Study Program	Office Administration Education	30	20.0
	Economics Education	19	12.7
	Agribusiness	15	10.0
	Management	10	6.7
	Accounting	8	5.3
	Hospital Administration	8	5.3
	Sociology	7	4.7
	Informatics	5	3.3
	Agricultural Extension & Communication	5	3.3
	Elementary School Teacher Education	3	2.0
	Other Study Programs	40	26.7
	Total	**150**	**100.0**
Region of Origin	Surakarta/Solo	18	12.0
	Sukoharjo	16	10.7
	Karanganyar	15	10.0
	Boyolali	8	5.3
	Sragen	7	4.7
	Kebumen	4	2.7
	Wonogiri	4	2.7
	Klaten	4	2.7
	Ngawi	4	2.7
	Yogyakarta	4	2.7
	Other Regions	66	44.0
	Total	**150**	**100.0**

Table 2: Convergent Validity

	Entrepreneurship Education	Green Entrepreneurship	Incentives	Promoting Social Change	Skills
E1	0.771				
E2	0.813				
E3	0.836				
E4	0.839				
E5	0.806				
G1		0.804			
G2		0.795			
G3		0.850			
G4		0.835			
G5		0.810			
I1			0.781		
I2			0.767		
I3			0.731		
I4			0.803		
I5			0.793		
PSC1				0.789	
PSC2				0.889	
PSC3				0.770	
PSC4				0.818	
PSC5				0.790	
S1					0.727
S2					0.783

S3	0.816
S4	0.711
S5	0.789

Table 2 shows the results of the convergent validity test, where all indicators have loading factor values above 0.7, indicating that each question item is able to measure its construct well. The highest loading value is PSC2 at 0.889 for the Promoting Social Change variable, while the lowest value is S4 at 0.711 for the Skills variable. These results confirm that all indicators in the five research constructs (Entrepreneurship Education, Green Entrepreneurship, Incentives, Promoting Social Change and Skills) meet the convergent validity criteria and are suitable for use in further analysis.

Coefficient of Determination (R^2)

The explanatory power of the structural model was evaluated using the coefficient of determination (R^2). Table 3 reports the R^2 and adjusted R^2 values of the endogenous constructs.

Table 3: Coefficient of Determination (R^2)

Variable	R Square	R Square Adjusted
Green Entrepreneurship	0.459	0.448
Promoting Social Change	0.328	0.323

Table 3 provides an overview of the coefficients of determination (R^2) values. The Green Entrepreneurship variable yielded an R^2 of 0.459, which indicates that 45.9% of the variance is explained by the predictor variables in the model. The remaining 54.1% of the variance is explained by factors outside the model. With respect to the Promoting Social Change variable, an R^2 of 0.328 indicates that 32.8% of the variance is explained by the variables in the model. The remaining 67.2% is explained by other external variables. The slightly lower Adjusted R^2 values of 0.448 and 0.323, due to the adjustments made with respect to the predictor variables, still indicate moderate and quite good predictive ability.

Reliability and Construct Validity

Construct reliability and validity were evaluated using Cronbach's Alpha, Composite Reliability and Average Variance Extracted (AVE). The results are presented in Table 4.

Table 4: Construct Reliability and Validity

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Entrepreneurship Education	0.874	0.907	0.662
Green Entrepreneurship	0.877	0.911	0.671
Incentives	0.836	0.883	0.601
Promoting Social Change	0.871	0.906	0.660
Skills	0.825	0.876	0.587

Table 4 shows the results of the reliability and construct validity tests where all variables meet the established criteria with Cronbach's Alpha values ranging from 0.825 to 0.877 (>0.7), Composite Reliability between 0.876 to 0.911 (>0.7) and Average Variance Extracted (AVE) ranging from 0.587 to 0.671 (>0.5). The highest value for reliability and validity was obtained by the Green Entrepreneurship variable with a Cronbach's Alpha of 0.877, Composite Reliability of 0.911 and AVE of 0.671. These results confirm that all constructs in the study have good internal consistency and can measure the intended concept validly.

Discriminant Validity

Discriminant validity was assessed using the Fornell–Larcker criterion. Table 5 presents the square root of AVE values and inter-construct correlations.

Table 5: Discriminant Validity

Variable	EE	GE	I	PSC	S
Entrepreneurship Education (EE)	0.814				
Green Entrepreneurship (GE)	0.499	0.819			
Incentives (I)	0.615	0.522	0.775		
Promoting Social Change (PSC)	0.682	0.573	0.609	0.812	
Skills (S)	0.434	0.603	0.457	0.446	0.766

Table 5 shows the results of the discriminant validity test with the square root of the AVE (Average Variance Extracted) value on the main diagonal being greater than the correlation between constructs, indicating that each construct has a distinct uniqueness. The diagonal values ranged from 0.766 to 0.819, while the highest correlation between constructs was 0.682 between Entrepreneurship Education and Promoting Social Change. These results indicate

that all constructs in the research model meet the criteria for discriminant validity and can be distinguished from one another.

Hypotheses Testing and Mediation Analysis

Figure 2 illustrates the structural model and standardized path coefficients obtained from the PLS-SEM analysis.

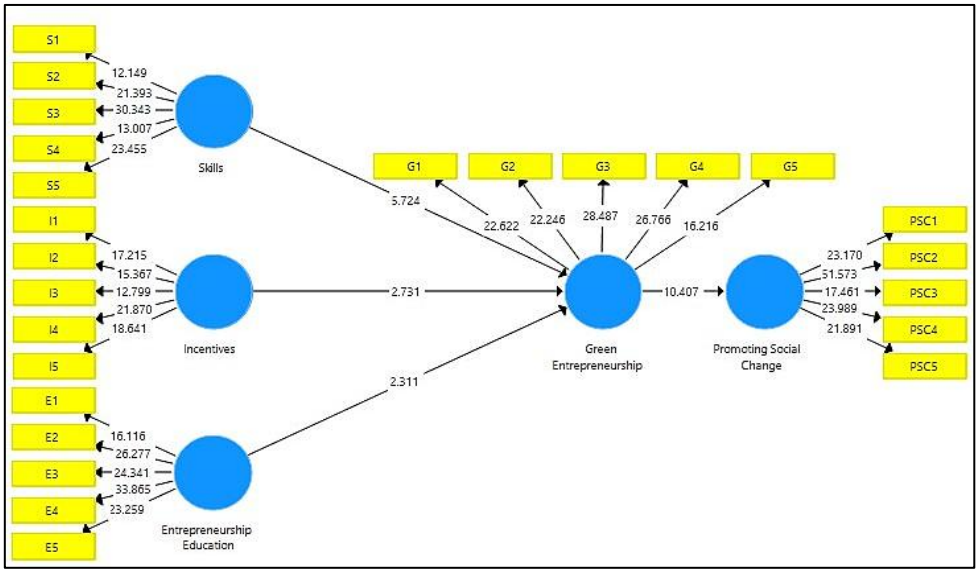

Figure 2: Structural Model

Figure 2 illustrates the structural model used to examine the causal relationships among Skills, Readiness and Entrepreneurship Education on Green Entrepreneurship, as well as its influence on Promoting Social Change, through Structural Equation Modeling (SEM). The results of the direct and indirect hypothesis testing are summarized in Table 6.

Table 6: Results of Hypotheses Testing

Hypothesis	Path Relationship	Path Coefficient	t-Statistics	p -Value	Decision
Direct Effects					
H1	Skills → Green Entrepreneurship	0.425	5.724	0.000	Supported
H2	Incentives → Green Entrepreneurship	0.216	2.731	0.007	Supported
H3	Entrepreneurship Education → Green Entrepreneurship	0.181	2.311	0.021	Supported
H4	Green Entrepreneurship → Promoting Social Change	0.573	10.407	0.000	Supported
Indirect Effects (Mediation)					
H5	Skills → Green Entrepreneurship → Promoting Social Change	0.243	5.409	0.000	Supported
H6	Incentives → Green Entrepreneurship → Promoting Social Change	0.124	2.495	0.013	Supported
H7	Entrepreneurship Education → Green Entrepreneurship → Promoting Social Change	0.104	2.130	0.034	Supported

The results of the PLS-SEM analysis for the seven hypotheses concerning the relationships of Skills, Incentives, Entrepreneurship Education, Green Entrepreneurship and Promoting Social Change are presented in Table 6. All the hypotheses (H1-H7) have been statistically validated at the establishment of a standard significance level for the range of (0.104, 0.573) path coefficients, where the t-statistics exceed the standard 1.96 critical value.

Looking at the direct effects, H1, which considers the relationship of skills and green entrepreneurship, has the most significant effect, at ($\beta = 0.425$, $t = 5.724$, $p = 0.000$) meaning that the most prominent predictors of green entrepreneurial activity are business and technical skills. In relation to the effect of skills on green entrepreneurship (H2), there is a slight positive relationship, ($\beta = 0.216$, $t = 2.731$, $p = 0.007$) meaning that the external incentive is most likely to offer important support for sustaining the development of the ventures. As for the effect of education on green entrepreneurship (H3), while the value is significant, it is the lowest of all at ($\beta = 0.181$, $t = 2.311$, $p = 0.021$), meaning that formal education systems offer little to assist in the development of green entrepreneurship compared to skills and incentives.

H4 establishes a relationship between green entrepreneurship and social change and shows the

strongest effect across the entire model (β = 0.573, t = 10.407, p = 0.000). This indicates that social change can be constructed through green entrepreneurial initiatives. The relationship and social change(s) resulting from green entrepreneurship is/are statistically proven through the extreme t-stat and a p-value close to zero.

The mediation analysis shows that green entrepreneurship positively mediates the effect all antecedent variables have on social change. Regarding H5, the effect of skills on social change is mediated the most by green entrepreneurship (β = 0.243, t = 5.409, p = 0.000). This means that of all the variables, skills impact social change the most by enabling a person to start an entrepreneurial venture. H6 shows that external support (incentives) can impact social change, but only when it stimulates green entrepreneurial activities (β = 0.124, t = 2.495, p = 0.013). H7 indicates that the impact of EE on social change is most pronounced when green entrepreneurship is involved (β = 0.104, t = 2.130, p = 0.034). This means that educational programmes have a mediating effect on social change that comes about mainly by increasing entrepreneurial capacity and the subsequent establishment of ventures.

All the proposed relationships have a p-value that is less than 0.05 and a t-value that is greater than the statistically significant value of 1.96. This means that there is considerable empirical support for the proposed relationships and that green entrepreneurship is an important mediating factor in social change through sustainable business practices.

Discussion

The results provide strong empirical support for the proposed mediation model, confirming that green entrepreneurship serves as a strategic transformative mechanism that changes individual competencies and institutional frameworks into social impact outcomes. Rather than merely serving as an outcome variable, green entrepreneurship serves as a behavioural and organizational conduit through which the combination of competencies, motivation and the transformative power of the educated sustain entrepreneurial activity.

The data suggests that of the three variables, skills is the strongest predictor of green entrepreneurship, more than incentives and entrepreneurship education. This means that practical competencies, especially sustainable skills, are more important than institutional interventions in the development of green venture behavior. The same relationships have been shown in previous studies that highlighted the significance of green entrepreneurial skills in promoting sustainable entrepreneurial engagement (3). This is consistent with the findings of an extensive review of frameworks of entrepreneurial abilities where acquired competencies outperformed other variables in relevance to venture success (34). In addition, the divide of environmental-technical competencies and other sustainability competencies Justifies the separation.

Among the effects the model accounts for, the strongest concerns the impact of green entrepreneurship on the fostering of social change. This affirms that green entrepreneurial initiatives can be seen as an operational model for social change through responsible environmental stewardship. Previous empirical studies show that social development on the continuum of the social development of society (2) and a positive contribution to the social facet of green entrepreneurship (15) are indicative of the positive social contribution of sustainable development. This extensive reach of green entrepreneurship social contribution reinforces the construct of an entrepreneur as an economic agent, primarily and an agent of social change, secondarily (35).

In the context of this study, the mediating results are the greatest contribution. These results show that of the skills, motivation and education on entrepreneurship, the most significant effect on social change is through the impact on green entrepreneurship, thus confirming the mediating effect of green entrepreneurship on social change.

Skills show the strongest indirect effect on social change through green entrepreneurship. This indicates that entrepreneurial competencies do not directly create social impact; rather, they enable the formation of environmentally oriented ventures, which subsequently generate social transformation. Research demonstrating that green entrepreneurship boosts innovation results via certain tactical pathways have found comparable mediation patterns (6). Self-efficacy as an intervening pathway has been documented in

relation to the entrepreneurial ends and sustainable means connection (3).

The mediating effect of incentives shows that social impact of institutional and financial support mechanisms is realized only when they encourage real green entrepreneurial activity. Previous studies have shown that green entrepreneurship contributes to business sustainability via structural capital mechanisms (36). Also, fiscal and policy incentives have been proven to positively affect green innovation and business creation (4). Despite this, the relatively weak indirect effect suggests that incentives are not enough in the absence of capability development.

The brought-up mediation effect of entrepreneurship education shows us that the formal educational programs have the potential of fostering social transformation, but only indirectly, as far as enhancing engagement in green entrepreneurship. It has been shown that educational interventions facilitate the green entrepreneurial intentions, because of changing the perception of both the desirability and the feasibility (14). These findings suggest that there must be a conversion of educational exposure into venture-oriented behavior to elicit noticeable social change.

Theoretical Contribution

This research contributed to the development of green entrepreneurship theory through the first empirical evidence of green entrepreneurship as a central transforming mechanism in a structured mediation model, connecting precursor(s) to end consequences). Of the limited research that has systematically assessed green entrepreneurship as a mediator, none have done so in the multitude of precursor pathways spanning green entrepreneurship and sustainable entrepreneurship, direct and indirect, within an ecosystems approach to entrepreneurship. The distinctions theorized around social value and more extensive social change outcomes (20) and the mediation within entrepreneurship ecosystems are confirmed and supported by the findings (37).

Practical Implications

The research indicates that most predictors identified in the study viewed skills as the most powerful direct predictor as well as the most powerful indirect predictor on the pathways studied. Therefore, it might be reasonable for universities to suggest that capability-based entrepreneurship training, as opposed to training that is primarily focused on theoretical constructs, be developed. For example, traditional entrepreneurship education may be less effective in promoting social change than experiential education models, project-based incubation and sustainability venture labs. Previous studies have suggested that more applied sustainability entrepreneurship education be included in pedagogical diversification efforts (38).

With all the mediation pathways validated, universities can justify unsought social transformation through the creation of green ventures. For entrepreneurship programs that catalyze the creation of green ventures, the broad societal impact of the programs can be claimed based on the mediating factor identified in this study.

Conclusion

This investigation provides empirical evidence that green entrepreneurship operates as a mediating mechanism that converts personal capabilities and institutional support into social change within the UNS entrepreneurship ecosystem. The complete validation of all seven hypotheses not only advances theoretical comprehension but also provides insights into the optimisation of entrepreneurship practices within the university context, positioning green entrepreneurship as a core component of societal change among student entrepreneurs. The research signifies that among all factors, 'skills' bears the most weight when fostering green entrepreneurship within university students, implying that the development of practical capabilities should be the focus of design and resource allocation within entrepreneurship programmes. The strong correlation between green entrepreneurship and the advocacy of social change provides evidence of the value of supporting student ventures with sustainable practices and justifies the continued focus on developing initiatives centred around green entrepreneurship. The mediation pathways highlighted in this analysis provide university administrators with the opportunity to design holistic support frameworks that bridge the social impact chasm through the creation of sustainable enterprises.

These results suggest for policymakers and educational administrators that the generation of social change through entrepreneurship requires an integrated approach that emphasises experiential learning and includes balanced incentive systems and educational support. The confirmation of green entrepreneurship as a pivotal mediating mechanism demonstrates that universities can rightfully assert social transformation results from programmes that effectively assist students in establishing sustainable ventures while helping to build advanced impact assessment systems that measure entrepreneurial outcomes along with social change results.

Abbreviations

PLS: Partial Least Squares, SEM: Structure Equation Analysis.

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Author Contributions

Asri Laksmi Riani: conceptualization, methodology, formal analysis, writing - original draft, writing – review and editing, supervision, project administration, Hunik Sri Runing Sawitri: conceptualization, methodology, investigation, data curation, writing – review and editing, Salamah Wahyuni: methodology, investigation, data curation, formal analysis, visualization, Suryandari Istiqomah: investigation, data curation, validation, writing - review & editing, Indah Novita Sari: investigation, data collection, validation, writing – review and editing.

Conflict of Interest

No potential conflicts of interest, whether financial or otherwise, have been reported by the authors.

Data Availability

Data supporting the findings of this study are not available in the public domain owing to participant confidentiality privacy and ethical restrictions. However, with the corresponding author's permission and that of the institution's ethics committee, anonymized aggregated data can be made available.

Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors declare that no generative AI or AI-assisted technologies were used in the preparation, writing, data analysis, or any other aspect of this manuscript. All content, including literature review, data interpretation and manuscript drafting, was developed entirely by the authors without the assistance of artificial intelligence tools.

Ethics Approval

This research included human subjects and was ethically conducted. The University Sebelas March Economic and Business Faculty granted ethical clearance. With the purpose of the research study explained to the subjects and confidentiality guaranteed, the subjects signed an informed consent form prior to participation. It was voluntary and the subjects were able to withdraw at any point during the research study without any consequence.

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