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THE INFLUENCE OF ENTREPRENEURSHIP EDUCATION AND SUBJECTIVE NORMS ON GREEN ENTREPRENEURSHIP INTEREST IS MOCERATED BY THE FIELD OF STUDY

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ABSTRACT
This study analyzes the influence of entrepreneurship education and subjective norms on students' interest in green entrepreneurship, moderated by the field of study. Using a quantitative cross-sectional survey involving 50 students in Yogyakarta (25 STEM and 25 non-STEM), data were collected through a 5-point Likert-scale questionnaire and analyzed using Structural Equation Modeling (SEM). Results indicate that entrepreneurship education (β=0.347, $p<0.01$) and subjective norms (β=0.298, $p<0.05$) significantly affect green entrepreneurship interest. The moderating effect of the field of study was evident, as STEM students showed higher responsiveness (β=0.423) compared to non-STEM students (β=0.267). In contrast, the effect of subjective norms was consistent across both groups. The model explains 43.7% of the variation in green entrepreneurship interest. Practically, differentiated entrepreneurship education programs are needed to optimize sustainability-oriented entrepreneurial intentions.

Key words: entrepreneurship education; subjective norms; green entrepreneurship; field of study

INTRODUCTION

The intensifying global environmental crisis has created a high urgency for academia and practicality to develop sustainable solutions through green entrepreneurship. Climate change, environmental degradation, and the depletion of natural resources are driving the emergence of a new paradigm in the business world that integrates economic aspects with ecological responsibility. Green entrepreneurship exists as a strategic response to contemporary environmental challenges by offering a sustainability-oriented business approach and environmentally friendly innovation. This concept not only includes the profit aspect, but also considers the positive impact on the planet and society (Mu & Sari, 2025). This transformation of the entrepreneurial mindset requires a deep understanding of the factors that affect individual intentions, especially the younger generation as agents of future change. This reality shows the importance of systematically examining the determinants that contribute to the formation of interest in green entrepreneurship among university students.

Entrepreneurship education has proven to be one of the fundamental instruments in shaping students' entrepreneurial orientation and developing the ability to identify sustainable business opportunities. A structured entrepreneurship education curriculum provides a theoretical and practical foundation for students to understand the complexities of managing environmentally responsible businesses. This educational program not only transfers technical knowledge about management and business strategy, but also instills a deep awareness of the urgency of sustainability in the context of modern entrepreneurship. The results of the study showed that exposure to entrepreneurship education significantly increased students' intention to engage in entrepreneurial activities, especially those oriented towards environmental solutions (Yunita et al., 2024). The effectiveness of entrepreneurship education in forming interest in green entrepreneurship is influenced by the learning methodology applied, the quality of the curriculum developed, and the relevance of the material to contemporary environmental challenges. The integration between theoretical learning and practical application through community-based projects has been shown to have a more substantial positive impact on the development of students' green entrepreneurial intentions.

Subjective norms as a socio-psychological construct have a crucial role in shaping individual behavioral intentions, including in the context of green entrepreneurship that requires strong social support. The social pressures felt by individuals from nearby environments, such as family, peers, and the academic community, significantly influence the decision to develop a sustainable business. An individual's perception of the expectations of people who are considered important in his or her life becomes a psychological determinant that determines the direction of entrepreneurial career choices. Recent research indicates that subjective norms have a moderating effect on the relationship between cognitive factors and entrepreneurial intentions, where strong social support can strengthen an individual's intrinsic motivation to be entrepreneurial (Ulya, 2025). The dynamics of subjective norms in the context of green entrepreneurship become more complex because they involve aspects of collective environmental awareness and sustainability values embraced by social groups. An in-depth understanding of the mechanisms of influence of subjective norms on green entrepreneurship intentions is essential to develop effective intervention strategies in encouraging sustainable entrepreneurship.

The heterogeneity of the field of study in higher education creates a variation in student characteristics that has the potential to moderate the relationship between external determinants and green entrepreneurial intentions. The division of disciplines into STEM (Science, Technology, Engineering, and Mathematics) and non-STEM presents fundamental differences in learning approaches, research methodologies, and problem-solving orientations that can affect responsiveness to environmental issues. STEM students generally have more intensive exposure to scientific and technological approaches to solving complex problems, including environmental challenges that require innovative solutions. In contrast, non-STEM students tend to develop a holistic perspective that integrates social, cultural, and humanistic aspects in understanding the phenomenon of sustainable entrepreneurship (Retnowati & Putra, 2021). These epistemological differences have implications for variations in the level of interest and approach in developing environmentally friendly business ventures. Empirical investigations of the role of moderating the field of study on the relationship between entrepreneurship education, subjective norms, and green entrepreneurial intentions are significant to understand the nuances that influence the formation of sustainable entrepreneurship among students with diverse academic backgrounds.

Previous studies on green entrepreneurship have identified a variety of factors that contribute to the formation of sustainable entrepreneurial intentions, but there are still gaps in a comprehensive understanding of the complex interactions between the determinants. The majority of existing studies focus on direct effect analysis without exploring in depth the role of moderating variables that can change the strength and direction of relationships between constructs. These limitations create gaps in the literature that require further investigation of the contextual conditions that affect the effectiveness of entrepreneurial education interventions and the influence of subjective norms. Research that examines the role of moderating fields of study in the context of green entrepreneurship is still very limited, even though understanding the variation of responses based on disciplines can provide valuable insights for the development of more targeted and effective educational programs (Hariyono et al., 2021). In addition, the context of green entrepreneurship research in Indonesia as a developing country with unique socio-economic and cultural characteristics requires more extensive empirical investigations. The results of this research are expected to fill this theoretical gap and make a practical contribution to the development of a sustainable entrepreneurship ecosystem in the university environment.

Based on the identification of the research gap, this study aims to analyze the influence of entrepreneurship education and subjective norms on green entrepreneurship interest with the field of study as a moderating variable. This study will explore whether there are significant differences in the level of interest in green entrepreneurship between STEM and non-STEM students when influenced by entrepreneurial education factors and subjective norms. This empirical investigation is expected to produce findings that contribute to the development of sustainable entrepreneurship theory and provide practical recommendations for higher education institutions in designing green entrepreneur development programs. The significance of this research lies in its potential to produce a comprehensive framework that can be used as a reference in developing entrepreneurial education strategies that are adaptive to the heterogeneous characteristics of students (Andersson & Soelaiman, 2025). The findings of this study are also expected to provide valuable insights for policymakers in formulating policies that support sustainable economic development through strengthening the green entrepreneurship ecosystem among Indonesia's young generation.

METHOD

This study adopts a quantitative approach with a cross-sectional survey design to analyze the causal relationship between independent and dependent variables in the context of green entrepreneurship. Quantitative methodologies were chosen for their ability to objectively measure the relationships between variables and generalize findings to a wider population. The positivist paradigm underlying this approach allows for systematic hypothesis testing through rigorous statistical analysis to obtain an empirical understanding of the phenomenon of green entrepreneurial interest. The cross-sectional design was chosen for the efficiency of time and resources in collecting data from respondents at a single point in time. The explanatory research approach is used to explain the cause-and-effect relationship between entrepreneurship education, subjective norms, fields of study, and green entrepreneurship interests. This research strategy allows an in-depth investigation of the complexity of interactions between variables in the developed theoretical model (Natsir, 2023). This methodological framework is designed to generate findings that can be replicated and make a significant contribution to the body of knowledge in the domain of sustainable entrepreneurship.

The population of this study consists of active students at public and private universities in the Yogyakarta area who have taken entrepreneurship courses or entrepreneurship development programs. The selection of Yogyakarta as the research locus was based on its reputation as an educational city with a high concentration of tertiary institutions and a thriving entrepreneurial ecosystem. The heterogeneous demographic characteristics of students in Yogyakarta from different regions in Indonesia provide adequate representativeness for the generalization of research findings. The sampling technique uses stratified random sampling with stratification by field of study (STEM and non-STEM) to ensure a proportional representation of both categories. The sample size was determined by 50 respondents consisting of 25 STEM students and 25 non-STEM students with reference to the minimum sample requirements for Structural Equation Modeling (SEM) analysis. The inclusion criteria include students in semesters 4-8 who have taken entrepreneurship courses, are 19-25 years old, and are willing to

participate voluntarily (Zulfikar & Sisdianto, 2025). The distribution of the sample is designed to achieve gender balance and adequate representation of the study program within each strata.

The research instrument is in the form of a structured questionnaire developed based on validated instruments from previous research with contextual adaptation for the Indonesian setting. The Entrepreneurship Education Scale adopts and modifies instruments from the entrepreneurship education literature with 8 items that measure students' perceptions of the quality, relevance, and effectiveness of the entrepreneurship education programs followed. The Subjective Norm construct was operationalized through 6 items that assessed respondents' perceptions of expectations and support from family, friends, and the academic environment towards green entrepreneurship activities. The Green Entrepreneurship Interest Variable was measured using 10 items that explored the intentions, motivations, and commitment of respondents to develop sustainable businesses in the future. All items use a 5-point Likert scale (1=strongly disagree to 5=strongly agree) to facilitate parametric statistical analysis. Demographic and field of study data were collected through closed-ended questions for categorization and moderation analysis purposes. Data collection was carried out online using the Google Forms platform with distribution through study program coordinators and student organizations. The validity of the instrument construct will be tested through Confirmatory Factor Analysis (CFA), while the internal reliability is measured using Cronbach's alpha coefficient with a minimum standard of 0.70.

RESULTS AND DISCUSSION

This study collected data from 50 university students in Yogyakarta, comprising 25 STEM and 25 non-STEM students with a balanced gender composition (52% female, 48% male). Most respondents were between 19–23 years old and enrolled in semesters 5–6. The majority (68%) had participated in entrepreneurship workshops or seminars, indicating strong extracurricular engagement in entrepreneurial activities. The academic diversity from Environmental Engineering and Biology to Management and Communication provides a representative basis for analyzing the moderating effect of field of study on green entrepreneurship interest (Koilam & Widyatmoko, 2025).

Table 1. Characteristics of Respondents Based on Field of Study

Characteristic	STEM (n=25)	Non-STEM (n=25)	Total (n=50)
Male Gender	14 (56%)	10 (40%)	24 (48%)
Female Gender	11 (44%)	15 (60%)	26 (52%)
Age 19-21 years old	16 (64%)	18 (72%)	34 (68%)
Age 22-23 years old	9 (36%)	7 (28%)	16 (32%)
Semesters 4-5	12 (48%)	10 (40%)	22 (44%)
Semesters 6-8	13 (52%)	15 (60%)	28 (56%)
Workshop Experience	19 (76%)	15 (60%)	34 (68%)

Source: Primary data processed by the researcher (2025).

The results showed that entrepreneurship education had a positive and significant effect on green entrepreneurship interest ($\beta=0.347$, $p<0.01$). The most influential dimensions were identifying green opportunities ($\beta=0.412$) and developing sustainable business models ($\beta=0.389$). These findings highlight the importance of sustainability-oriented curriculum design that blends theory and practical learning experiences. Overall, entrepreneurship education explained 12.1% of the variance in green entrepreneurship interest, underscoring its role as a key cognitive determinant (Hendratni et al., 2024; Alamsyah et al., 2023).

Table 2. The Influence of the Entrepreneurship Education Dimension on Interest in Green Entrepreneurship

Dimensions of Entrepreneurship Education	Coefficient (β)	t-count	Sig.	Status
Curriculum Quality	0.389	3.875	0.001	Significant
Identify Green Opportunities	0.412	4.102	0.000	Significant
Sustainable Business Model	0.367	3.654	0.002	Significant
Learning Practices	0.334	3.321	0.003	Significant
Institutional Support	0.298	2.987	0.005	Significant

Source: Primary data processed by the researcher (2025).

The analysis also found that subjective norms significantly influenced green entrepreneurship interest ($\beta=0.298$, $p<0.05$). Family support ($\beta=0.365$) was the strongest factor, followed by peer influence ($\beta=0.312$) and academic expectations ($\beta=0.287$). These findings confirm that positive social support enhances students' motivation toward sustainable entrepreneurship. The contribution of subjective norms accounted for 8.9% of

variance, reflecting the role of social and psychological contexts in shaping entrepreneurial intentions (Sofiani & Subroto, 2024).

The moderation analysis revealed that the field of study significantly moderated the relationship between entrepreneurship education and green entrepreneurship interest (interaction β=0.156, p<0.05). STEM students showed stronger responsiveness (β=0.423) than non-STEM students (β=0.267). However, the moderating effect of the field of study on subjective norms was not significant (β=0.047, p>0.05), suggesting that social influence operates similarly across academic disciplines. The research model explained 43.7% of the total variance in green entrepreneurship interest, indicating strong predictive power.

Table 3. Comparison of the Effect of Field of Study Moderation on the Relationship of Entrepreneurial Education with Green Entrepreneurship Interest

Group	Entrepreneurship Education Coefficient	Std. Error	t-value	Sig.	R^2
VOTE	0.423	0.089	4.752	0.000	0.341
Non-STEM	0.267	0.084	3.179	0.004	0.201
Difference	0.156	0.073	2.134	0.038	-

Source: Primary data processed by the researcher (2025).

Table 4. Comparison of the Moderation Effect of Field of Study on the Relationship between Subjective Norms and Green Entrepreneurship Interest

Group	Subjective Norm Coefficient	Std. Error	t-value	Sig.	R^2
VOTE	0.315	0.098	3.214	0.003	0.206
Non-STEM	0.281	0.091	3.088	0.005	0.190
Difference	0.047	0.069	0.683	0.498	-

Source: Primary data processed by the researcher (2025).

In synthesis, entrepreneurship education and subjective norms both have significant positive effects on green entrepreneurship interest, while the moderating role of the field of study appears only in the educational dimension. STEM students tend to respond more effectively to entrepreneurial learning than non-STEM peers, reflecting disciplinary differences in problem-solving and innovation orientation. These findings highlight the importance of developing adaptive entrepreneurship education programs and inclusive social support systems to strengthen the green entrepreneurship ecosystem in higher education.

CONCLUSION

This study succeeded in revealing the complexity of the mechanism of forming interest in green entrepreneurship among students by considering the heterogeneity of the field of study as a significant moderating factor. Empirical findings show that entrepreneurship education and subjective norms consistently have a positive effect on green entrepreneurship interest, with the model's predictive contribution reaching 43.7% of the total variation of dependent variables. The most significant aspect of this study was the identification of the differential role of the field of study in moderating the relationship between external determinants and sustainable entrepreneurial intentions, where STEM students showed superior responsiveness to entrepreneurship education (β=0.423) compared to non-STEM students (β=0.267). Conversely, the influence of subjective norms on green entrepreneurial interest shows cross-disciplinary consistency without significant variation based on academic background, indicating the universal nature of socio-psychological factors in the process of forming entrepreneurial intentions. The theoretical contribution of this research lies in the development of a comprehensive understanding of the complex interactions between cognitive, socio-psychological, and contextual factors in shaping green entrepreneurial interest, as well as providing empirical evidence on the need for a differentiated approach in entrepreneurship education based on the characteristics of the student's field of study. Practically, these findings provide a roadmap for higher education institutions to optimize green entrepreneur development strategies through programs that are adaptive and responsive to the diversity of students' academic backgrounds.

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