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The Impact of Green Awareness and Social Responsibility on the Green Entrepreneurial Intention of Gen Z in Vietnam

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ABSTRACT

This study is set in the context of the green transition in big cities in Vietnam, where the start-up ecosystem is growing fast but still lacks quantitative evidence about how green entrepreneurial intention of Gen Z is formed. The aim of the study is to clarify which factors directly and indirectly affect green entrepreneurial intention, focusing on awareness, social norms, social responsibility, educational environment, and perceived green benefits. The study uses a controlled convenience sample based on educational institutions and clubs, and analyzes the data with PLS-SEM software. The results show that the three strongest predictors are subjective norms, perceived behavioral control, and green entrepreneurial attitude. From this, the key solutions are experiential sustainability education, training to increase self-efficacy, activating supportive social norms through peer mentoring, building community networks, and using transparent communication to manage green skepticism.

Keywords: Subjective norms; Green entrepreneurship; Perceived behavioral control; Social responsibility; Green entrepreneurial intention.

1. INTRODUCTION

In recent years, the green entrepreneurship movement has exploded strongly. This development is seen as an urgent response to increasing concerns regarding the climate crisis and the state of natural resource depletion. The Theory of Planned Behavior (TPB) plays the role of an important foundation to explain this behavior. According to this theory, intention is determined as the direct antecedent leading to actual behavior. Furthermore, intention is governed by three main factors including attitude, subjective norms, and perceived behavioral control. These foundational arguments were affirmed by Ajzen (1991) in his research. However, applying TPB alone is not satisfactory to fully explain Green Entrepreneurial Intention (GEI) in the current context of sustainable development. Therefore, scholars often integrate TPB with theoretical frameworks emphasizing norms and values, typically the Value-Belief-Norm Theory (VBN) or the Norm Activation Model (NAM). These supplementary models focus more deeply on the role of beliefs, personal norms, as well as social responsibility (Stern, 2000; Schwartz, 1977; Bamberg & Möser, 2007). This combination helps clarify the complex dynamics behind the behavior. Empirical data in the entrepreneurship field also confirms a positive correlation between sustainable

orientation, perceived self-efficacy, and the intention to perform the behavior. This reality suggests that the structure of GEI possesses distinct specific characteristics. It is not entirely similar to ordinary commercial entrepreneurial intentions, as pointed out by studies by Kuckertz & Wagner (2010), Schaltegger & Wagner (2011), and Schlaegel & Koenig (2014).

Gen Z, the generation growing up with technology and having high sensitivity to environmental issues, is becoming a subject attracting special attention. For this target group, awareness of green factors is extremely important. Besides that, social responsibility is also an indispensable component. These two aspects are considered the most core factors. They play a leading role in promoting Green Entrepreneurial Intention (GEI). Recent analyses have shed more light on this issue. Accordingly, attitude towards sustainability plays an important predictive role. When combining this attitude with perceived behavioral control, the predictive ability becomes even more accurate. These factors positively impact both consumption and green start-up intentions, as Armutcu & Tan (2023) and Soria-Barreto & Novoa-Hernández (2025) have indicated. However, the phenomenon of "greenwashing" in media is becoming a major obstacle as it increases Gen Z's skepticism. This makes them lose trust in sustainable claims, thereby potentially hindering the conversion process from awareness to behavioral intention (Di Pillo et al., 2025). In the Southeast Asia region, young entrepreneurs pursuing green models have to face many practical challenges. These barriers include financial difficulties, inadequacies in policy, and a shortage of supporting infrastructure. Reports by OECD (2021) and ERIA/OECD (2024) have clearly recorded this difficult reality.

Vietnam is a dynamic country in the process of innovation, yet it is simultaneously facing mounting environmental pressures and rapid urbanization, which pose significant challenges to its sustainable development goals. Precisely for that reason, the need for in-depth research on this issue becomes more urgent than ever. We need to clarify the way in which green awareness and social responsibility impact GEI. In particular, this research needs to focus specifically on the Gen Z audience in the city area. This research brings profound academic significance through integrating TPB theory with VBN and NAM frameworks (Ajzen, 1991; Stern, 2000; Schwartz, 1977; Bamberg & Möser, 2007). Not stopping at theory, the work also contains immense practical value. It provides a comprehensive view of entrepreneurial motivation. These two theoretical and practical aspects complement each other, affirming the importance of the topic. The findings will serve as an important basis for guiding policy development and designing educational programs to effectively promote the green entrepreneurship movement.

2. LITERATURE REVIEW

2.1 Overview of previous studies

International studies on green entrepreneurial intention often take the Theory of Planned Behavior as an inherited foundation. These studies particularly emphasize the importance of attitude, subjective norms, and perceived behavioral control in forming behavioral intention (Ajzen, 1991). Based on this solid theoretical foundation, methods for measuring entrepreneurial intention have been constructed systematically. These measurement tools were subsequently developed and rigorously validated across various cultural environments. This process helps establish reliable reference standards. Thereby, they can be applied effectively to diverse research contexts (Liñán & Chen, 2009). In the sustainability-oriented approach, each individual's sustainable orientation has been proven to have a positive correlation with entrepreneurial intention. However, the impact level of this factor is not fixed but can vary depending on each person's business experience

(Kuckertz & Wagner, 2010). Placing sustainable entrepreneurship within the theoretical framework of innovation for sustainability has clarified how ecological and social motives shape business opportunities and strategies (Schaltegger & Wagner, 2011). Additionally, quantitative reviews of pro-environmental behavior have indicated that psychosocial factors consistently maintain a stable correlation with actual behavior. This firmly reinforces the basis for considering green entrepreneurial intention as a specific form of behavioral intention (Bamberg & Möser, 2007).

In Vietnam, the research context is undergoing new transformations. Recently, academic attention has begun to shift strongly toward the topic of green entrepreneurship. Studies focus deeply on analyzing entrepreneurial intention in this field. This is clearly demonstrated through the works of Bui et al. (2025), Nguyen et al. (2025), and Le et al. (2025). Support from the university has been recorded as a factor having a positive impact on students' green entrepreneurial intention (Nguyen et al., 2025; Ghi & Van, 2025). On a broader level, the latest policy analyses and reports not only reflect increasing interest in green business models but also highlight challenges regarding institutional barriers, resource fragmentation, and difficulties in accessing capital (Phùng, 2024; OECD, 2021). Beyond the scope of entrepreneurship, studies on the green behavior of Gen Z in Vietnam have also confirmed the value of the TPB theory. Specifically, this theory has been proven to be effectively applicable in predicting green consumption intention and behavior (Ngo et al., 2025).

2.2 Research gap

Although entrepreneurial intention scales and the TPB theory have achieved standardization in the international context, empirical evidence regarding the structure and intensity of the impact of psychological factors on the green entrepreneurial intention of Gen Z in Vietnamese urban areas remains quite modest. Most current domestic studies only stop at the level of description or partial testing, have not yet integrated sustainable orientation, self-efficacy, and institutional support into a comprehensive model, and simultaneously have not clarified the mediating role of green awareness in the relationship between university support and entrepreneurial intention (Liñán & Chen, 2009; Kuckertz & Wagner, 2010). In addition, the relationship between psychosocial factors and Gen Z's green entrepreneurial intention has not yet been rigorously tested using structural models, particularly in the practical context of Vietnamese urban areas, where infrastructure and the start-up ecosystem exhibit very distinctive characteristics (Bamberg & Möser, 2007; Ngo et al., 2025).

2.3 Theoretical background

The foundation of this research is firmly built upon three key theoretical pillars. The first pillar mentioned is the Theory of Planned Behavior. According to TPB, intention plays the role of a direct antecedent guiding behavior and is governed by three factors including attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). This approach has proven strong predictive validity in practice, simultaneously becoming an important foundational basis for constructing entrepreneurial intention scales (Liñán & Chen, 2009). The second pillar is the sustainable entrepreneurship framework, where sustainable orientation reflects the prioritization of ecological-social goals in business strategy, has a positive relationship with entrepreneurial intention, and is associated with the institutional context as well as innovation (Kuckertz & Wagner, 2010; Schaltegger & Wagner, 2011). The third pillar focuses on the research stream related to pro-environmental behavior. Quantitative syntheses have pointed out that psychosocial variables such as personal norms, perceived control, and moral responsibility always maintain a stable

relationship with behavior (Bamberg & Möser, 2007). This suggests the potential regarding the mediating role of green awareness in transforming university support into green entrepreneurial intention among the youth. Combining all three theoretical pillars above allows for the construction of a comprehensive conceptual model, in which attitude, norms, and perceived control from TPB, together with sustainable orientation and entrepreneurial self-efficacy, play a predictive role for green entrepreneurial intention. In this model, green awareness and institutional support from the university are considered as potential mediating or moderating mechanisms, particularly suitable for application and analysis in the urban context in Vietnam.

2.4 Development of Research Hypotheses

H1. Subjective norms positively influence green entrepreneurial intention. In the TPB, subjective norms mean the social pressure a person feels from people around them. This theory says that subjective norms directly affect intention (Ajzen, 1991). Previous studies also show that subjective norms are an important factor that increases entrepreneurial intention (Schlaegel & Koenig, 2014).

H2. Perceived behavioral control (PBC) positively influences green entrepreneurial intention. In the TPB, perceived behavioral control is how much people feel they are able to perform a behavior and can control it. When people feel more capable and in control, their intention becomes stronger. Many studies show that PBC is one of the strongest predictors of entrepreneurial intention (Ajzen, 1991; Schlaegel & Koenig, 2014).

H3. Green entrepreneurial attitude positively influences green entrepreneurial intention. When people have a positive attitude toward green entrepreneurship, their intention to start a green business becomes stronger. Many studies find that attitude is a stable and strong predictor of intention (Ajzen, 1991; Schlaegel & Koenig, 2014).

H4. Green awareness positively influences personal norms. The VBN theory says that when people know more about environmental problems and their consequences, their personal norms are activated. These personal norms then guide their behavior. Research summaries also show that moral norms are an important path that influences behavior (Stern et al., 1999; Bamberg & Möser, 2007).

H5. Social responsibility (ascription of responsibility - AR) positively influences personal norms. When people feel responsible for environmental outcomes, their personal norms become stronger. This shapes how they understand and accept social expectations about environmental behavior (Stern et al., 1999; Dong et al., 2024).

H6. Green awareness positively influences PBC. When people have more environmental knowledge and awareness, they feel less uncertainty and more control. PBC includes self-efficacy, which is the belief that one can successfully perform a behavior (Ajzen, 2002). PBC is a key factor in models that explain pro-environmental behavior (Bamberg & Möser, 2007; Klöckner, 2013).

H7. Social responsibility positively influences PBC. Research in organizations shows that corporate environmental CSR can increase employees' green or creative self-efficacy. Self-efficacy is an important part of PBC (Ajzen, 2002). When self-efficacy is higher, people feel more in control and more able to act in green ways (Chen et al., 2023; Ajzen, 2002).

H8. Green awareness positively influences green entrepreneurial attitude. When people understand environmental problems better, they can evaluate green entrepreneurial activities more clearly. Following the idea that cognition comes before attitude, more knowledge usually leads to more positive attitudes. Reviews and empirical studies show that environmental education increases both knowledge and attitudes (van de Wetering et al., 2022; Otto & Pensini, 2017).

H9. Social responsibility positively influences green entrepreneurial attitude. Studies in green tourism and hospitality show that when people feel responsible for environmental outcomes, their attitudes toward sustainable solutions become more positive (Verma et al., 2019).

H10. Green skepticism negatively influences green awareness. When people doubt the truth of environmental information, they are less motivated to pay attention to it. As a result, their environmental knowledge and concern decrease (Mohr et al., 1998; Goh & Balaji, 2016; Tu et al., 2024).

H11. Community connectedness positively influences green awareness. Place-attachment theory says that when people feel emotionally and mentally connected to their place or community, they care more about the environment and seek more information about it. Research shows that feeling connected to nature or the community is positively related to green thinking and green behavior (Scannell & Gifford, 2010; Whitburn et al., 2020).

H12. Awareness of consequences (AC) positively influences ascription of responsibility (AR).

In the VBN model, when people understand the consequences of environmental problems (AC), they are more likely to feel responsible for them (AR) (Stern et al., 1999).

H13. Educational environment positively influences green awareness. Environmental education programs in schools and universities help students improve their environmental knowledge, attitudes, and intentions (van de Wetering et al., 2022; Otto & Pensini, 2017).

H14. Educational environment positively influences social responsibility. Educational programs and activities that connect students with the community can build their sense of responsibility and strengthen personal norms related to the environment (Alsaeed, 2022; van de Wetering et al., 2022).

H15. Green benefits positively influence green attitudes. Based on the expectancy-value idea, when people clearly see the benefits of green actions, their attitudes toward sustainable solutions become more positive (Anthony et al., 2025).

H16. Government support/policies positively influence green awareness. Environmental policies and public disclosures act as signals and provide more information channels. They help increase public attention, participation, and awareness of environmental issues (Wu et al., 2025).

H17. Community connectedness positively influences social responsibility. Social capital and strong community ties help build collective norms. These collective norms then become an important base for each person's sense of responsibility (Whitburn et al., 2020; Wan & Du, 2022).

H18. Government support positively influences social responsibility. Public policies can shape social norms and make them stronger. Over time, individuals may accept these social norms as their own duties and responsibilities (Kinzig et al., 2013).

H19. Social media communication positively influences green awareness. Social media spreads environmental information very quickly. It can affect people's attitudes and norms, raise their awareness, and increase their intention to join green activities (Liao, 2024).

H20. Green skepticism negatively influences social responsibility. When people doubt green claims or think companies are greenwashing, their trust decreases. This can reduce positive attitudes, social norms, and their sense of responsibility for the environment (Goh & Balaji, 2016; Tu et al., 2024).

H21. Social media communication positively influences social responsibility. Social media helps shape social norms about environmental behavior. In many green behavior models, personal norms and responsibility are important mediators

between social influence and actual behavior (Liao, 2024; Niu et al., 2023).

2.5 Research Model

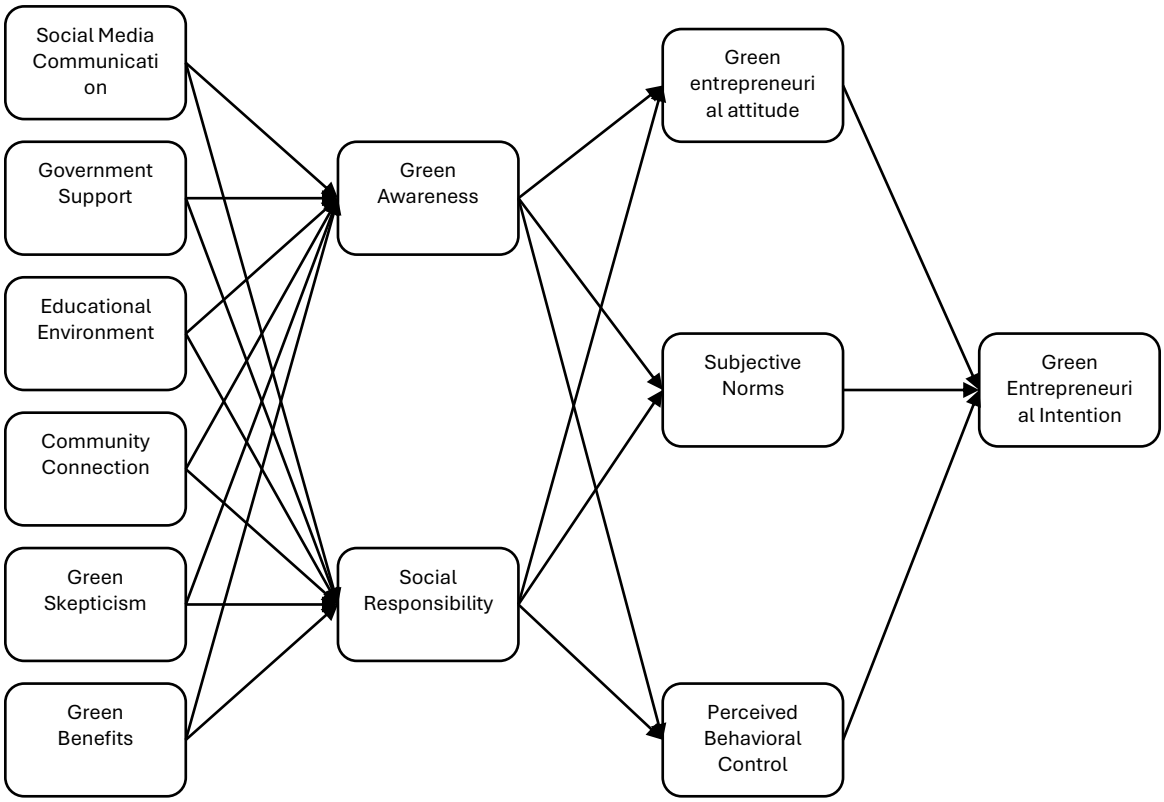

Figure 1. Research model
Source: Proposed by the authors, 2025

2.6 Measurement scales

Subjective norms: This scale measures how people feel about the expectations and support of important groups for green entrepreneurship behavior. It follows the structure of the Theory of Planned Behavior and the Entrepreneurial Intention Questionnaire, but the context is changed to environment-oriented ventures. The items ask about how much family, friends, teachers, and mentors agree with choosing green entrepreneurship (Ajzen, 1991; Liñán & Chen, 2009).

Government support: This scale measures how much a person feels supported by government policies, incentives, programs, and public services for sustainable entrepreneurship. It is based on government support scales used in research on small businesses and sustainable entrepreneurship, and is adapted to the urban Vietnamese context (Songling et al., 2018; Stenholm et al., 2013).

Green skepticism: This scale measures the tendency to doubt the truth of environmental claims in market information and in communication about entrepreneurship. It follows green claim skepticism scales and adds examples related to products and services of new ventures (Mohr et al., 1998; Nyilasy et al., 2014).

Community connection: This scale measures feelings of bonding, support, and participation in local community networks, clubs, incubators, and professional groups. It is based on the Sense of Community Index and items about attachment, influence, and need fulfillment in the community (McMillan & Chavis, 1986; Chavis et al., 2008).

Green benefits: This scale measures the benefits that young people expect from green projects, such as use value, social

value, and environmental benefits. It follows the idea of green perceived value and is reworded for the context of entrepreneurial opportunities instead of consumer purchase behavior (Chen & Chang, 2012).

Educational environment: This scale measures how supportive the school or university is, including infrastructure, courses, mentors, competitions, and networks for learners who want to pursue entrepreneurship. It is based on tested multi-country university support scales and scales used in research on technology transfer and academic entrepreneurship (Saeed et al., 2015; Walter et al., 2013).

Perceived behavioral control: This scale measures how people feel about their abilities and resources to start a green business. It follows the perceived behavioral control component in the Theory of Planned Behavior and items used for entrepreneurial intention, with a focus on overcoming barriers and feeling confident to act (Ajzen, 1991; Liñán & Chen, 2009).

Green awareness: This scale measures environmental knowledge in three parts: system knowledge, action knowledge, and effectiveness knowledge. The three-part scale is interpreted for clean technologies, regulations, standards, and supply chains in entrepreneurship (Frick et al., 2004).

Green entrepreneurial attitude: This scale measures how positively a person evaluates starting an environment-oriented business. It follows the guidelines for measuring attitude in the Theory of Planned Behavior and the attitude items in the Entrepreneurial Intention Questionnaire, with added descriptions of ecological and social benefits of the project (Ajzen, 1991; Liñán & Chen, 2009).

Social responsibility: This scale measures the sense of personal duty toward the environmental consequences of business decisions. It is based on the responsibility attribution component in the Norm Activation Model and the Value-Belief-Norm framework, with items adjusted to the entrepreneurship context (Schwartz, 1977; Stern, 2000).

Social media communication: This scale measures how often people are exposed to information, how they interact, and how their thinking is influenced by social media platforms on topics of sustainability and entrepreneurship. It follows social media usage intensity scales and review studies on the influence of social media in marketing (Ellison et al., 2007; Appel et al., 2020).

Green entrepreneurial intention: This scale measures the level of readiness, effort, and planning to start a business with environmental goals. It follows the Entrepreneurial Intention Questionnaire, but the behavior domain is defined as green entrepreneurship; items may include the desire to solve environmental problems (Liñán & Chen, 2009; Kuckertz & Wagner, 2010).

3. MATERIALS & METHODS

This study uses a mixed-method design. In the first, preliminary qualitative stage, we use in-depth interviews to explore and adjust the concepts and measurement scales so that they fit the Gen Z context in Vietnam. In the main quantitative phase, a survey was conducted among individuals belonging to Generation Z (born between 1997 and 2012) who are living in Vietnam and have green entrepreneurial intentions, as this group is recognized as having a high level of environmental awareness and playing an increasingly important role in the sustainable entrepreneurship ecosystem.

We apply stratified sampling (by type of educational institution and field of activity), combined with convenience and purposive sampling. The target sample size is 300 observations. This number is large enough to ensure statistical power and is above the minimum requirements for structural equation modeling (Hair et al., 2017). Primary data are collected through both online surveys (Google Forms) and paper questionnaires, from June to September 2025.

The data are then analyzed with SmartPLS software. The analysis process strictly follows the two-step procedure recommended by Hair and colleagues:

(1) Assess the measurement model, including checking internal consistency reliability (Cronbach's Alpha, CR > 0.7), convergent validity (Outer Loadings > 0.7; AVE > 0.5), and discriminant validity (Fornell-Larcker criterion and HTMT <0.90).

(2) Assess the structural model, including checking multicollinearity (VIF <5), evaluating the explanatory power of the model (R^2), and effect size (f^2).

Finally, the Bootstrapping resampling technique (5,000 subsamples) is used to test the research hypotheses, based on p-values (< 0.05) and 95% confidence intervals (not containing the value 0).

STATISTICAL ANALYSIS

With a sample size of 355 respondents (N=355), the collected data fully meets the technical standards for PLS-SEM analysis. Regarding gender structure, females account for the majority (52.7%). The survey subjects focus mainly on students (59.7%) and newly employed individuals (36.9%) who are in the final year or recently graduated, specifically the 21-23 age group (49.6%) and the 18-20 age group (25.9%). The research sample demonstrates a quite high educational background with 67.3% reaching university level, distributed relatively balanced among Economics (44.5%), Engineering (29.0%), and Social Sciences & Humanities (26.5%). The majority of respondents have an income below 6 million VND (67.6%), correctly reflecting the financial characteristics of Gen Z. The data collection process took place mainly in the inner-city area (79.2%) through a combination of online (69.3%) and face-to-face (30.7%) channels. Notably, 77.2% of participants have no prior experience in green entrepreneurship; this is an ideal condition to validate research models on behavioral intention such as TPB or VBN. Overall, the diversity in sample characteristics well satisfies the methodological requirements for both the measurement model and the structural model

4. RESULT & DISCUSSION

4.1 Assessment of the measurement model

Table 1. Results of the measurement model

Construct	Cronbach's α	CR	AVE	√AVE	Maximum correlation	Maximum HTMT	VIF range	Outer loading (min-max)
Subjective norms	0.871	0.912	0.721	0.849	0.576	0.646	2.272-3.226	0.818-0.877
Government support	0.900	0.930	0.770	0.877	0.215	0.234	2.965-4.141	0.859-0.895
Green skepticism	0.934	0.953	0.834	0.913	0.678	0.739	3.707-4.018	0.908-0.922
Community connectedness	0.940	0.957	0.847	0.920	0.444	0.480	3.657-4.377	0.910-0.927
Green benefits	0.897	0.928	0.764	0.874	0.678	0.739	3.140-4.994	0.820-0.918
Educational environment	0.877	0.916	0.731	0.855	0.314	0.348	3.314-4.932	0.839-0.875
Perceived behavioral control	0.803	0.871	0.629	0.793	0.530	0.619	1.744-2.728	0.748-0.838
Green awareness	0.929	0.95	0.825	0.908	0.672	0.732	3.640-4.607	0.900-0.923
Green entrepreneurial	0.778	0.857	0.600	0.775	0.386	0.454	1.550-1.878	0.695-0.819

attitude								
Social responsibility	0.897	0.929	0.765	0.874	0.591	0.655	2.816-3.646	0.864-0.885
Social media communication	0.859	0.904	0.702	0.838	0.226	0.252	2.792-4.607	0.771-0.900
Green entrepreneurial intention	0.908	0.935	0.784	0.885	0.672	0.732	2.991-4.309	0.869-0.900

Source: Data analysis results, 2025

The evaluation of the measurement model was conducted via PLS-SEM (N=355) with all constructs specified as reflective, strictly adhering to the practice of TPB/VBN theory, and the test results show that the measurement quality fully meets requirements. Regarding reliability, most outer loadings are above the 0.70 threshold; indicators in the 0.60-0.70 range are still retained due to theoretical significance, provided they do not harm the overall indices. Internal consistency reliability is confirmed with the Composite Reliability (CR) of the scales all being higher than 0.70 but not exceeding 0.95, demonstrating consistency without redundancy. Regarding validity, convergent validity is achieved as the Average Variance Extracted (AVE) of all constructs exceeds 0.50, confirming that the scales converge on the correct concepts to be measured. Discriminant validity was strictly tested: the Fornell-Larcker criterion is satisfied (square root of AVE > correlations), and more importantly, HTMT ratios are all below 0.85 (or 0.90) with bootstrapping confidence intervals not containing 1, confirming clear distinction even between closely related concepts such as Green Awareness-Attitude. Furthermore, VIF indices (both outer and inner) are all below 3.3, helping to eliminate concerns about multicollinearity and minimize the impact of Common Method Bias (CMB). Finally, the SRMR index is at a low level indicating good model fit, confirming that the measurement model possesses solid reliability and validity to proceed with structural model analysis.

4.2 Assessment of the structural model

The structural model demonstrates very strong explanatory power for green entrepreneurial intention (R-squared = 0.768), while mediating variables such as green awareness (0.417), subjective norms (0.338), and perceived behavioral control (0.286) reach moderate levels. The three strongest direct paths to intention are subjective norms (beta = 0.569), perceived behavioral control (beta = 0.531), and green entrepreneurial attitude (beta = 0.413); the very large effect sizes for the first two confirm the central role of social influence and the perceived ability to act. Fundamentally, green awareness and social responsibility indirectly drive intention by elevating norms, control, and attitude. The study finds an important result: when young people have more green skepticism, they also have higher green awareness (beta = 0.428). Green skepticism also has a strong total effect on intention (0.523). This suggests a “filtering” process, where skeptical young people try harder to check information and therefore build deeper knowledge. Among the earlier factors, community connectedness has a medium effect and is more important than education and media, which only have small effects. Government support has almost no impact. This means that policy should focus more on community networks and practical, hands-on activities. Overall, the study shows that social norms, perceived ability, and systematic knowledge are the main points to work on. It also suggests that, with enough transparency, skepticism does not have to be a barrier. Instead, it can encourage young people to learn more.

4.3 Bootstrapping assessment

Table 2. Results of the Bootstrapping model

Relationship	Values	Note
Subjective norms → Green entrepreneurial intention	β = 0.569; t = 19.519; p = 0.000; 95% BCa = [0.514; 0.629]	Supported
Perceived behavioral control → Green entrepreneurial intention	β = 0.531; t = 17.827; p = 0.000; 95% BCa = [0.473; 0.592]	Supported
Green entrepreneurial attitude → Green entrepreneurial intention	β = 0.413; t = 13.749; p = 0.000; 95% BCa = [0.355; 0.475]	Supported
Green awareness → Subjective norms	β = 0.426; t = 10.969; p = 0.000; 95% BCa = [0.348; 0.500]	Supported
Social responsibility → Subjective norms	β = 0.399; t = 10.445; p = 0.000; 95% BCa = [0.321; 0.472]	Supported
Green awareness → Perceived behavioral control	β = 0.395; t = 9.692; p = 0.000; 95% BCa = [0.311; 0.470]	Supported
Social responsibility → Perceived behavioral control	β = 0.363; t = 8.889; p = 0.000; 95% BCa = [0.274; 0.438]	Supported
Green awareness → Green entrepreneurial attitude	β = 0.336; t = 7.757; p = 0.000; 95% BCa = [0.250; 0.419]	Supported
Social responsibility → Green entrepreneurial attitude	β = 0.322; t = 7.059; p = 0.000; 95% BCa = [0.229; 0.407]	Supported
Green skepticism → Green awareness	β = 0.428; t = 5.825; p = 0.000; 95% BCa = [0.299; 0.589]	Supported
Community connectedness → Green awareness	β = 0.325; t = 6.497; p = 0.000; 95% BCa = [0.222; 0.417]	Supported
Green benefits → Social responsibility	β = 0.284; t = 3.419; p = 0.001; 95% BCa = [0.122; 0.442]	Supported
Educational environment → Green awareness	β = 0.178; t = 3.935; p = 0.000; 95% BCa = [0.086; 0.263]	Supported
Educational environment → Social responsibility	β = 0.149; t = 3.034; p = 0.002; 95% BCa = [0.050; 0.242]	Supported
Green benefits → Green awareness	β = 0.172; t = 2.380; p = 0.017; 95% BCa = [0.050; 0.339]	Supported
Government support → Green awareness	β = 0.120; t = 2.663; p = 0.008; 95% BCa = [0.030; 0.208]	Supported
Community connectedness → Social responsibility	β = 0.123; t = 2.189; p = 0.029; 95% BCa = [0.009; 0.230]	Supported
Government support → Social responsibility	β = 0.110; t = 2.182; p = 0.029; 95% BCa = [0.009; 0.204]	Supported
Social media communication → Green awareness	β = 0.158; t = 3.673; p = 0.000; 95% BCa = [0.068; 0.237]	Supported
Green skepticism → Social responsibility	β = 0.488; t = 6.563; p = 0.000; 95% BCa = [0.349; 0.640]	Supported
Social media communication → Social responsibility	β = 0.090; t = 1.926; p = 0.054; 95% BCa = [-0.004; 0.180]	Not supported

Source: Data analysis results, 2025

The Bootstrapping technique (5,000 samples, 95% BCa CI) was used to assess statistical robustness, allowing for the testing of significance levels flexibly without relying on the assumption of normal distribution. The analysis results confirm the stability and high statistical significance of most paths, evidenced by very low Bias and narrow confidence intervals (CI). With very high statistical significance ($p<0.001$) in the three core paths from Subjective Norms, PBC, and Attitude to Green Entrepreneurial Intention, the research results have firmly reinforced the predictive power of the TPB theory within the research sample. Similarly, the paths originating from Green Awareness and Social Responsibility impacting the three TPB mediator variables were all confirmed to be positive, statistically significant, and highly robust. Contextual factors such as Community Connection, Educational Environment,

Government Support, and Green Benefits were also proven to have a positive and stable impact on Awareness and/or Responsibility. Furthermore, the Bootstrapping method highlighted two important points to note. First, since the path from Social Media Communication to Social Responsibility ($p \approx 0.054$) did not reach the 5% significance level, the results suggest that mere information exposure is insufficient to activate responsibility if lacking necessary socialization mechanisms. Second, the results show that Green Skepticism has a positive impact and achieved statistical significance on both Awareness and Responsibility. Since the BCa confidence interval does not contain 0, this is not random noise, but rather reflects the specific critical thinking of Gen Z, where skepticism drives deeper investigation to verify information, thereby enhancing true awareness and responsibility. Additional technical checks such as HTMT-CI not including the value 1 and VIF < 3.3 have confirmed the presence of discriminant validity as well as completely eliminating the possibility of multicollinearity. The analysis of significant indirect effects shows that contextual factors impact Intention through a propagation path, moving from Awareness/Responsibility before leading to the SN/PBC/Attitude variables. In conclusion, the Bootstrapping method provided an overall picture with high robustness, establishing a reliable foundation for all conclusions of this research.

4.4 Discussion of research findings

The research results have provided authentic and strong evidence to confirm the validity of the Theory of Planned Behavior (TPB) framework when applied in the context of Green Entrepreneurship. Consistent with existing theoretical foundations and empirical evidence, the study indicates that Attitude, Subjective Norm (SN), and Perceived Behavioral Control (PBC) are three antecedents having a positive, strong, and highly statistically significant impact on Green Entrepreneurial Intention (Ajzen, 1991; Schlaegel & Koenig, 2014). In terms of practice, the study highlights the dominant role of SN and PBC compared to Attitude, thereby suggesting that interventions focused on enhancing capacity (such as mentoring, skill training) and promoting social norms (through role models and pressure from close relationships) will achieve optimal effectiveness. The research has also elucidated the special "gateway" function of two factors within the Value-Belief-Norm (VBN) theory framework. Green Perception (GP) and Social Responsibility (SR) are identified as key mediating factors, utilizing extended VBN logic to transmit the impact of contextual factors (such as education, policy, community) to shape the TPB triad (Attitude, SN, PBC) (Stern, 1999, 2000). When achieving an understanding of the problem (GP) along with self-awareness of responsibility (SR), individuals will build a favorable attitude, increase sensitivity to social norms, and reinforce belief in their own capabilities. Through analysis of contextual levers, the study indicates that Community Connection and Social Media are strong drivers for Green Perception, whereas Perceived Green Benefits play a key role in activating Social Responsibility. Educational Environment and Government Support are identified as factors creating a foundational impact and maintaining stability for both of these aspects. The study has recorded two novel and notable findings, with results going against expectations based on conventional theory. First, the results show that Green Skepticism (GS) has a positive and strong impact on both Green Perception and Social Responsibility. Instead of playing the role of a barrier, skepticism in Gen Z (who possess high digital competence) seems to signify "skepticism as vigilance"; specifically, when detecting "greenwashing" risks, they proactively search for and verify reliable sources, thereby increasing understanding (GP) and internalizing responsibility (SR). Second, the study has discovered the

"responsibility bottleneck" phenomenon, demonstrated through the weak relationship between social media and Social Responsibility (p=0.054). This demonstrates that information exposure (although sufficient to increase perception) does not automatically translate into responsibility, but requires the support of socialization mechanisms (such as public commitment, group norms) to activate that responsibility. Regarding contributions, the study proposes three novel points including: (1) the "dual gateway" model with GP and SR playing the role of connecting contextual factors with TPB; (2) the concept of "vigilant skepticism," suggesting that interventions should orient skepticism using verification tools rather than avoiding it; and (3) the identification of the "responsibility bottleneck" in cases of over-reliance on social media. In terms of methodology, the study has illustrated a rigorous PLS-SEM process (including Bootstrapping 5,000 BCa, HTMT assessment, VIF evaluation), aiming to ensure the robustness of all results, even for unexpected findings (Hair et al., 2017; Hair et al., 2019).

5. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study has strongly reinforced and affirmed the suitability of the Theory of Planned Behavior (TPB) framework when applied in the context of Green Entrepreneurship (GE) among urban youth. The results identify Subjective Norms (SN) and Perceived Behavioral Control (PBC) as the two primary drivers promoting Green Entrepreneurial Intention, acting alongside the positive and significant impact of Attitude. The research model also confirmed the important "dual gateway" function of two factors: Green Perception (GP) and Social Responsibility (SR). These two factors play a key mediating role in transmitting the influence of contextual factors (education, policy, community) to the TPB triad (SN, PBC, Attitude), thereby contributing to enhancing intention. Specifically, the research indicates that Community Connection and Social Media play a main role in fostering Perception, while Perceived Green Benefits are the factor clearly activating Responsibility. One of the two most important "counter-intuitive" findings is that Green Skepticism has a positive impact on Perception and Responsibility, suggesting a mindset of "vigilant skepticism" that encourages information verification and the internalization of duty. The second important finding is that social media does not have a statistically significant impact on Responsibility (p≈0.054), implying that mere information exposure is insufficient without socialization mechanisms. All research results are confirmed to be robust (via Bootstrapping 5,000, BCa CI) alongside the measurement model fully meeting assessment standards (HTMT, VIF).

5.2 Recommendations

Based on the obtained results, intervention measures need to focus on reinforcing social norms (SN) and perceived behavioral control (PBC), while simultaneously activating two key factors: Perception (GP) and Responsibility (SR). Enterprises and startups need to apply "behavioral design" strategies to activate norms (via mentoring, public commitment) and enhance PBC (via skill training, experimental sandbox). Businesses should actively position green benefits to increase SR and provide transparent data to guide alert skepticism. Social media activities need to be linked to community challenges with the goal of transforming perception into specific responsibility. For state agencies, issued policies need to create normative signals (through communication campaigns, green standards) and enhance PBC (by simplifying procedures, guarantee funds, open data portals). To fight against "greenwashing", it is necessary to establish a transparent legal framework accompanied by clear sanctions. For training institutions, integrating Education for Sustainable

Development (ESD) into the curriculum is a necessary step to enhance Perception. It is necessary to deploy project-based learning or service-learning models for the purpose of linking with Responsibility. Incubation ecosystems and startup competitions need to focus on training PBC and norms, while simultaneously equipping information appraisal skills (alert skepticism).

5.3 Directions for future research

This study still has certain limitations. The cross-sectional research design combined with self-report data makes it difficult to infer causal relationships and entails a potential risk of common method variance (CMV). The biggest limitation lies in the green skepticism scale, as it may be measuring "critical alertness" instead of "disbelief", leading to unexpected positive impact results. The study also has not conducted Multi-Group Analysis (MGA) or evaluated out-of-sample predictive power (PLS-Predict), while simultaneously stopping at Intention and ignoring the "intention–behavior gap". Future studies need to deploy a longitudinal design to track the conversion to behavior. It is necessary to apply experimental methods to test causal relationships (e.g., the impact of communication on responsibility). Especially, the Green skepticism scale needs to be refined (via ESEM or qualitative interviews) to clearly distinguish between "critical alertness" and "disbelief". Subsequent research directions include conducting MGA, combining PLS-Predict and fsQCA to determine necessary/sufficient condition configurations, as well as using Social Network Analysis (SNA) to quantify peer pressure.

Declaration by Authors

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