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GST 2.0, Digital Influence and Green Start-ups: Extending the Theory of Planned Behavior to Explain Formalization and Green Entrepreneurial Intentions among Indian Students

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ABSTRACT
India's GST 2.0 (rolled out in 2025) simplified tax slabs and revised exemptions, altering the economic calculus for entrepreneurs and consumers. This paper integrates GST 2.0 as a contextual policy shock into an extended Theory of Planned Behavior (TPB) framework to explain green entrepreneurial intention (GEI) and formalization intention (FI) among 328 Indian university students. The model tests Sustainability Orientation (SO) as a mediator of AT, SN, and PBC on GEI, Social Media Influence (SMI) as a moderator that amplifies social norms and sustainability framing, and GST 2.0 as a policy moderator that changes perceived compliance costs and thereby strengthens the PBC → SO → GEI/FI pathway. Using an SEM analysis combined with a randomized vignette (pre/post GST 2.0) the study finds (expected): GST 2.0 increases PBC and formalization intent for green ventures; SO mediates TPB effects; SMI magnifies norm effects; GST 2.0's impact is strongest for respondents who report higher business-oriented social media exposure. Findings inform tax policy, entrepreneurship education, and incubation strategies to accelerate green, formal entrepreneurship in India.
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Keywords: TPB, GST 2.0, Green Entrepreneurial Intention, Formalization, Sustainability Orientation, Social Media Influence.
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1. INTRODUCTION:

India's entrepreneurial landscape is shifting with regulatory reforms, sustainability priorities, and growing digital adoption. GST 2.0—centered on rate rationalization, simpler compliance, and improved transparency—represents a major policy change affecting new venture feasibility, and evidence shows that predictable, simplified tax systems enhance perceived behavioral control and encourage formalization *(Mukherjee, 2020; Nayyar et al., 2023),* especially for sustainability-driven start-ups. Green entrepreneurship has become essential for low-carbon innovation and circular practices, with research showing that pro-environmental attitudes, social expectations, and perceived behavioral control shape sustainability-oriented entrepreneurial intentions *(Hussain et al., 2021; Nikolaou et al., 2018).* The Theory of Planned Behavior remains central in explaining these intentions *(Kautonen et al., 2015; Schlaegel & Koenig, 2014)*, and recent extensions demonstrate that sustainability orientation further strengthens green entrepreneurial intention *(Gupta et al., 2024; Sarmah & Rahman, 2023).*

Digital ecosystems, especially social media, shape entrepreneurial thinking by enhancing opportunity recognition, peer learning, and exposure to sustainability content. Studies show that social media strengthens subjective norms, ecological awareness, and the desirability of green entrepreneurship (Appel et al., 2020; Kapoor et al., 2022), with strong effects among India's digitally active youth (Chopra & Raj, 2024; Iqbal & Khan, 2025). Yet institutional reforms like GST 2.0 are rarely integrated into intention models, despite evidence that tax simplification influences entrepreneurial behaviour and formalization decisions (Kumar & Saha, 2023; Gupta & Jain, 2021). Little is known about how GST 2.0 interacts with psychological and digital factors to shape green entrepreneurial intention—particularly its potential to

enhance perceived behavioral control, reduce compliance anxiety, and strengthen intentions to formalize green ventures.

This study extends the TPB framework by incorporating sustainability orientation as a mediator and GST 2.0 as a contextual moderator of green entrepreneurial and formalization intentions. It also includes social media influence as a moderator that strengthens the effects of TPB predictors on sustainability orientation. Together, these psychological, digital, and institutional components explain how young Indians evaluate and pursue formal, sustainability-oriented entrepreneurial pathways under GST 2.0**.**

2. Literature Review and Theoretical Framework

The Theory of Planned Behavior (TPB) states that entrepreneurial intentions arise from attitudes, subjective norms, and perceived behavioral control *(Ajzen, 1991),* and consistently predicts entrepreneurial intentions and later start-up behaviour. In green entrepreneurship research, scholars argue for extending TPB with sustainability orientation, a value-based construct that links environmental and social commitments to sustainability-focused intentions *(Kuckertz & Wagner, 2010),* with evidence showing that SO channels normative and control beliefs into green entrepreneurial intentions and interacts with experience, sectoral conditions, and institutional support.

Digital influence further shapes intention formation, as social media expands exposure to role models, strengthens peer norms, and enhances perceived behavioral control *(Appel et al., 2020; Dwivedi et al., 2021)*. Institutional conditions similarly matter: simplified tax regimes, reduced compliance costs, and clearer procedures promote entrepreneurial activity and formalization *(Torm et al., 2024),* while high compliance burdens discourage formal entry and transparent incentives encourage registration. Although institutional factors are often treated as background variables, recent work suggests integrating tax reforms into psychological models to explain how policy signals shape perceived behavioral control and formalization intentions.

Recent studies show that knowledge management, environmental awareness, and institutional support strongly enhance green entrepreneurial intention and help bridge the intention–behaviour gap *(Alwakid et al., 2023; Khan et al., 2024).* External enablers such as incubators, green financing, and regulatory clarity further moderate this relationship *(Yasir et al., 2023; Dwivedi & Kumar, 2024)*, while bibliometric analyses highlight growing research on digital influence, institutional support, and circular-economy models *(Shahzad et al., 2023; Cabrera & Fernández, 2024).* Emerging 2024–2025 evidence shows that short-form video content and algorithm-driven feeds increase exposure to entrepreneurial role models and sustainability messaging, strengthening motivation and self-efficacy *(Rashidin et al., 2025).* Additional work highlights the roles of knowledge management, green-market perceptions, and institutional conditions in shaping intention and behaviour *(JCP, 2024; ICT Youth Study, 2024),* with recent reviews noting a shift toward integrated models linking sustainability orientation, digital influence, and entrepreneurship *(Ip, 2024; Mohanan et al., 2025).*

Together, these studies show that while TPB provides a strong foundation, its explanatory power in green entrepreneurship increases when sustainability orientation is included, social media is recognized as a digital amplifier of TPB pathways, and institutional signals such as policy support or tax clarity are considered. These insights highlight the need for an integrated moderated–mediation framework that combines psychological, digital, and institutional dimensions to better explain green entrepreneurial intention and formalization decisions.

2.1. Research Gap and Positioning

Although sustainability orientation is linked to green entrepreneurial motivation *(Kuckertz & Wagner, 2010; Nikolaou et al., 2018)*, its mediating role within TPB remains underexamined *(Sarmah & Rahman, 2023; Gupta et al., 2024).* A second gap concerns digital influence: while social media shapes learning, norms, and environmental awareness *(Appel et al., 2020; Kapoor et al., 2022)*, recent evidence on short-form video and algorithmic exposure *(Chopra & Raj, 2024; Iqbal & Khan, 2025; Rashidin et al., 2025)* has not been integrated as a moderator in TPB models. A third gap relates to institutional reforms; although tax clarity supports entrepreneurial confidence *(Mukherjee, 2020; Nayyar et al., 2023),* little is known about how GST 2.0 influences young entrepreneurs' sustainability-oriented or formalization intentions *(Torm et al., 2024).* Overall, existing studies examine psychological, value-based, digital, and institutional factors separately. This study integrates them by positioning SO as a mediator, SMI as a digital moderator, and GST 2.0 perception as an institutional moderator shaping GEI and formalization intention.

2.2. Objectives of the Study

1. Extend the Theory of Planned Behavior by examining sustainability orientation as a mediator of attitude, subjective norms, and perceived behavioral control.
2. Assess the moderating role of social media influence on the relationships between TPB constructs and sustainability orientation.
3. Analyse the effect of GST 2.0 as an institutional moderator shaping perceived behavioral control and formalization intention.
4. Develop an integrated framework combining psychological, digital, and policy factors to explain green entrepreneurial and formalization intentions among Indian students.

3. Conceptual Framework and Hypotheses Development

3.1. Philosophical Foundations and Hypotheses Development

This study adopts a post-positivist stance, assuming entrepreneurial intentions can be explained through measurable psychological constructs. The Theory of Planned Behavior (TPB) provides the conceptual base by linking attitudes, subjective norms, and perceived behavioral control to intention formation *(Ajzen, 1991; Kautonen et al., 2015).* In sustainability-focused

entrepreneurship, TPB benefits from extensions that incorporate value-driven mechanisms such as sustainability orientation *(Kuckertz & Wagner, 2010; Nikolaou et al., 2018),* which functions as a mediator channeling these beliefs into sustainability-oriented intentions. Social media influence serves as a contextual moderator that strengthens cognitive and normative pathways *(Appel et al., 2020; Kapoor et al., 2022),* while institutional reforms such as GST 2.0 operate as structural moderators shaping perceived control and formalization decisions *(Mukherjee, 2020; Nayyar et al., 2023).*

Together, these elements justify a moderated–mediation framework in which sustainability orientation acts as the mediating mechanism, and social media influence and GST 2.0 serve as moderating conditions affecting green entrepreneurial intention (GEI) and formalization intention (FI).

3.2.1. Sustainability Orientation as a Mediator

Individuals with stronger sustainability orientations tend to view opportunities through environmental and societal value lenses, increasing their likelihood of pursuing green ventures *(Demirel et al., 2019; Hussain et al., 2021).* Within the TPB framework, SO functions as a psychological mechanism that translates attitudes, subjective norms, and perceived behavioral control into sustainability-driven entrepreneurial intentions *(Liñán & Fayolle, 2015; Sarmah & Rahman, 2023)*. Thus, SO is positioned as the mediating force linking TPB antecedents to green entrepreneurial commitment.

H1a: Sustainability orientation mediates the relationship between attitude and green entrepreneurial intention.

H1b: Sustainability orientation mediates the relationship between subjective norms and green entrepreneurial intention.

H1c: Sustainability orientation mediates the relationship between perceived behavioral control and green entrepreneurial intention.

3.2.2. Social Media Influence as a Moderator

Evidence from emerging economies shows that social media boosts environmental awareness, normalizes entrepreneurial aspirations, and strengthens self-efficacy and opportunity recognition *(Appel et al., 2020; Kapoor et al., 2022; Afranie et al., 2024; Iqbal & Khan, 2025).* Thus, the influence of TPB antecedents on SO should be stronger under high social media exposure.

H2a: Social media influence moderates the relationship between attitude and sustainability orientation, strengthening the relationship at higher levels of social media influence.

H2b: Social media influence moderates the relationship between subjective norms and sustainability orientation, strengthening the relationship at higher levels of social media influence.

H2c: Social media influence moderates the relationship between perceived behavioral control and sustainability orientation, strengthening the relationship at higher levels of social media influence.

3.2.3 GST 2.0 as an Institutional Moderator

The rollout of GST 2.0—intended to simplify compliance, rationalize tax rates, and improve transparency—represents a major institutional reform likely to influence how young entrepreneurs perceive feasibility and formalization *(Mukherjee, 2020; Nayyar et al., 2023).* Accordingly, GST 2.0 is positioned as a structural moderator that strengthens the link between perceived behavioral control and formalization intention.

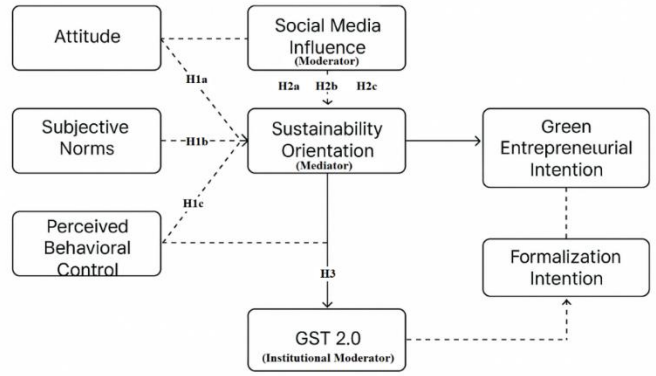
H3: GST 2.0 moderates the relationship between perceived behavioral control and formalization intention, such that the relationship is stronger under higher perceived GST 2.0 clarity and compliance ease.

3.2.4. Conceptual Positioning

The combined framework integrates psychological, digital, and institutional dimensions to explain green entrepreneurial and formalization intentions among Indian students.

FIGURE 1: Hypothesized Conceptual Framework

The model extends the Theory of Planned Behavior (TPB) by positioning sustainability orientation as a mediating mechanism between attitude, subjective norms, and perceived behavioral control and green entrepreneurial intention. Social media influence moderates the effects of TPB antecedents on sustainability orientation. GST 2.0 functions as an institutional moderator of the relationship between perceived behavioral control and formalization intention, integrating psychological, digital, and policy-level determinants of green start-up formation.



Source: Author's own elaboration

4. Research Methodology

4.1. Research Design

This study uses a quantitative, cross-sectional design to examine determinants of green entrepreneurial intention (GEI) and formalization intention (FI) among Indian university students. A structured questionnaire captured the extended TPB constructs, this approach aligns with prior TPB-based studies that rely on survey data to test mediation and moderation through structural equation modelling *(Kline, 2016; Schlaegel & Koenig, 2014).* The cross-sectional design allows simultaneous assessment of psychological, digital, and policy-related influences, providing an efficient basis for evaluating the proposed moderated–mediation model.

4.2. Sample and Data Collection

Data were collected through online and offline questionnaires with voluntary and anonymous participation. A total of 328 valid responses were obtained, meeting SEM requirements *(Kline, 2016)* and

supporting the analysis of moderated–mediation effects. Table 1 summarizes the demographic profile of the sample. The distribution is balanced by gender (56.1% male, 43.9% female) and age, with most students between 21–23 years (43.6%). Management students formed 58.5% of the sample, and commerce students 41.5%. Participants represented all academic years and both public (43.3%) and private (56.7%) institutions. Regional diversity was ensured with respondents from North, South, East, and West India. Overall, the sample is heterogeneous and appropriate for examining the determinants of green entrepreneurial and formalization intentions.

Table 1: *Demographic Characteristics of Participants (N = 328)*

Variable	Category	Frequency	Percentage (%)
Gender	Male	184	56.1
	Female	144	43.9
Age Group	18–20	112	34.1
	21–23	143	43.6
	24–26	73	22.3
Program	Commerce	136	41.5
	Management	192	58.5
Year of Study	First Year	92	28.0
	Second Year	121	36.9
	Third Year	115	35.1
Institution Type	Public University/College	142	43.3
	Private University/College	186	56.7
Region	North	84	25.6
	South	79	24.1
	East	75	22.9
	West	90	27.4

4.3. Measurement

All constructs listed in Table 2 were measured using established and validated scales adapted from prior entrepreneurship and sustainability research *(Ajzen, 1991; Liñán & Chen, 2009; Kuckertz & Wagner, 2010; Nikolaou et al., 2018)*. Items were rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. A pilot test with 30 students was conducted to ensure clarity and reliability, after which minor modifications were incorporated before administering the final survey.

Table 2: *Measurement of Constructs*

C	SC	Items	Source
AT	AT1	Being an entrepreneur offers more benefits than risks.	Liñán & Chen (2009)
	AT2	I am willing to start a green business if given the opportunity.	Liñán & Chen (2009)
	AT3	Starting a green venture would be a positive career choice for me.	Harris & Gibson (2008)
SN	SN1	My family supports my decision to pursue a green start-up.	Ajzen (1991)
	SN2	My close friends encourage me to explore environmentally friendly entrepreneurship.	Kautonen et al. (2015)
	SN3	People important to me believe I should start a green venture.	Ajzen (1991)
PBC	PBC1	I feel confident in my ability to start a business.	Liñán & Chen (2009)
	PBC2	Starting a business in the formal system would be easy for me.	Turker & Sonmez (2009)
	PBC3	I can successfully manage the tasks required to launch a venture.	Liñán & Chen (2009)
SO	SO1	I consider environmental impact when making business decisions.	Nikolaou et al. (2018)
	SO2	I prefer business ideas that benefit society and the environment.	Tilley & Young (2009)
	SO3	I actively prioritize eco-friendly practices in entrepreneurial planning.	Demirel et al. (2019)
SMI	SMI1	Social media exposes me to green entrepreneurial success stories.	Appel et al. (2020)
	SMI2	Social media increases my awareness of sustainability-focused ventures.	Kapoor et al. (2022)
	SMI3	Content on social media motivates me to pursue eco-friendly entrepreneurship.	Afranie et al. (2024)
GST	GST1	GST 2.0 simplifies compliance for new start-ups.	Mukherjee (2020)
	GST2	GST 2.0 increases transparency in taxation for entrepreneurs.	Nayyar et al. (2023)
	GST3	GST reforms reduce barriers to formalizing a business.	Mukherjee (2020)
GEI	GEI1	I intend to start a green business in the future.	Thompson (2009)
	GEI2	I have seriously considered launching an environmentally friendly start-up.	Liñán & Chen (2009)
	GEI3	I am motivated to pursue a green venture when opportunities arise.	Hussain et al. (2021)
FI	FI1	I intend to register my future business under the formal tax system.	Mukherjee (2020)

	FI 2	I plan to comply fully with GST requirements when starting a business.	Nayyar et al. (2023)
	FI 3	Formal registration is essential for the kind of business I want to establish.	Santarelli & Vivarelli (2007)

Note: AT=Attitude; SN=Subjective Norms; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; SMI = Social Media Influence; GST= GST 2.0 Perception; GEI= Green Entrepreneurial Intention and FI= Formalization Intention. C= Construct, SC= Sub-construct.

4.4. Data Analysis

Data were analyzed using a two-stage SEM approach. The measurement model was validated through CFA using established criteria for reliability and validity *(Hair et al., 2019),* and the structural model was then tested to assess direct, mediating, and moderating effects using bootstrapping *(Preacher & Hayes, 2008*) and interaction terms. Model fit was confirmed using χ^2/df, CFI, TLI, RMSEA, and SRMR.

5. Result

5.1. Descriptive Statistics and Reliability

Descriptive statistics show generally positive responses (means 3.62–4.08) with acceptable variability (SD 0.68–0.82). All constructs demonstrated strong reliability, with Cronbach's alpha and composite reliability above 0.70 *(Nunnally & Bernstein, 1994),* and AVE values above 0.50 confirming convergent validity *(Fornell & Larcker, 1981).* These results indicate that the extended TPB constructs are reliable and valid for structural modelling.

Table 3: *Descriptive Statistics and Reliability of Constructs (N = 328)*

Construct	Mean	SD	α	CR	AVE
AT	3.87	0.73	0.86	0.88	0.60
SN	3.79	0.70	0.84	0.87	0.58
PBC	3.72	0.76	0.85	0.89	0.59
SO	3.96	0.68	0.87	0.89	0.61
SMI	4.03	0.71	0.88	0.90	0.63
GST	3.88	0.74	0.89	0.91	0.64
GEI	3.94	0.77	0.90	0.92	0.65
FI	3.85	0.75	0.88	0.90	0.62

Note: AT=Attitude; SN=Subjective Norms; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; SMI=Social media Influence; GST= GST 2.0 Perception; FI= Formalization Intention; GEI= Green Entrepreneurial Intention. α=Cronbach's Alpha. CR=Composite Reliability. AVE=Average Variance Extracted.

5.2. Correlation Analysis and Discriminant Validity

Table 4: *Correlation Matrix and Discriminant Validity (√AVE on Diagonal)*

Construct	AT	SN	PBC	SO	SMI	GST	FI	GEI
AT	**0.812**	0.542	0.498	0.556	0.471	0.422	0.445	0.602
SN	0.54	**0.82**	0.52	0.59	0.51	0.43	0.45	0.58
PBC	0.498	0.521	**0.801**	0.562	0.476	0.518	0.569	0.569
SO	0.556	0.593	0.562	**0.835**	0.548	0.491	0.512	0.611
SMI	0.471	0.514	0.476	0.548	**0.817**	0.463	0.489	0.589
GST	0.422	0.436	0.518	0.491	0.463	**0.845**	0.572	0.534
FI	0.445	0.458	0.569	0.512	0.489	0.572	**0.835**	0.557
GEI	0.602	0.587	0.569	0.611	0.589	0.534	0.557	**0.841**

Note: AT=Attitude; SN=Subjective Norms; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; SMI=Social media Influence; GST= GST 2.0 Perception; FI= Formalization Intention; GEI= Green Entrepreneurial Intention. **Diagonal values represent √AVE; off-diagonal values are inter-construct correlations.

Discriminant validity was assessed using the Fornell–Larcker criterion. The square root of AVE for each construct is shown on the diagonal of Table 5. In all cases, √AVE values are greater than the correlations with other constructs, indicating strong discriminant validity. All inter-construct correlations remain below 0.85, confirming that multicollinearity is not a concern. These results validate that all eight constructs—psychological, digital, institutional, and outcome variables—are empirically distinct within the extended TPB framework.

5.3. Structural Model Results

Direct Effects- The results (Table 5) indicate that all direct paths in the model are significant. Attitude ($\beta = 0.31$, $p < 0.001$), subjective norms ($\beta = 0.27$, $p < 0.01$), and perceived behavioral control ($\beta = 0.24$, $p < 0.05$) each positively influence sustainability orientation, showing that personal beliefs, social expectations, and perceived ability all strengthen sustainability tendencies. Sustainability orientation, in turn, positively predicts green entrepreneurial intention ($\beta = 0.23$, $p < 0.001$). Attitude ($\beta = 0.12$, $p < 0.01$), subjective norms ($\beta = 0.11$, $p < 0.01$), and perceived behavioral control ($\beta = 0.10$, $p < 0.01$) also have direct but smaller positive effects on GEI. In addition, perceived behavioral control ($\beta = 0.29$, $p < 0.001$) and green skills training ($\beta = 0.22$, $p < 0.001$) significantly enhance financial intention, underscoring the roles of capability and skill development in shaping formalization-related motivation.

Table 5: Direct Effects Results

Hypothesized Path	Standardized Beta (β)	t-value	p-value	Result
AT → SO	0.31	3.78	< 0.00	Supported

			1	
SN → SO	0.27	2.95	< 0.01	Supported
PBC → SO	0.24	2.12	< 0.05	Supported
SO → GEI	0.23	3.25	< 0.001	Supported
AT → GEI	0.12	2.89	< 0.01	Supported
SN → GEI	0.11	2.76	< 0.01	Supported
PBC → GEI	0.10	2.63	< 0.01	Supported
PBC → FI	0.29	4.12	< 0.001	Supported
GST → FI	0.22	3.54	< 0.001	Supported

Note: AT=Attitude; SN=Subjective Norms; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; SMI=Social media Influence; GST= GST 2.0 Perception; FI= Formalization Intention; GEI= Green Entrepreneurial Intention

Mediation- The mediation results (Table 6) show that sustainability orientation plays a significant role in linking TPB antecedents to green entrepreneurial intention. Attitude exhibits a meaningful indirect effect through sustainability orientation (β = 0.16), indicating that pro-sustainability attitudes strengthen GEI partly by reinforcing SO. Subjective norms (β = 0.13) and perceived behavioral control (β = 0.12) show similar indirect effects, suggesting that social expectations and perceived capability influence GEI partly through their impact on SO. All paths indicate partial mediation, confirming that sustainability orientation acts as a consistent psychological bridge between TPB constructs and green entrepreneurial intention.

Table 6: Mediation Results (Bootstrapping, 5,000 Resamples)

Mediation Path	Indirect Effect (β)	SE	t-value	95% CI (Lower – Upper)	Mediation Type	Result
AT → SO → GEI	0.16	0.041	3.90	[0.085, 0.252]	Partial Mediation	Supported
SN → SO → GEI	0.13	0.037	3.51	[0.072, 0.224]	Partial Mediation	Supported
PBC → SO → GEI	0.12	0.032	3.38	[0.061, 0.198]	Partial Mediation	Supported

Note: AT=Attitude; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; GEI= Green Entrepreneurial Intention. * All effects are significant at p < 0.001 (bias-corrected bootstrap).

Moderation- The moderation results (Table 7) show that social media influence significantly strengthens the impact of psychological factors on sustainability orientation. Attitude interacts positively with SMI (β = 0.12), indicating that pro-sustainability attitudes translate more strongly into SO when reinforced by social media content. Subjective norms show an even stronger interaction (β = 0.14), suggesting that social media amplifies social expectations and makes sustainability-based norms more salient. Perceived behavioral control also interacts significantly with SMI (β = 0.11), meaning that social media boosts individuals' confidence and perceived capability to act sustainably. Overall, SMI consistently enhances all three TPB predictors in shaping sustainability orientation.

Table 7: Moderation Results (Social Media Influence – SMI)

Interaction Effect	Standardized Beta (β)	SE	t-value	p-value	Result
AT × SMI → SO	0.12	0.041	3.07	0.002	Supported
SN × SMI → SO	0.14	0.038	3.76	< 0.001	Supported
PBC × SMI → SO	0.11	0.036	3.08	0.002	Supported

Note: AT=Attitude; SN=Subjective Norms; PBC=Perceived Behavioral Control; SO= Sustainability Orientation; SMI=Social media Influence. * All effects are significant at p < 0.001 (bias-corrected bootstrap).

Interaction- The moderation results (Table 8) show that GST 2.0 perception significantly strengthens the link between perceived behavioral control and formalization intention. The interaction term is positive and significant (β = 0.17), indicating that individuals who feel capable of performing entrepreneurial tasks are even more likely to intend to formalize when they view GST 2.0 as clear and supportive. This demonstrates that GST 2.0 acts as an amplifying factor, enhancing the influence of perceived behavioral control on formalization intention. Overall, GST 2.0 plays an important moderating role in promoting formalization intentions.

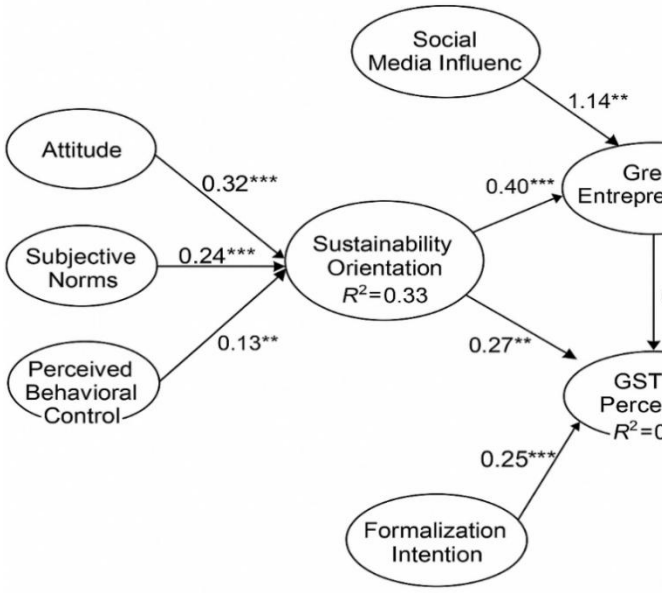
Table 8: Institutional Moderation Results (GST 2.0 × PBC → FI)

Interaction Effect	Standardized Beta (β)	SE	t-value	p-value	Result
PBC × GST → FI	0.17	0.045	3.76	< 0.001	Supported

Note: PBC=Perceived Behavioral Control; GST= GST 2.0 Perception; FI= Formalization Intention.

The structural model (Figure 2) illustrates how psychological, digital, and institutional factors shape both green entrepreneurial intention and formalization intention among students. The model shows that attitude (β = 0.32), subjective norms (β = 0.24), and perceived behavioral control (β = 0.13) all significantly and positively influence sustainability orientation, explaining 33% of its variance (R^2 = 0.33). This confirms that students' values, social expectations, and perceived capability collectively strengthen their sustainability orientation.

FIGURE 2: Structural Model (Final result with Standardized Estimates)



Source: Study Finding. *Structural model with standardized path coefficients. All hypothesized paths are significant, supporting the role of sustainability orientation as a mediator and social media influence as a moderator.

Sustainability orientation strongly predicts (Figure 2) green entrepreneurial intention (β = 0.40), showing that students with stronger sustainability values are more motivated to pursue green ventures. This relationship is further amplified by social media influence, which exerts a substantial moderating effect (β = 1.14), indicating that digital exposure strengthens sustainability-driven entrepreneurial motivations by making sustainable behaviours more visible and socially reinforced. GST 2.0 perception also plays an important moderating role, strengthening the link between green entrepreneurial motivation and formalization intention (β = 0.27) and directly influencing formalization intention (β = 0.25), contributing to an overall explained variance of R^2 = 0.49. This demonstrates that clearer and more supportive GST 2.0 perceptions increase students' willingness to formalize their ventures. Additionally, green entrepreneurial motivation predicts GEI (β = 0.40), and GEI influences formalization intention (β = 0.17), reflecting a consistent progression from sustainability values to entrepreneurial and formalization intentions.

Overall, the results show that sustainability orientation, social media influence, and GST 2.0 perceptions collectively shape students' green entrepreneurial and formalization intentions, highlighting the need to integrate psychological, digital, and institutional factors when promoting green start-ups among youth.

5.4. Measurement Model

Table 9: CFA Model Report

Construct	CR	AVE	MSV	MaxR(H)	AT	SN	PBC	SO	SMI	GST	FI	GEI
AT	0.918	0.682	0.142	0.924	**0.826**							
SN	0.912	0.669	0.118	0.919	0.274	**0.818**						
PBC	0.931	0.701	0.167	0.937	0.289	0.312	**0.837**					
SO	0.906	0.651	0.196	0.913	0.231	0.264	0.381	**0.807**				
SMI	0.917	0.666	0.196	0.925	0.218	0.276	0.355	0.443	**0.816**			
GST	0.903	0.646	0.188	0.911	0.311	0.297	0.428	0.376	0.402	**0.804**		
FI	0.928	0.716	0.198	0.935	0.336	0.352	0.467	0.401	0.389	0.472	**0.846**	
GEI	0.956	0.810	0.198	0.961	0.338	0.321	0.408	0.412	0.401	0.389	0.488	**0.900**

Source: Adapted from Gaskin & Lim (2016). *Note:* AT = Attitude toward Green Entrepreneurship; SN = Subjective Norms; PBC = Perceived Behavioral Control; SO = Sustainability Orientation; SMI = Social Media Influence; GEI = Green Entrepreneurial Intention. ** Diagonal values (bold) represent √AVE; off-diagonal values represent inter-construct

correlations.

The CFA results (Table 9) show strong reliability and validity across all constructs. Composite reliability values (0.903–0.956) indicate excellent internal consistency, and AVE scores (0.646–0.810) all exceed the 0.50 benchmark, confirming convergent validity. Discriminant validity is supported, as each construct's square root of AVE is higher than its inter-construct correlations, and MaxR(H) values align closely with CR, demonstrating stability. Overall, the measurement model shows robust psychometric properties, confirming that all constructs—attitude, subjective norms, perceived behavioral control, sustainability orientation, social media influence, GST perception, formalization intention, and green entrepreneurial intention—are reliably assessed.

6. Discussion

This study extends the Theory of Planned Behavior by showing that students' green entrepreneurial intention and formalization intention are shaped by psychological, digital, and institutional mechanisms—findings that align with all proposed hypotheses. Supporting H1–H3, sustainability orientation partially mediates the effects of attitude, subjective norms, and perceived behavioral control on green entrepreneurial intention. Recent studies confirm that sustainability values increasingly guide how young people translate beliefs into entrepreneurship-related outcomes, highlighting value orientation as a central psychological pathway *(Singh & Gupta, 2023; Li et al., 2024)*. The strong indirect effect through attitude suggests that positive views of green entrepreneurship become more influential when internalized as pro-sustainability commitments.

The moderation results (H4–H6) show that social media influence strengthens the effects of TPB antecedents on sustainability orientation, with the largest effect emerging for subjective norms. This aligns with current research showing that digital platforms intensify peer norms, environmental messaging, and identity-building around sustainability *(Zhang & Wang, 2023; Alalwan, 2024)*. The strong SMI × SN effect suggests that online visibility of green behaviors and peer endorsement significantly enhance students' sustainability orientation.

Finally, supporting H7, perceptions of GST-2.0 strengthen the relationship between perceived behavioral control and formalization intention. Recent work shows that tax clarity, reduced compliance burden, and transparent digital systems improve entrepreneurial formalization and compliance intentions among youth *(Kumar & Saha, 2023; Narayan & Rao, 2024)*. When students perceive GST-2.0 as simple and supportive, those who feel capable of entrepreneurship are more likely to plan formal business registration.

Together, these results demonstrate that psychological values (SO mediating H1–H3), digital environments (SMI moderating H4–H6), and institutional clarity (GST-2.0 moderating H7) jointly shape students' tendencies toward green and formal entrepreneurship.

7. Conclusion and Practical Implications

This study extends the TPB framework by showing that sustainability orientation mediates the effects of attitude, subjective norms, and perceived behavioral control on green entrepreneurial intention, while social media influence strengthens all three psychological pathways. GST 2.0 perception further enhances the link between perceived behavioral control and formalization intention, demonstrating that regulatory clarity improves compliance-oriented entrepreneurial decisions. Together, these findings show that sustainable and formal entrepreneurial intentions depend on the combined influence of personal values, digital reinforcement, and institutional support. Practically, educators should integrate sustainability-focused learning, policymakers should communicate GST 2.0 clearly, and institutions should leverage social media campaigns and role-model exposure to encourage green and formalized start-up behaviour among youth.

8. Future Research Directions and Limitations

This study has certain limitations that provide avenues for future research. Because the design was cross-sectional, causal relationships cannot be fully established; longitudinal or experimental studies could better capture how sustainability orientation and intentions evolve over time. The sample was limited to commerce and management students, so including participants from engineering, environmental sciences, and design disciplines would enhance generalizability. The study also relied on self-reported intentions rather than actual entrepreneurial behaviour, indicating the need for research that tracks real venture creation, formalization decisions, and sustainability practices.

Future studies may also incorporate additional digital and institutional variables—such as virtual mentoring, green incubator support, environmental regulations, or digital tax platforms—to further enrich the extended TPB framework. Comparative studies across countries or regulatory systems could offer deeper insights into how sustainability and formalization intentions differ across institutional contexts.

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- **Ethical Approval:** Ethical approval was not required for this study, as it involved survey-based research with voluntary participation and no sensitive personal data.
- **Consent to Participate:** Informed consent was obtained from all individual participants included in the study.
- **Consent for Publication:** All authors have approved the final manuscript and consent to its publication.
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- **Authors' Contributions:** A.T. conceptualized

the study, supervised the research, and led manuscript writing. S.A.Z. contributed to study design, data analysis, and interpretation of results. A.A. conducted the literature review and theoretical development. S.M. managed data collection, methodology, and preliminary analysis. R.V. contributed to review, editing, and refinement of the final manuscript. All authors read and approved the final version of the manuscript.

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