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Gen Z's E-Commerce Engagement in Sustainable Tourism: A Mixed-Method Approach Based on the Theory of Planned Behaviour and the Value-Belief-Norm Model

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Abstract

This research investigates Generation Z's e-commerce behaviour regarding sustainable tourism practices by incorporating the Theory of Planned Behaviour and the Value-Belief-Norm model. A mixed-method approach was employed, integrating quantitative data from 400 surveys analyzed by structural equation modelling and confirmatory factor analysis with qualitative insights from 10 interviews. The findings indicate that internal drivers, including a commitment to sustainability and personal values, are more influential than external factors such as social norms in promoting sustainable behaviour. Financial limitations and systemic restrictions were recognized as impediments, but transparency and confidence in e-commerce platforms strengthen sustainable aspirations. By augmenting the TPB framework with intrinsic values from the VBN model, the study offers pragmatic insights for cultivating trust, overcoming obstacles, and employing educational programs to harmonize consumer values with sustainability objectives. This integration provides a new perspective on sustainable behaviour, assisting businesses and policymakers in advancing sustainable tourism practices.

Keywords Generation Z; e-commerce behaviour; sustainable tourism; intrinsic motivation; systemic barriers; theory of planned behaviour; value-belief-norm model

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Introduction

The growing need for sustainable development makes e-commerce and sustainable tourism a critical area of study. Generation Z, known for its digital fluency and environmental awareness, is crucial in transforming tourism consumption patterns and promoting sustainability (Entina et al., 2021). Their behaviour is important on e-commerce platforms, where decision-making is influenced by a complex interaction of psychological factors, including social influence, moral considerations like environmental ethics, and normative aspects like sustainability standards (Nadeem et al., 2021). The Theory of Planned Behaviour (TPB) and Value-Belief-Norm (VBN) model are useful in understanding consumer and pro-environmental behaviour (Ateş, 2020), but they often overlook the interconnected factors that influence sustainability-orientated intentions (Han, 2015). However, few studies have used a comprehensive framework to investigate the complex motivations driving e-commerce behaviour in sustainable tourism. Commitment to sustainability and perceived moral obligations are underutilised in predicting young consumers' sustainable intentions (Chunhua et al., 2024; Shuvo & Islam, 2024). The study employs confirmatory factor analysis and structural modelling to integrate the TPB with the VBN framework. It emphasizes the significance of educating young consumers regarding their sustainability potential, as this can enhance their propensity to prioritise sustainability in decision-making. This study found that intrinsic factors, rather than external influences, determine Generation Z's sustainable behaviour, as demonstrated by the significant predictors of sustainable intentions, beliefs, trust, and behaviour. This indicates that the TPB, grounded in subjective norms, has restricted applicability in this context. Literature from related fields suggests that understanding these factors will make it easier to tailor interventions and communications to more effectively encourage sustainable practices among this group (Chang et al., 2024). However, the moderate reliability scores of constructs such as Aspiration to Act Responsibly (AAR) and Concern for Sustainability (CFS) indicate that the motivational framework is intricate and necessitates additional examination. The results indicate that attitudes and personal norms affect sustainable intentions. Furthermore, the analysis findings refuted Hypothesis 11, suggesting that Generation Z interprets external pressures differently from intrinsic motivation. This discovery challenges the belief that social norms determine pro-environmental behaviour. It underscores the necessity for theoretical advancement that integrates individual-centered values with structural influences to foster sustainable behaviour. The findings call for a rethinking of subjective norms in sustainable behaviour, as well as an understanding of the relationship between e-commerce and sustainable tourism. By emphasising the relationship between personal values and sustainable practices, young consumers can make more environmentally responsible decisions. The research may inform the development of educational initiatives and marketing strategies that promote sustainable consumption among young consumers.

Theoretical background

The relationship between sustainable tourism and e-commerce is becoming more evident as digital transformation influences consumer behaviour toward sustainable practices (Nafi & Ahmed, 2017). Generation Z consumers appreciate firms that align

with their beliefs and environmental efforts (Al-Sharafi et al., 2023). By incorporating environmentally sustainable practices into operations and marketing strategies, firms can differentiate themselves in the e-commerce industry and meet the growing demand for socially responsible products (Choi et al., 2015). Understanding psychological motives and structural barriers is crucial for businesses to align with ethical and environmental principles. The TPB and VBN model offer a comprehensive framework for understanding these factors, enabling sustainable tourism service operators to optimise e-commerce strategies and meet environmental concerns (Batool et al., 2024).

The TPB and Generation Z's sustainable e-commerce practices

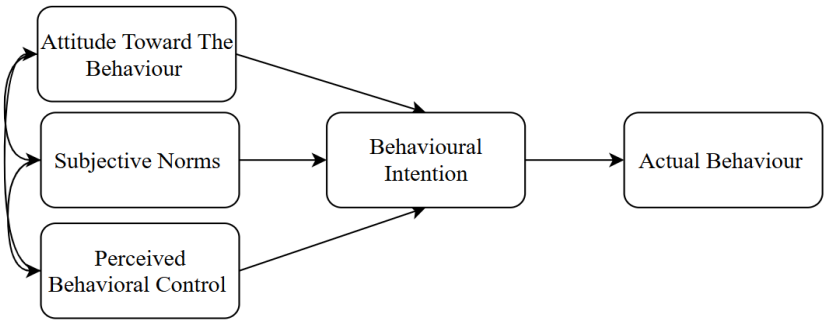

Figure 1. TPB (Ajzen, 1991)

The TPB explores human behaviour by emphasizing attitudes, subjective norms, and perceived behavioural control (Jalilvand & Samiei, 2012). It is especially pertinent in sustainable tourism, as Generation Z's e-commerce behaviours correspond with environmental objectives (Mazanec & Harantová, 2024). Attitudes profoundly affect sustainable consumer behaviour, with digital information availability and social media shaping decision-making processes. Subjective norms, indicative of societal pressures, also exert influence. Generation Z's dependence on personal values often surpasses conventional assumptions, challenging the predictive validity of subjective norms (Nafi & Ahmed, 2019). Perceived behavioural control signifies Generation Z's assurance in embracing sustainable behaviours. The availability of sustainable items and e-commerce platforms may improve this perspective. Nonetheless, budgetary limitations and the absence of viable alternatives may diminish this feeling of control, requiring extensive systemic remedies (Quintal et al., 2010).

The Value-Belief-Norm (VBN) model and Generation Z's sustainable e-commerce practices

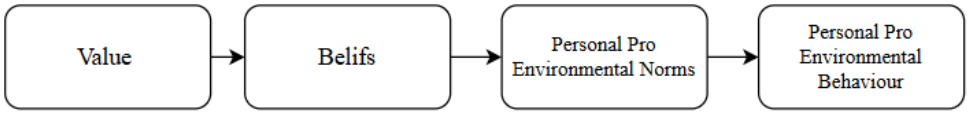

Figure 2. Stern et al.'s (1999) Value-Belief-Norm model

The VBN Model is a crucial framework for understanding human behaviour, emphasizing attitudes, subjective norms, and perceived behavioural control (Hwang, 2020). It is particularly relevant in sustainable tourism, where Generation Z's e-commerce behaviours align with environmental goals. Attitudes, subjective norms, and perceived behavioural control are all crucial in shaping sustainable consumer behaviour (Chunhua et al., 2023). However, the reliance on personal values and perceived behavioural control may not always be effective. The presence of sustainable products and trust in e-commerce platforms can enhance this orientation, but financial constraints and lack of sustainable alternatives may reduce control, necessitating comprehensive systemic solutions (Sudirjo et al., 2023).

Hypothesis development

Grounded in the robust frameworks of the TPB and the VBN model in assessing behavioural intentions related to sustainable practices, and integrating essential constructs such as moral norms, pro-environmental behaviour, self-identity, place attachment, and environmental knowledge, the subsequent hypotheses have been formulated. These hypotheses aim to provide a deeper understanding of the factors influencing individuals' decisions toward sustainable practices, considering both internal beliefs and external constraints. The proposed hypotheses offer a holistic approach to addressing the complex interplay between individual behaviours and environmental sustainability by incorporating various psychological and sociological perspectives.

Commitment to sustainability and attitudes

Individuals' commitment to sustainability strongly influences their perceptions of sustainable tourism, reflecting their alignment with ecologically responsible behaviours. According to Nina & Young-Sook (2013), tourists deeply committed to sustainability are more likely to support environmentally beneficial actions, such as participating in eco-friendly vacations. This is consistent with research suggesting that such commitments strengthen individuals' ties to sustainability, thereby elevating their likelihood

of engaging in environmentally responsible actions (Chiu et al., 2014). The commitment catalyses the cultivation of favorable attitudes toward ecotourism.

H1: Commitment to sustainability significantly and positively influences individuals' attitudes toward adopting sustainable tourism practices.

Concern for sustainability, attitude, and social norms

The concern for sustainability reflects a heightened awareness of environmental issues and their associated social ramifications. Research consistently indicates that concern for the environment plays a significant role in shaping pro-environmental attitudes and behaviours (Yamin et al., 2019). This concern extends beyond individual viewpoints, influencing the understanding of social norms and reinforcing the perception that societal standards endorse sustainable practices (Heeren et al., 2016). Research suggests that individuals with pronounced environmental concerns are more likely to perceive sustainability as a collective societal objective, thereby impacting their behavioural intentions (Poškus, 2016).

H2: Concern for sustainability significantly and positively influences individuals' attitudes toward adopting sustainable tourism practices.
H3: Concern for sustainability significantly and positively influences individuals' perceived social norms regarding sustainable tourism practices.

Moral obligation and social norms

The focus on sustainability reflects a growing awareness of environmental challenges and their social implications. This awareness leads to pro-environmental attitudes and behaviours, making sustainable tourism practices more socially responsible and essential (Chen, 2020). The understanding of moral responsibility and compliance with societal standards motivates individuals to participate in sustainable tourism practices. Empirical studies show that individuals with significant environmental concerns view sustainability as a shared societal goal, which influences their behavioural intentions (Müller et al., 2021). This issue transcends personal perspectives and shapes the comprehension of social norms.

H4: Perceived moral obligation significantly and positively influences an individual's perceived social norms regarding sustainable tourism practices.

Eagerness to pay a premium, perceived customer effectiveness, and perceived behavioural control

Opting to pay a premium signifies an individual's willingness to invest additional resources in environmentally sustainable options. This willingness enables consumers to engage in sustainable decision-making, even in the face of financial constraints (Intayos et al., 2021). This enhances consumers' assurance in their ability to regulate their behaviour. Individuals with a focus on sustainability exhibit a greater propensity to purchase eco-friendly products (Hoque et al., 2024). The acquisition of increasingly sustainable products may contribute positively to environmental preservation and foster a more ecologically responsible economy. Organizations that adopt sustainable practices are likely to cultivate consumer loyalty and satisfaction by aligning with the values of their clientele (Kidwell & Jewell, 2003). Individuals within this demographic perceive their expenditures as a means of endorsing environmental initiatives.

H5: Eagerness to pay a premium significantly and positively influences individuals perceived behavioural control over engaging in sustainable tourism practices.

The belief that individual efforts are instrumental in advancing broader environmental goals is reflected in the understanding of consumer effectiveness (Garrido-Morgado et al., 2016). The importance of perceived control is highlighted by the research evidence indicating that consumers who hold the belief that their actions exert a considerable influence are more inclined to adopt sustainable practices (Kim et al., 2013). The perception in question can be significantly bolstered by e-commerce platforms that adeptly illustrate the concrete outcomes of consumer choices, thus promoting more sustainable practices.

H6: Perceived customer effectiveness significantly and positively influences individuals perceived behavioural control over engaging in sustainable tourism practices.

Attitudes, social norms, and perceived behavioural control

The belief that individual efforts contribute meaningfully to the advancement of broader environmental goals is encapsulated in the notion of consumer effectiveness (Hardin-Fanning & Ricks, 2017). The importance of perceived control is highlighted by a substantial body of research indicating that consumers who hold the belief that their actions exert a considerable influence are more inclined to adopt sustainable practices. This perception can be significantly bolstered by e-commerce platforms that effectively illustrate the concrete outcomes of consumer choices, thus promoting more sustainable practices.

H7: A positive attitude toward sustainable tourism practices has a significant and direct positive effect on individuals' intention to engage in sustainable tourism practices.
H8: Perceived social norms regarding sustainable tourism practices have a significant and direct positive effect on individuals' intention to engage in sustainable tourism practices.

H9: Perceived behavioural control over sustainable tourism practices has a significant and direct positive effect on individuals' intention to engage in sustainable tourism practices.

Mediating roles of attitudes, norms, and perceived behavioural control
The mediating roles of attitudes, norms, and perceived behavioural control are crucial for understanding the indirect pathways that link psychological drivers to sustainable intentions. The commitment to sustainability exerts an indirect influence on intentions through the framework of attitudes (Wan & Shen, 2015), while the concern for sustainability functions as a mediator, operating through both attitudes and social norms (Johe & Bhullar, 2016). Similarly, moral obligation exerts an indirect influence on behaviour through its effect on social norms, thereby highlighting the complex interplay between values and actions.

H10: Commitment to sustainability indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by their attitude.
H11: Concern for sustainability indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by their attitude.
H12: Concern for sustainability indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by perceived social norms.
H13: Perceived moral obligation indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by perceived social norms.

Additionally, the eagerness to pay a premium and the perceived effectiveness of the customer both have substantial indirect impacts on behavioural intentions, mediated by perceived behavioural control (Hao et al., 2019). Sustainable platforms improve affordability and highlight the effect on consumers by strengthening these mediating pathways (Rana et al., 2024).

H14: Eagerness to pay a premium indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by perceived behavioural control.
H15: Perceived customer effectiveness indirectly and positively affects individuals' intention to engage in sustainable tourism practices, mediated by perceived behavioural control.

Methodology
This study utilised an abductive approach to dynamically combine theory and research, ensuring a thorough comprehension of the research topic. The authors first considered a deductive approach centred on hypothesis formation and data analysis, which would have corresponded to a quantitative method. Upon reviewing pertinent literature and theories, they acknowledged that this approach could impede the investigation of novel concepts. Thus, a mixed-method strategy was implemented to fill the research gap via two interrelated studies. The initial phase employed a quantitative methodology, examining 15 hypotheses over 9 latent variables to investigate correlations and dynamics. The second phase utilised a narrative qualitative methodology, gathering data through Key Informant Interviews (KII) and in-depth interviews to yield more comprehensive insights. Ethical standards, encompassing informed consent and participant confidentiality, were rigorously adhered to, with data collection emphasising real-world relevance and authenticity. The study combines quantitative breadth with qualitative depth, providing a comprehensive picture of consumer motivations, thereby addressing the research gap and yielding substantial insights. Method 1 employed the TPB and the VBN theory as foundational frameworks. A systematic survey, administered both online and offline, garnered 430 responses via random sampling, with 400 valid responses analysed following data cleansing. A pilot study involving 60 participants confirmed the survey's clarity and reliability, resulting in essential modifications. The sample size, calculated using Cochran's method and the criteria established by Singh & Masuku (2014), ensures a ±4% margin of error at a 95% confidence level. Key constructs such as attitudes, subjective norms, perceived behavioural control, values, norms, and ecological worldviews were analysed through descriptive statistics, confirmatory factor analysis (CFA), structural equation modelling (SEM), and mediation analysis using SPSS and JASP software, with a 95% confidence interval and 2000 bootstrap samples for each analysis. Each dimension was evaluated using a series of indicators rated on a five-point Likert scale, from 1 (Strongly Disagree) to 5 (Strongly Agree). A preliminary evaluation was performed to enhance the questionnaire, ensuring the clarity and relevance of the items. The paper evaluates the conceptual model and path relationships using SEM. Marketers, tourism managers, and strategic planners employ SEM to analyse complex relationships (Hair et al., 2012). Hair et al., (2014) suggest using PLS-SEM to forecast a complicated model without distribution assumptions since it can handle non-normal observations. While CB-SEM requires a lot of data, PLS-SEM is more flexible and yields similar findings. For these advantages, the article assessed the conceptual framework using PLS-SEM.

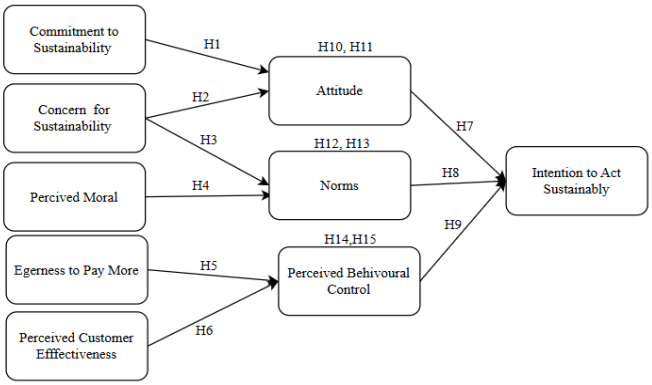

Figure 3. Conceptual framework

Method 2 entailed a qualitative data analysis that was performed using thematic analysis with NVivo software to enrich the study's constructs, yielding deeper insights into behavioural and normative dimensions. Three KII and seven in-depth interviews were conducted using a purposive sampling method. A semi-structured questionnaire facilitated the interviews, allowing for in-depth conversations about participants' motives, attitudes, and obstacles related to sustainable practices. Each interview lasted roughly 35 to 40 minutes, providing substantial contextual information that greatly influenced the study's outcomes. These qualitative insights provided a detailed comprehension of behaviours and beliefs concerning sustainability, enhancing the quantitative findings and augmenting the overall research.

Analysis

Demographic profiles

The demographic profile in Table 1 of Study 1 with the research sample (N = 400) reveals a balanced gender distribution, with 49.0% male (n = 204) and 51.0% female (n = 196). The predominant age group is 24-26 years (38.0%, n = 152), followed by 27-32+ years (25.8%, n = 103), 17-20 years (19.5%, n = 78), and 21-23 years (16.8%, n = 67), highlighting a predominantly young adult population. Most respondents are single (70.5%, n = 282), and A-Level education is the most common qualification (42.3%, n = 169), followed by postgraduate (23.3%, n = 93), undergraduate (21.0%, n = 84), and graduate education (13.5%, n = 54).

Table 1: Demographic characteristics (Method 1)

Characteristics	N=400	Percentage
Gender		
Male	204	49.0
Female	196	51.0
Age		
17-20	78	19.5
21-23	67	16.8
24-26	152	38.0
27-32	103	25.8
Marital Status		
Married	118	29.5
Unmarried	282	70.5
Education Level of the respondent		
A Level	169	42.3
Undergraduate	84	21.0
Graduate	54	13.5
Postgraduate	93	23.3

Table 2 demonstrates the varied demographics of Study 2 participants, consisting of 10 individuals from Bangladesh, Sweden, Greece, England, and the USA, including six males and four females aged 22 to 35. Participants consisted of environmental studies and tourism students (4), professionals such as a logistics operator, administrative retail personnel, head chef, and eco-friendly goods vendors (5), as well as a family-oriented tourist (1). This diversity ensured profound insights from both scholarly and practical viewpoints.

Table 2: Demographic characteristics (Method 2)

Participant No	Nationality	Gender	Age	Type of Participant
1	Bangladeshi	Female	23	Student of Environmental Studies (In-depth-Interview)
2	Sweden	Male	25	Logistic operator (In-depth-Interview)
3	Greek	Male	27	Administrative Retail (In-depth Interview)
4	Bangladeshi	Male	23	Tourism Student (In-depth Interview)
5	Bangladeshi	Female	22	Tourism Student (In-depth Interview)
6	Bangladeshi	Female	26	Eco-friendly product seller (KII)
7	Bangladeshi	Male	23	Student of Environmental Studies (In-depth-Interview)
8	Bangladeshi	Female	28	Family-Oriented Tourist (In-depth Interview)
9	England	Male	35	Head Chef (KII)
10	USA	Male	30	Eco-friendly product seller (KII)

Model fit

The results of the confirmatory factor analysis (CFA) indicate a strong model fit with the data. The key fit indices are χ^2 = 824.35, CFI = 0.924, TLI = 0.932, RMSEA = 0.041, and SRMR = 0.051, all of which satisfy the recommended thresholds. The

RMSEA and SRMR values are below 0.05, while the CFI and TLI values exceed 0.90, suggesting a strong alignment between the hypothesized model and the observed data.

Normality test

The data were assessed for normality through skewness and kurtosis values, all of which fell within the acceptable range of ±2. Skewness values for "Commitment to Sustainability (CS)" items range from -1.099 to -1.163, while kurtosis values range from 0.877 to 1.722. Items related to "Eagerness to Pay More (EPM)" demonstrate skewness values ranging from -1.117 to -1.811, with kurtosis values ranging between 0.553 and 3.524. The results indicate that the data are approximately normally distributed, validating the dataset's appropriateness for confirmatory factor analysis.

Confirmatory factor analysis (CFA)

The CFA results demonstrate that all factor loadings are significant, surpassing the 0.60 threshold, thereby confirming the reliability of the indicators in measuring their respective constructs. The factor loadings for "Commitment to Sustainability (CS)" range from 0.792 to 0.818, whereas "Intention to Act Sustainably (IAS)" exhibits notably high loadings, reaching values up to 0.997. The findings underscore the robustness of the measurement model.

Measurement model

The measurement model exhibits high reliability and validity. Cronbach's Alpha (α) and Composite Reliability (ω) values are greater than 0.70 for all constructs, demonstrating strong internal consistency. For example, "Eagerness to Pay More (EPM)" demonstrates $\alpha = 0.894$ and $\omega = 0.893$, whereas "Concern for Sustainability (CFS)" shows $\alpha = 0.809$ and $\omega = 0.799$. Convergent validity is established, as Average Variance Extracted (AVE) values exceed 0.50 for all constructs. Significant instances are AVE = 0.691 for "Perceived Moral (PM)" and AVE = 0.815 for "Intention to Act Sustainably (IAS)." The results confirm the reliability of the constructs for subsequent analysis.

Table 3. Measurement model validity and reliability

Variables	Items	Skewness	Kurtosis	Loadings	R-Squared	Coefficient ω	Coefficient α	Average variance extracted (AVE)
Commitment to Sustainability (CS)	CS1	-1.099	0.877	0.792	0.628	0.847	0.849	0.642
	CS2	-1.113	1.637	0.818	0.668			
	CS3	-1.202	2.014	0.795	0.631			
	CS4	-1.163	1.722	0.801	0.642			
Concern for Sustainability (CFS)	CFS1	-1.841	3.263	0.773	0.597	0.809	0.799	0.673
	CFS2	-1.967	4.531	0.803	0.645			
	CFS3	-0.766	0.006	0.882	0.778			
	CFS4	-1.686	2.586	0.819	0.670			
Perceived Moral (PM)	PM1	-1.117	0.802	0.839	0.704	0.851	0.852	0.691
	PM2	-1.461	2.144	0.811	0.658			
	PM3	-1.182	0.979	0.843	0.710			
Eagerness to Pay More (EPM)	EPM1	-1.283	0.777	0.838	0.702	0.893	0.894	0.731
	EPM2	-1.203	0.637	0.850	0.722			
	EPM3	-1.117	0.553	0.815	0.665			
	EPM4	-1.811	3.524	0.914	0.835			
Perceived Customer Effectiveness (PCE	PCE1	-1.022	0.216	0.782	0.612	0.870	0.868	0.662
	PCE2	-1.171	1.245	0.853	0.728			
	PCE3	-1.420	1.459	0.782	0.612			
	PCE4	-1.489	2.458	0.834	0.695			
Attitude (ATT)	ATT1	-1.048	1.277	0.767	0.588	0.801	0.801	0.658
	ATT2	-0.871	1.024	0.867	0.752			
	ATT3	-1.129	1.597	0.810	0.656			
	ATT4	-0.637	0.018	0.797	0.635			
Norms (NM)	NM1	-1.488	3.415	0.796	0.634	0.848	0.847	0.698
	NM2	-1.346	2.128	0.892	0.795			
	NM3	-1.061	1.076	0.840	0.706			
	NM4	-0.960	0.753	0.812	0.659			
Perceived Behavioural Control (PBC)	PBC1	-1.118	1.629	0.858	0.737	0.777	0.783	0.733
	PBC2	-1.055	1.666	0.855	0.732			
	PBC3	-0.770	0.990	0.856	0.732			
Intention to act sustainably (IAS)	IAS1	-0.950	1.048	0.814	0.662	0.883	0.869	0.815
	IAS2	-0.884	1.229	0.782	0.611			
	IAS3	-0.726	0.248	0.997	0.994			
	IAS4	-0.726	0.248	0.997	0.994			

Model Fit: $\chi^2 = 2.84 \leq 3$, CFI=0.941≥ 0.90, TLI=0.935≥ 0.90, RMSEA=0.041≤ 0.05, SRMR=0.019≤ 0.05, NFI=0.924≥ 0.90, IFI = 0.941≥ 0.90

Discriminant validity

The discriminant validity of the constructs was evaluated through the Heterotrait-Monotrait (HTMT) ratio. The findings indicate that the majority of construct pairs have values below the suggested threshold of 0.85, signifying robust discriminant validity as presented in Table 2. The HTMT ratio between CS and CFS is 0.550, whereas the ratio between PCE and PM is 0.245, indicating distinct differences between these constructs. The findings indicate that most constructs in the model are adequately distinct, thereby affirming the validity of the measurement model.

Table 4: Discriminant validity

CS	CFS	PM	EPM	PCE	ATT	NM	PBC	IAS
1.000								
0.550	1.000							
0.404	0.434	1.000						
0.357	0.049	0.249	1.000					
0.225	0.269	0.242	0.245	1.000				
0.675	0.494	0.491	0.289	0.312	1.000			
0.631	0.503	0.452	0.348	0.311	0.916	1.000		
0.676	0.510	0.474	0.366	0.328	0.858	0.901	1.000	
0.660	0.515	0.436	0.313	0.343	0.755	0.747	0.864	1.000

Hypothesis result

The hypothesised relationships between the various constructs were analysed using SEM. The model fit was assessed before examining the path coefficients. Figure 4 presents the results of the path coefficients in a graphical format. The hypothesis testing results presented in Table 5 provide substantial support for the majority of the proposed relationships in the model. This study explored Generation Z's e-commerce behaviours regarding sustainable tourism practices in Bangladesh, using an integrated framework of the TPB and the VBN models. The mixed-method approach provided quantitative and qualitative insights, revealing a complex interplay of intrinsic motivations, external influences, and systemic barriers. By examining 15 hypotheses and integrating qualitative insights, the findings bridge theoretical understanding with real-world implications, addressing significant gaps in the literature.

Intrinsic motives as fundamental drivers

Significant relationships were identified between CS and ATT (H1) ($\beta = 0.617$, $p < .001$), CFS and ATT (H2) ($\beta = 0.419$, $p < .001$), and CFS and NM (H3) ($\beta = 0.741$, $p < .001$). PM had a significant effect on NM (H4) ($\beta = 0.528$, $p < .001$). The qualitative findings provide valuable support for the quantitative results, illustrating the relationships between key constructs. Participant 2 stated, *"I make sure to choose eco-friendly lodgings and activities whenever I go on vacation because I want my purchases to reflect my dedication to the environment. This is about more than just having fun; it's about actively contributing to a better world"*. This reflects a strong commitment to sustainability, supporting the finding that commitment significantly influences attitudes toward adopting sustainable practices. The statement also highlights the participant's concern for sustainability and its role in shaping positive attitudes and perceived social norms around sustainable tourism, aligning with the quantitative results. Furthermore, the participant's emphasis on contributing to a better world underscores the importance of moral obligation in influencing perceived social norms, demonstrating the interconnected nature of individual motivations, attitudes, and societal expectations in driving sustainable tourism behaviour. Participant 10 noted, "*Over the years, societal norms have shifted towards sustainability. A multitude of client's express pride in sharing their sustainable purchases on social media or with acquaintances and relatives. It has evolved into a symbol of pride for them, reflecting both their principles and societal expectations that are progressively intensifying*". These sentiments highlight the potential for individuals to drive positive change in the tourism industry through their own choices and actions. The statistical significance of perceived behavioural control (H5 and H6) further supports this notion, as members of Generation Z feel empowered when they believe their actions are impactful. Both EPM (H5) and PCE (H6) demonstrated strong positive effects on PBC, with coefficients of $\beta = 0.795$ and $\beta = 0.815$, respectively (both $p < .001$).

The limited influence of subjective norms

Even though Commitment to Sustainability (CS), Concern for Sustainability (CFS), and Perceived Moral (PM) play a role in shaping positive attitudes and perceived social norms around sustainable practices. The study reveals that subjective norms have a limited direct impact Attitude had no impact on Generation Z's decision-making processes, raising skepticism about the Theory of Planned Behaviour's emphasis on external social pressures. Quantitative results showed weaker path coefficients for the influence of perceived social norms on sustainable intentions (H8) ($\beta = 0.175$, $p = .005$) and the relationship between ATT and IAS (H7) was found to be non-significant ($\beta = 0.299$, $p = .845$). However, qualitative findings suggest that community engagement and awareness play a vital indirect role. For instance, participant 7 mentioned, "*When it comes to making environmentally friendly purchases, I rely more on my values than on what other people think*". It also underscores the indirect influence of community involvement, identifying online forums, social media influencers, and peer recommendations as pivotal sources of inspiration. Participant 5 articulated, *"Communities that prioritize sustainability influence my choices, even in the absence of explicit pressure to follow"*. This suggests that subjective norms might function via indirect pathways, such as enhancing awareness and attitudes, instead of directly determining intentions.

Challenges in promoting eco-friendly consumption

Despite strong intrinsic motivations, significant barriers to sustainable consumption persist. Quantitative findings indicated that financial constraints and accessibility issues weaken sustainable intentions, as reflected in the modest path coefficient for the tendency to accept higher expenditures (H7). Participant 9 noted, "*While many desire sustainable options, the scarcity and elevated cost of these sustainable alternatives often discourage my customers*". These insights emphasize the importance of addressing systemic barriers to promote sustainable consumption more effectively. The lack of accessibility, particularly in rural areas, highlights structural challenges to sustainable practices. These impediments must be addressed from financial, infrastructural, and educational perspectives. Holistic solutions, including government-business collaborations, can help reduce financial barriers and improve access to sustainable products. This approach is critical to ensuring that communities, especially underserved ones, can adopt sustainable practices more effectively.

Transparency and trust: A path to action

Quantitative research confirmed that trust significantly influences intentions to act sustainably, PBC and IAS (H9) ($\beta = 0.347$, $p < .001$) were confirmed. Qualitative findings highlighted confidence-building measures, such as transparency, ecological certifications, and detailed product descriptions. Participant 2 stated, *"Open communication about sustainability practices instils confidence in my decisions"*. emphasizing the role of transparency in enabling ethical and informed consumer choices.

Participants also called for behind-the-scenes information and third-party audits. Participant 8 noted, "*We want to know more about the sourcing information and the backstory of the tourism initiatives before committing our precious family time and money*". These findings suggest that e-commerce platforms can foster trust and loyalty among environmentally conscious consumers by enhancing transparency and accountability. The findings highlight the strength of the hypothesized relationships, especially the significant impact of constructs like CFS, PCE, and EPM on their outcomes.

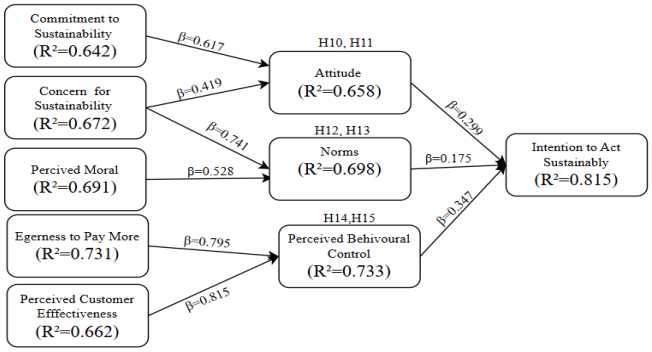

Figure 4. Path coefficient and R-square values

Table 5: Results of hypothesis testing

							95% Confidence interval	
Relations	**Hypothesis**	**Std. estimate**	**Std. Error**	**z-value**	**p**	**Results**	**Lower**	**Upper**
CS → ATT	H1	0.617	0.045	13.727	< .001	Accepted	0.529	0.705
CFS → ATT	H2	0.419	0.046	9.029	< .001	Accepted	0.328	0.510
CFS → NM	H3	0.741	0.031	24.182	< .001	Accepted	0.681	0.801
PM → NM	H4	0.528	0.045	11.617	< .001	Accepted	0.439	0.617
EPM → PBC	H5	0.795	0.053	15.009	< .001	Accepted	0.691	0.899
PCE → PBC	H6	0.815	0.047	17.528	< .001	Accepted	0.724	0.724
ATT → IAS	H7	0.299	0.051	5.845	5.845	Rejected	0.199	0.400
NM → IAS	H8	0.175	0.062	2.825	0.005	Accepted	0.054	0.296
PBC → IAS	H9	0.347	0.052	6.694	< .001	Accepted	0.245	0.448

Mediating roles in sustainable intentions

The mediation analysis, illustrated in Table 6 via a bootstrapping procedure, demonstrated significant indirect effects across the model, validating all mediation hypotheses. The results indicated that Commitment to Sustainability (CS) had an indirect effect on IAS through ATT (H10: $\beta = 0.185$, $p < .001$), whereas Concern for Sustainability (CFS) impacted IAS via ATT (H11: $\beta = 0.125$, $p < .001$) and NM (H12: $\beta = 0.130$, $p = .005$), confirming ATT and NM as mediators. Qualitative insights from participants corroborated these findings, exemplified by Participant 4's assertion: *"I appreciate the concept of exploration while making a positive contribution. When I visit coastal regions, I ensure to engage in cleanup initiatives or patronize locations that reinvest in conservation endeavors".* Moreover, Perceived Moral (PM) exerted an indirect influence on IAS through NM (H13: $\beta = 0.092$, $p = .006$), while Eagerness to Pay More (EPM) and Perceived Consumer Effectiveness (PCE) affected IAS via PBC (H14: $\beta = 0.276$, $p < .001$; H15: $\beta = 0.283$, $p < .001$), highlighting the substantial mediating role of PBC. Qualitative insights further elucidated these dynamics, with Participant 3 asserting, "*Increased payment engenders a sense of active contribution to the solution. It is empowering since I am supporting enterprises that emphasize sustainability*". Participant 1 remarked, "*Last year, we chose a resort that utilizes renewable energy and procures food locally. Although it was costlier, I believed it resonated with my principles and served as a positive model for my children".*

Table 6: Test for mediation using a bootstrap

							95% Confidence interval	
Relations	**Hypothesis**	**Std. estimate**	**Std. Error**	**z-value**	**p**	**Results**	**Lower**	**Upper**
CS → ATT → IAS	H10	0.185	0.034	5.425	< .001	Accepted	0.118	0.251
CFS → ATT → IAS	H11	0.125	0.026	4.814	< .001	Accepted	0.074	0.176
CFS → NM → IAS	H12	0.130	0.046	2.823	0.005	Accepted	0.040	0.220
PM → NM → IAS	H13	0.092	0.033	2.761	0.006	Accepted	0.027	0.158
EPM → PBC → IAS	H14	0.276	0.045	6.093	< .001	Accepted	0.187	0.364
PCE → PBC → IAS	H15	0.283	0.047	6.058	< .001	Accepted	0.191	0.374

Discussion

This study emphasizes the crucial influence of intrinsic motivations, including a dedication to sustainability, environmental awareness, and ethical responsibility, in shaping Generation Z's sustainable e-commerce practices in tourism. These inherent elements surpass the impact of external societal standards in determining sustainable practices. Although subjective norms exhibited minimal direct influence, they indirectly contributed by enhancing awareness and cultivating positive attitudes via community engagement. Emotional and social values profoundly affect subjective norms, whereas attitudes and norms jointly drive behavioural intentions. This highlights the significance of interpersonal and experiential factors over utilitarian ones (Yang & Ahn, 2020). Financial limitations and restricted access to environmentally friendly alternatives emerged as major obstacles, highlighting the pressing need for systemic measures to improve the affordability and availability of sustainable options. Ngah et al. (2020) discovered that positive attitudes and a sense of control increase Generation Z's willingness to pay for environmentally friendly alternatives. Furthermore, trust and transparency in e-commerce platforms were recognized as

essential factors, with explicit sustainability information enhancing consumer confidence. The research demonstrated a complex interaction between inner values and external influences, facilitated by attitudes and perceived behavioural control. These findings challenge conventional theories, including the TPB, and promote a nuanced approach that integrates individual-centered ideals with structural factors. Liao (2024) asserts that utilizing empathy-driven interactions and continuous engagement fosters enduring environmentally sustainable behaviours. Future initiatives should focus on improving transparency, addressing structural obstacles, and implementing educational programs. Aligning Generation Z's ideals with sustainable practices through these strategies may cultivate a more ecologically conscious consumer base, facilitating significant advancements in sustainability within tourism and beyond.

The integration of the TPB with VBN model shows potential, especially in light of critiques highlighting TPB's oversight of moral and normative motivations among individuals. The integration of TPB and VBN provides a comprehensive framework for understanding sustainable consumer behaviour, particularly in the contexts of e-commerce and tourism. The TPB emphasises attitudes, subjective norms, and perceived behavioural control; however, it has been criticised for overlooking moral and normative influences. The VBN model addresses this gap by integrating intrinsic factors such as moral obligations and environmental values, linking external social influences with internal motivations. This integration underscores the substantial impact of elements such as dedication to sustainability and perceived customer effectiveness on behaviour. The concept highlights the indirect influence of subjective standards through social values and awareness, connecting intrinsic values to actionable behaviours. This cohesive framework enhances theoretical comprehension. The practical implications encompass the development of targeted interventions, the enhancement of community engagement, the improvement of access to sustainable alternatives, and the promotion of awareness through educational programmes. This cohesive approach provides businesses and governments with pathways to effectively encourage sustainable consumption.

Conclusion

This study provides critical insights into Generation Z's sustainable tourism behaviour, indicating that intrinsic motivations such as personal values and environmental concern exert a more significant influence than social pressure on e-commerce engagement. The research employs a hybrid TPB-VBN framework to demonstrate that commitment to sustainability, readiness to incur higher costs, and perceived consumer effectiveness enhance perceived behavioural control, a significant predictor of sustainable intentions. Conversely, social norms exert less influence, indicating that Gen Z is primarily driven by intrinsic values rather than external pressures. Financial hurdles and limited eco-friendly options persist, especially in developing nations, but transparent e-commerce platforms promote sustainable choices. The study proposes a redesigned behavioural framework that combines personal ethics with institutional support, education, platform openness, and regulation to make sustainable tourism more accessible to Gen Z. The study is not without its limitations. The dataset, primarily rooted in the sociocultural contexts of Bangladesh, restricts its generalizability; subsequent studies should broaden their scope to include a variety of cultural environments. The cross-sectional design limits the understanding of behavioural changes over time, underscoring the necessity for longitudinal studies. Focused on e-commerce, the scope could be expanded to encompass additional digital and offline platforms. Certain constructs, such as Aspiration to Act Responsibly and Concern for Sustainability, demonstrated moderate reliability, indicating a need for further refinement. Future studies should also examine emotional engagement, digital influencers, and gamified tools, while applying the TPB-VBN model to additional areas such as fashion or food.

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