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Conceptualization and Empirical Validation of Sustainability Touchpoint Experience (STE) Influencing Customer Trust and Dining Loyalty in Restaurants using higher order constructs in PLS-SEM

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Abstract

Growing environmental concerns and changing consumer expectations have driven the Hospitality Industry to consider sustainability as their strategic focus. However, limited research has been conducted to examine how customers' experience sustainability across various service interactions. This study addresses this gap by conceiving Sustainable Touchpoint Experience (STE) as a higher-order, customer-centric sustainability construct build out of Touchpoints associated with Food, People, Planet and Governance. The study focuses at mediating role of customer trust and how STE impacts dining loyalty and customer trust. Using survey data from 400 customers at restaurant businesses in Eastern India, a conceptual model was tested. The higher-order measurement model, structural connections, mediation effects, predictive-performance and managerial priorities were evaluated utilizing Importance Performance Map Analysis (IPMA) and partial least squares structural equation model (PLS-SEM).

The outcomes demonstrate that STE is significantly impacted on all four sustainability touchpoints, with the Food Touchpoint bearing the biggest effect. Dining Loyalty ($\beta = 0.506$, $p < 0.001$) along with Customer Trust ($\beta = 0.506$, $p < 0.001$) have both been considerably boosted through STE. Also, Customer Trust had favourable effect upon Dining Loyalty ($\beta = 0.429$, $p < 0.001$). The connection between STE along with dining loyalty is partly mediated through customer trust, based on mediation research. The model shows acceptable out-of-sample predictive performance, good model fit (SRMR = 0.065), and satisfactory explanatory power (R^2Customer Trust = 0.256; R^2Dining Loyalty = 0.380). Furthermore, IPMA shows the most significant domain for managerial interventions is to improve customer loyalty through Sustainable Touchpoint Experience and Food Touchpoint.

The study enhances the existing body of information on sustainability within the hospitality sector by introducing and empirically validating Sustainable Touchpoint Experience as a higher-order experiential sustainability construct. It further explains the way sustainability experiences contribute to customer loyalty by building trust. For restaurant managers seeking to develop integrated sustainability initiatives that enhance customer relationships and promote lasting loyalty, the findings provide useful insights.

1. Introduction

The Hospitality business is basically experience based, operating within a complex service ecosystem whereby customers, staff members, society and the natural environment all contribute value creation, requiring constant innovation (Kandampully et al., 2023; Torvinen et al., 2026). Sustainability is now recognised as a strategic priority for hospitality companies in light of increasing stakeholders' expectations, changing customer taste and growing environmental concerns (Brundtland Commission, 1987; Han et al., 2019; Bordian et al., 2024). As a consequence, restaurants are increasingly integrating sustainability practices such as ethical sourcing, waste reduction, environmentally responsible operations, employee well-being and transparent governance to enhance organizational performance while increasing customer satisfaction, loyalty and return visits (Chen & Shan 2010; Kim et al., 2016; Chaturvedi et al., 2024; Theodoraki et al., 2024;).

In line with customer experience theory, customers from evaluations using a series of interconnected touchpoints encountered before, during and after service consumption, integrating these interactions into an overall assessment of the service provider rather than evaluating individual practices in isolation (Verhoef et al., 2009; Lemon & Verhoef, 2016; Voorhees 2017; Aldulaimi et al., 2025). Extending the perspective, customers are more inclined to experience sustainability through multiple service interactions during their whole journey (Kandampully et al., 2024). However sustainability as a complete customer experience that differs across service touchpoints has attracted less consideration than the concept of sustainability from an organizational and operational perspectives with an emphasis on green practices, corporate social responsibility and environmental performance. (Pantouvakis & Gerou, 2022; Moliner-Tena et

al., 2023; Bonfanti et al, 2025). Addressing this gap is essential for establishing customer centric understanding of sustainability in Hospitality.

In consequence, there remains three major research gaps. First, customer focused sustainability experiences across service touchpoints received little consideration in hospitality sustainability research. Second, less is understood regarding the way sustainability experience influence loyalty among customers, particularly the mediating role of customer trust (Morgan & Hunt, 1994). Third, there exists insufficient data regarding which sustainable touchpoints sustainability touchpoints should be assigned precedence so as to maximize customer relationship outcomes, given the fact that environmental initiatives require substantial managerial effort. In order to address these gaps, this study develops and assesses the Sustainability Touchpoint Experience (STE), a higher order customer centric sustainability construct build out of Touchpoints associated with Food, People, Planet and Governance. It further investigates the way STE impacts dinning loyalty and trust among consumers.

Third, given the fact that there is no sufficient information to support managerial commitment towards demand for sustainability programs, as to which sustainability touchpoint should be assigned importance in an effort to maximise customer relationship outcomes. In order to address these gaps, this study develops and assesses the Sustainable Touchpoint Experience (STE), a higher order customer centric sustainability construct build out of Touchpoints associated with Food, People, Planet and Governance. Additionally, it investigates at the way STE impacts dinning Loyalty and trust among customers.

Four major contributors to the discipline in hospitality sustainability research have been provided in this study. In order to generate a unified, customer cantered sustainability experience, it first conceptualizes and empirically validates Sustainability Touchpoint Experience as a hierarchical higher -order construct that includes Food, People, Planet and Governance Touchpoints. Second, by emphasizing the mediating role of customer trust, it explains how long- lasting sustainable experience translates into behavioural outcomes. Third, the study enhances traditional PLS-SEM applications beyond explanatory modelling by incorporating managerial priorities through IPMA and predictive assessments using PLSpredict (Hair et al., 2022). Finally by identifying the sustainability touchpoints that should be accorded importance so as to foster long-term dining loyalty and customer trust, the findings give restaurant managers helpful recommendations.

Therefore, this study attempts to tackle three research questions:

1. What would be the most effective approach to conceptualise and execute a Sustainability Touchpoint Experience (STE) as a higher order sustainability construct?
2. Does the Sustainability Touchpoint Experience impact customer loyalty and trust?
3. Does the relationship between dinning loyalty and Sustainability Touchpoint Experience rely on customer trust?

To address this issue, data collected from customers at traditional dining establishments in West Bengal and Odisha, India was examined utilizing the PLS SEM software. The study offers three important contributions to the literature on hospitability sustainability. Sustainability Touchpoint Experience is initially presented as a novel higher order formative construct. Furthermore, the multidimensional structure of STE was verified by science. Lastly, it shows that customer trust works as a procedure which transforms sustainability experiences into outcomes linked to customer loyalty.

This study offers three specific results to the realm of hospitality sustainability research. First, it identifies and validates Sustainable Touchpoint Experience (STE) as a more advanced customer centric sustainability construct comprising of Food, People, Planet, Governance Touchpoints. Second it investigates the role of consumer confidence in mediating the connection among sustainability experiences with customer loyalty. Third, utilizing Importance-Performance Map Analysis (IPMA), it determines the sustainability touchpoint having the greatest managerial capacity to boost customer loyalty.

2. Review of Literature, Conceptual Framework and Hypotheses Development

2.1 Sustainability and Customer Experience in Hospitality

As customers expect businesses to demonstrate ethical, social, and environmental consciousness, sustainability has grown into an essential strategic concern for hospitality organizations. Recent research suggests that customers tend to be increasingly assessing sustainability through their direct service experiences, while prior hospitality studies primarily focused on operational sustainability initiatives such as waste reduction, energy efficiency and sustainable sourcing (Han et al., 2019; Su et al., 2021). As a consequence, sustainability is has become recognised as an experiential attribute that impacts customer opinions and behavioural responses as opposed to an isolated organizational practise. Thus, sustainability in customer experience is defined as customer engagement which is based on economic, social and environmental sustainability and is derived through sensations, feelings, emotions and actions evoked by sustainable stimuli. (Signori et al., 2019; Calza et al., 2023).

Customers evaluation is developed through a series of interactions which happen across different points of contact throughout the consumption journey, based on the literature on consumer experiences (Lemon and Verhoef, 2016; Calza et al., 2023). These touchpoints are essential instances where customers receive information, develop impressions and form judgements regarding service providers. Customer experiences in hospitality settings are influenced through interactions with physical environments employees related merchandise, organizational communications and service processes (Kandampully et al., 2018). Customers collected views across multiple sustainable touchpoints are therefore likely to shape sustainability related experiences instead of single sustainability endeavour.

While scholarly interest in sustainable hospitality is growing, majority of the research done currently has concentrated on sustainability elements individually. Environmental practices (Han et al., 2019), ethical sourcing (Kim & Hall, 2020), employee welfare (Su et. al., 2021), and corporate social responsibility (Martinez & Rodriguez del Bosque, 2013) were all examined as separate entities. Customers' complete experiences regarding sustainability throughout their service journey are not entirely comprehended through fragmented approaches. These disadvantages highlight the importance of designing the sustainable experience in a more integrated and customer centric approach.

Existing hospitality sustainability research has mainly concentrated on organizational practices and operational outcomes, with minimal emphasis on how customers experience sustainability throughout the service journey.

2.2 Sustainability Touchpoint Experience (STE) as a Higher-Order Customer-Centric Sustainability Construct

Touchpoint analysis has become increasingly recognised in the Hospitality Industry as an essential tool for establishing and optimizing sustainable experiences and further creating strategies to support businesses (Vajpai et al., 2025; Cui et al., 2025; Baidya et al., 2023). This particular study offers Sustainable Touchpoint Experience (STE), a term that captures customers' overall opinion of sustainability which are influenced through interactions with sustainability related service touchpoints when dining. STE focuses on how customers perceive and comprehend sustainability through their interactions with a restaurant, in contrast with traditional sustainability frameworks that focus on organizational practices.

The touchpoint theory of customer experience which argues that customers evaluate companies according to cumulative experiences across multiple interactions and responses rather than single service attributes which serves as the basis of the concept of STE (Lemon and Verhoef, 2016; LaSelle & Britton 2003; Meyer & Schwager 2007; Liu et al., 2024). Based on this perspective, customers consider sustainability important when it is experienced through tangible and observable interactions during service utilization (Verhoef et al., 2009; Becker & Jaakkola, 2020)

Whenever customers visit traditional dining establishments consumers are presented with a number of sustainability related signals. Their views regarding the authenticity and effectiveness of an organization's sustainability commitment are shaped with these interactions considered collectively. Food Touchpoint, People Touchpoint, Planet Touchpoint and Governance Touchpoints constitute the four sustainability touchpoint elements based on which STE is characterized as an experiential outcome.

The Sustainability Touchpoint Experience (STE) refers to the entire customer experience developed through interactions with sustainability related touchpoints throughout the dining journey. STE is conceived as a higher order formative construct having four lower order corresponding to dimensions: food touchpoints, people touchpoints, planet touchpoint and governance touchpoint.

2.3. Dimensions of the Higher-Order Sustainability Touchpoint Construct

2.3.1. Food Touchpoint as a Dimension of STE

One of the most apparent instances of environmentally friendly procedures is food, since it is the primary service provided in restaurant settings. Customers are progressively assessing restaurants based on measures taken to minimize food waste, ethical production procedures, organic and conventional goods, local procurement, and responsible sourcing (Filimonau et al., 2020; Legrand et al., 2022).

Consumers' evaluation of service quality and authenticity are directly affected through sustainable food practices, which provide tangible evidence of an organization's commitment to sustainability. Based on previous studies consumers think that food that is ethically and sustainably produced offers symbolic and functional value (Hartmann & Siegrist, 2017; Han et al., 2019). Consumers' sustainability experiences are thus expected to be significantly strengthened by food related sustainability efforts.

H1a: Food Touchpoints positively influence Sustainability Touchpoint Experience

2.3.2 People Touchpoints as a Dimension of STE

Employees possess a significant part in shaping customer experiences because they constitute the main point of contact between organizations and customers (Bitner et al., 1990). In service environment, employees who emphasize on sustainability demonstrate sustainability values through their actions, knowledge and interactions. Consumers often turn to frontline workers to assess sustainability initiatives and assess the company's credibility (Kim et al., 2017). Employee engagement in sustainability initiatives, moral conduct and responsible service delivery, contributes to customers' perceptions of the organizations' commitment to sustainability. Employee related sustainability practices were proven in research to significantly boost positive customer evaluations and perceived authenticity (Berezan et al., 2014; Fatma et al., 2018).

H1b: People Touchpoint positively influence Sustainability Touchpoint Experience.

2.3.3 Planet Touchpoint as a Dimension of STE

Planet Touchpoints include environmentally friendly practices that customers directly observe during service encounters. These involve waste management systems, energy efficient operations, waste conservation measures, recycling initiatives, sustainable packaging, and environmentally responsible facility management.

Environmentally sustainable actions provide obvious signals of company's responsibility and influence customer perceptions of environmental stewardship (Han et al., 2019). Customers are increasingly requesting hospitality companies to minimize environmental impacts and actively contribute to sustainability objectives (White et al., 2019).

Visible environmental behaviour may therefore enhance customers perception of sustainability performance and can contribute to their overall experience.

H1c: Planet Touchpoints positively influence Sustainability Touchpoint Experience

2.3.4 Governance Touchpoints and Sustainability Touchpoint Experience

Governance Touchpoints includes company policies, ethical standards, transparency processes, certifications and accountability mechanisms that show an organizations commitment to sustainability. Efficient governance enhances organizational credibility by reducing information asymmetry and improving stakeholder confidence (Freeman et al., 2021).

Customers are increasingly seeking evidence that companies should actually implement sustainability commitment rather than just making symbolic claims (Delmas & Burbano 2011). Transparency in sourcing processes, sustainability reporting, moral conduct and compliance initiatives may all enhance perceptions of authenticity and trustworthiness. As a consequence, governance related sustainability practices have the potential to positively benefit sustainability results.

H1d: Governance Touchpoints positively influence Sustainability Touchpoint Experience.

As a consequence, the three significant gaps are present. First, sustainability research in hospitality has paid insufficient attention to customer-centric sustainability experience across service touchpoints. Second, the ways in which sustainability experiences foster customer loyalty remain neglected especially the significance of customer trust. Third, there exists no proof on which sustainability touchpoint provide the greatest managerial influence to enhance customer experiences. Addressing these flaws this study develops and validates Sustainability Touchpoint Experience (STE), a higher-order customer centric sustainability construct and examines its effect on consumer confidence and dining loyalty.

2.4. Sustainability Touchpoint Experience and Customer Trust

Trust involves customer's willingness to rely on organization based on expectations regarding competence, integrity and empathy (Morgan & Hunt, 1994). Trust becomes particularly important in sustainability contexts as customers often cannot directly verify sustainability commitments and thus rely on company credibility (Gefen et al., 2003)

Based on customer experience studies, positive experiences improve trust by decreasing uncertainty and increasing confidence in corporate behaviour (Verhoef et al., 2009; Klaus and Maklan, 2013; Riaz et al., 2024). Similarly, sustainability research demonstrates that authentic sustainability practices enhance stakeholders trust and corporate credibility (Fatma et al., 2018; Vlachos et al., 2009)

Customers are more likely to perceive the organization as responsible, transparent and trustworthy when they encounter environmentally conscious touchpoints on a regular schedule throughout their dining experiences. As a consequence positive sustainability experiences should boost customer trust.

H2: Sustainability Touchpoint Experience positively influences Customer Trust.

2.5. Sustainability Touchpoint Experience (STE) and Dining Loyalty

Dining Loyalty involves a customer's commitment to return to a restaurant and promoting it to others, despite the availability of other dining options. In hospitality research, loyalty is generally regarded as a complex concept that incorporates both behavioural intentions such as revisit intentions and attitudinal dimensions, such as positive word-of-mouth and emotional attachment (Oliver 1999; Han et al., 2020). Given the restaurant industry's intense rivalry, maintaining client loyalty remains a crucial objective for service providers seeking long-term profitability and a sustainable competitive advantage.

Based on customer experience literature, loyalty develops as a consequence of customer cumulative evaluations of their interaction with a service provider across multiple channels during the customer journey (Lemon and Verhoef, 2016; Bonfanti 2026). Rather than being affected by personal experience, loyalty emerges when customers consistently experience positive interactions with a service provider. Such experiences elicit favourable cognitive and emotional responses, boosting customer's desire to revisit and recommend the service provider to others (Verhoef et al., 2009; Becker & Jaakkola, 2020). As a consequence customer experience is widely recognised as a important indicator of customer loyalty in hospitality and service settings.

In recent years, sustainability has emerged as an increasingly important aspect of the customer's experience. Based on sustainability consumption literature, consumers are becoming more conscious about environmental and social issues which means that they increasingly choose companies whose values align with their own sustainability concern (White et. al., 2019). Customers often think about sustainability related practices such as responsible sourcing, waste reduction initiatives, employee welfare initiatives, and transparent governance when forming overall perception of a service provider (Font & McCabe, 2017). As sustainability becomes more incorporated in-service delivery, customers are going to come across multiple sustainability related touchpoints during their dining experiences.

Sustainability Touchpoint Experience (STE) evaluates customers' general impressions of sustainability according to interactions with Food, People, Planet and Governance Touchpoint. From a customer journey perspective, these sustainability related interactions continue to the overall dining experience and affect how customers think of the restaurant. Positive sustainability experience may enhance customers' perception of authenticity, responsibility and value congruence, resulting in a greater incentive to maintain their relationship with the restaurant (Bhattacharya & Sen, 2004; Martinez & del Bosque, 2013).

Previous study has shown that sustainability actions can positively influence customers' behaviour patterns, including returning to, referring and staying loyal (Han et al., 2009; Moise et al., 2021). Customers are more likely to develop favourable feelings regarding and organization and show stronger loyalty intentions when they perceive its sustainability efforts as significant and trustworthy. As a consequence, the Sustainability Touchpoint Experience is expected to serve a significant part in promoting dining loyalty in restaurant settings.

Accordingly, the following Hypothesis is proposed:

H3: Sustainability Touchpoint Experience positively influences Dining Loyalty.

2.6. Customer Trust and Dining Loyalty

Customer Trust is a key component of long-term relationship between customers and service providers. It symbolises customers' trust in a businesses' reliability, integrity and ability to uphold its promise (Morgan & Hunt, 1994). In Hospitality settings, where service outcomes tend to be intangible and erratic, trust plays an important role in influencing customer behaviour.

Based on Commitment-Trust Theory, confidence reduces perceived risk and encourages consumers to remain loyal with service providers, which renders it an essential indicator of relational continuity. (Morgan & Hunt, 1994). Based on relationship marketing research, trust was an important component in customer loyalty, leading to purchase repeats and positive word of mouth.

In restaurant settings, customers who trust the restaurant are more likely to visit again and recommend it to others. Prior research shows a positive relationship between trust and loyalty in hospitality contexts (Chaudhuri & Holbrook 2001; Martinez & del Bosque, 2013). As consequence higher levels of customer trust are expected to increase dining loyalty.

H4: Customer Trust positively influences Dining Loyalty

2.7. The Mediating Role of Customer Trust

Based on Relationship Marketing Theory, which has high relevance in research regarding sustainable competitive advantage, trust acts as a relationship mechanism through which company actions influence long term behavioural outcomes (Madhavaram 2024; Morgan & Hunt, 1994). As a consequence, sustainability experiences may impact customer loyalty both directly and indirectly through the development of trust.

Positive sustainability experiences indicate business responsibility, consistency, and authenticity that increases customer trust. Trust reduces perceived risk and improves customers' motivation to maintain long term relationships with the company. Prior studies also discovered trust as a mediator among sustainability initiatives with customer behavioural results (Fatma et al., 2018; Rather et al., 2019).

Therefore, Customer Trust is expected to mediate the relationship between Sustainability Touchpoint Experience and Dining Loyalty.

H4: Customer Trust mediates the relationship between Sustainability Touchpoint Experience and Dining Loyalty.

2.10. Conceptual Framework

Based on the previous theoretical justification the proposed conceptual framework defines Sustainable Touchpoint Experience as the main experiential mechanism through which sustainability related touchpoints influence customer relationship outcome. Food, People, Planet, and Governance Touchpoints are shown as antecedents of STE, and Customer Trust acts as an intermediatory connecting STE and Dining Loyalty.

3. Methodology

3.1. Research Design

According to the Theoretical framework outlined in preceding sections, Sustainability Touchpoint Experience (STE) is characterized as the basic experiential mechanism through which sustainability related touchpoint influence customer relationship outcomes. Food, People, Planet and Governance. Touchpoints were the dimensions of STE, and Customer Trust serving as an intermediatory among STE with Dining Loyalty. Partial Least Squares Structure Equation Model (PLS-SEM) version 4, which is suitable for estimating hierarchical component models and assessing both exploratory and predictive links was utilized to evaluate the suggested model. (Hair et al., 2022).

3.2. Study Context

The empirical investigation was conducted in the restaurant business in eastern India. The restaurant industry provides appropriate setting for studying sustainable experiences because customers encounter sustainability related practices throughout their dinning experience, including food sourcing, staff relationship, environmental initiatives and organizational transparency.

The study focuses on restaurant customers in the Indian states of West Bengal and Odisha. Both states have witnessed substantial growth in the hospitality and food service industries, as consumer concerns regarding sustainability have increased. As a consequence this situation offers a perfect environment to investigate how sustainability related touchpoints impact customer experience, trust and loyalty outcomes.

3.3 Sampling and Data Collection

Between December 2005 and March 2026, an organised online questionnaire was implemented to collect data. Respondents needed to satisfy two screening criteria: (1) be at least 18 years of age and (2) have visited a restaurant

within the past six months.

Purposive sampling was employed to be sure respondents have sufficient dining experience to assess touchpoints related to sustainability. Initially 432 responses were collected. Four hundred responses based on eligibility were stored for analysis after screening for incomplete submission and inconsistent replies. The final sample size exceeded the minimum limit for PLS-SEM and was considered adequate for estimating a hierarchical component model of comparable complexity (Hair et al., 2022).

3.4 Measurement Instrument

There were actually two parts in the questionnaire. The demographic data provided by respondents including gender, age, income, education and consumption of dietary intake was collected in the first section. Food touchpoints, people touchpoints, planet touchpoints, governance touchpoints, customer trust and dining loyalty were each discussed in the second section. All Items were obtained from established scales in the literature and adapted the restaurant industry. A five point Likert scale featuring “1” indicating “strongly disagree” and “5” representing “strongly agree,” was utilized to record responses.

After the initial survey, academic experts and hospitality practitioners reviewed the questionnaire on clarity, relevance and content validity.

3.5. Data Analysis Procedure

Smart PLS 4 was implemented to evaluate the data. As recommended for hierarchical component models, the analysis was done in two phases. The first criteria utilized to evaluate the measurement model are indicator reliability, internal consistency reliability, convergent validity and discriminant validity. The structural model was subsequently evaluated utilizing the path coefficient, coefficient of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and fit metrics. The significance of the suggested associated connections was assessed using bootstrapping method with 5,000 subsamples.

3.6. Assessment of the Higher-Order Construct

A Sustainability Touchpoint Experience (STE) was developed as a second-order formative construct featuring four first order reflected dimensions: Food Touchpoints, People Touchpoints, Planet Touchpoint, and Governance Touchpoints. The disjoint two-stage method was employed as suggested for reflective-formative hierarchical component models (Becker et al., 2012; Sarstedt et al., 2019). The constructs of the higher order was evaluated by analysing indicator weights, significant levels, and multicollinearity using variance inflation factor (VIF)e values.

3.7. Mediation Analysis

Utilizing bootstrapping methods in Smart PLS, the mediating role for customer trust in the relationship between Sustainability Touchpoint Experience (STE) and dining loyalty was assessed. Applying established PLS SEM guidelines, 5000 bootstrapping resamples were utilized to assess the significance of the direct, indirect and total effects. By comparing the indirect effects to the total effect, the Variance Accounted For (VIF) statistics was calculated to evaluate the level of mediation. The resulting VAF value was subsequently utilized to classify the mediation effect as full, partial, or absent.

3.8. Predictive Assessment

PLS predict was utilized to evaluate the model’s predictive ability in addition to exploratory evaluations. To evaluate out-of-sample predictive performance, the PLS model’s prediction errors were compared to those of a linear benchmark model in compliance with current PLS-SEM guidelines.

3.9. Importance- Performance Map Analysis (IPMA)

Importance-Performance Map Analysis was employed to support the structural model assessment and provide relevant managerial insights. Dining Loyalty was chosen as the target construct, alongside Food Touchpoints, People Touchpoints, Planet Touchpoints, and Governance Touchpoints acting as predecessor frameworks. IPMA facilitates for the simultaneous evaluation of construct importance and performance, leading to the recognition of sustainability touchpoints that offer the greatest managerial leverage to boost customer loyalty (Ringle and Sarstedt, 2020).

4. Result

4.1. Respondent Profile

400 valid respondents were chosen for analysis after data screening. Table 1 shows the demographic information provided by the respondents. The sample size includes restaurant dining customers from the eastern Indian states of West Bengal and Odisha, encompassing a broad spectrum of income categories, age categories and educational levels.

Table 1
Demographic Profiles of Respondents.

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	224	56
	Female	176	44
Age	18–29 years	144	36
	30–39 years	96	24
	40–49 years	92	23
	Above 50 years	68	17
Education	Undergraduate	204	51
	Postgraduate	196	49
Income Level	Low	192	48
	Medium	128	32
	High	80	20
Dining Frequency	Weekly	128	32
	Monthly	272	68
Residence	Capital City	176	44
	Town	224	56
Region	Kolkata	100	25
	Durgapur	140	35
	Bhubaneswar	76	19
	Cuttack	84	21

4.2. Measurement Model Assessment

4.2.1. Reliability and Convergent Validity

Utilizing recognized PLS-SEM standards the corresponding measurement model was evaluated overall for internal consistency, convergent validity and discriminant validity (Hair et al., 2022). Cronbach's alpha, composite reliability (rho_a), and composite reliability (rho_c) were used to evaluate internal consistency. Cronbach's alpha values ranged from 0.724 to 0.920 in Table 2, over the necessary threshold of 0.70 and showing high reliability across all constructs. In comparison composite reliability scores indicated adequate internal consistency and ranged from 0.819 to 0.937 beyond the proposed minimum of 0.70 (Hair et al., 2022)

Convergent validity was evaluated utilizing the average variance extracted (AVE). Most structures exceeded the recommended 0.50 threshold, with AVE values ranging from 0.553 to 0.749 (Fornell & Larcker, 1981). Governance Touchpoints possesses an AVE of 0.476 which is a bit lower below the acceptable threshold. Yet its composite reliability rating (0.819) is greater over the proposed threshold of 0.70. As stated to Fornell and Larcker (1981), convergent validity remains considered as acceptable when composite reliability is adequate even when AVE is slightly lower.

Food Touchpoint represented the construct having the highest reliability and convergent validity (𝛼= 0.916, ρC = 0.937, AVE = 0.675). Overall the results indicate that the measurement method offers enhanced convergent validity and internal consistency reliability.

Table 2
Reliability and Convergent Validity Assessment.

Customer Trust	**Cronbach's alpha**	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
	0.873	**0.875**	**0.905**	**0.613**
Dining Loyalty	0.771	0.773	0.854	0.593
Food Touchpoint	0.916	0.917	0.937	0.749
Governance Touchpoint	0.724	0.728	0.819	0.476
People Touchpoint	0.798	0.799	0.861	0.553
Planet Touchpoint	0.814	0.815	0.878	0.642
Sustainable Touchpoint Experience	0.920	0.920	0.936	0.675

4.2.2. Discriminant Validity

Discriminant validity was evaluated utilizing Heterotrait-Monotrait ratio (HTMT), an accurate metric to evaluate construct distinctiveness in PLS-SEM (Henseler et al., 2015). All HTMT values were below the appropriate threshold of 0.85, as shown in Table 3, with Sustainability Touchpoint Experience and Dining Loyalty having the highest value (HTMT = 0.710). These findings demonstrated that the ideas span various conceptual domains and are empirically distinct. As a consequence, discriminant validity was successfully determined for all constructs included in the study.

Table 3
HTMT Matrix

Customer Trust	Customer Trust	Dining Loyalty	Food Touchpoint	Governance Touchpoint	People Touchpoint	Planet Touchpoint	Sustainable Touchpoint Experience
Dining Loyalty	0.691						
Food Touchpoint	0.432	0.433					
Governance Touchpoint	0.375	0.398	0.388				
People Touchpoint	0.413	0.45	0.444	0.33			
Planet Touchpoint	0.405	0.418	0.328	0.345	0.313		
Sustainable Touchpoint Experience	0.687	0.71	0.655	0.537	0.596	0.555	

4.3. Assessment of the Higher order construct

Sustainability Touchpoint Experience (STE) was designed as a second-order formative construct that incorporated Food, People, Planet and Governance Touchpoints. The formative measurement model was evaluated utilizing indicator weights, statistical significance, and collinearity diagnostics in line with a fragmented two-stage approach (Becker et al., 2012; Hair et al., 2022).

Table 4 reveals significant formative weights ($\rho < 0.001$) for all four dimensions, indicating distinctive contribution to the formation of STE. Food Touchpoints has the greatest effect ($\beta = 0.403$, $t = 12.463$), followed by People Touchpoint ($\beta = 0.373$, $t = 11.635$), Planet Touchpoint ($\beta = 0.359$, $t = 10.725$), and Governance Touchpoint ($\beta = 0.320$, $t = 9.436$). These findings demonstrate that customers sustainability experience are influenced by a number of different sustainability related interactions throughout the dinning journey, with food-related sustainability practices providing the greatest influence.

VIF values were utilized to examine potential multicollinearity among the formative dimensions. The VIF values revealed zero multicollinearity issues and ranged from 1.152 to 1.283, significantly lower than the proposed threshold of 3.3 (Kock, 2015). As a consequence, the higher order construct covers all four dimensions.

Overall, the results support the hypothesis H1a-H1d, showing that Sustainability Touchpoint Experience is a multidimensional construct consisting Food, People, Planet and Governance Touchpoints.

Table 4
Assessment of the Higher -Order Construct (STE)

Hypothesis	Dimension	Weight (β)	t-value	p-value	VIF	Result
H1a	Food Touchpoint → STE	0.403	12.463	< 0.001	1.283	Supported
H1b	People Touchpoint → STE	0.373	11.635	< 0.001	1.22	Supported
H1c	Planet Touchpoint → STE	0.359	10.725	< 0.001	1.152	Supported
H1d	Governance Touchpoint → STE	0.32	9.436	< 0.001	1.174	Supported

4.4 Structural Model Assessment

To assess significance of suggested standard correlated variables, the structural model was evaluated using the bootstrapping method with 5,000 resamples. The evaluation focused on the path coefficients, t-value, and p-values associated with the proposed hypothesis.

Table 5 confirms hypothesis 2 by demonstrating the Sustainability Touchpoint Experience (STE) significantly enhances Customer Trust (β = 0.506, t = 13.808, p < 0.001). The study indicates that clients who view sustainability positively across numerous service touchpoints are more likely to establish trust in the restaurant.

Assumption H3 is backed with the study's findings that STE significantly enhances the loyalty of the diners (β = 0.276, t = 6.203, ρ < 0.001). The finding demonstrates that positive experiences significantly impact customers' intentions to visit again and recommend dining establishments.

Customer trusts strongly impact dining loyalty (β = 0.429, t = 10.249, ρ < 0.001), confirming H4 hypothesis. This result highlights importance of trust as an essential relational mechanism which transforms favourable customer experiences into loyalty outcomes.

Overall, all predicted structural association were positive and statistically significant, giving significant support towards the proposed conceptual framework.

Table 5
Structural Model Results

Hypothesis	Structural Path	Path Coefficient (β)	t-value	p-value	Result
H2	STE → Customer Trust	0.506	13.808	< 0.001	Supported
H3	STE → Dining Loyalty	0.276	6.203	< 0.001	Supported
H4	Customer Trust → Dining Loyalty	0.429	10.249	< 0.001	Supported

4.5. Model Quality Assessment

The structural model's quality was evaluated using R^2 coefficient, fit indices and predictive relevance metrics. These assessments provide evidence regarding the proposed model's explanatory and predictive abilities (Hair et al., 2022).

Table 6 indicates that Sustainability Touchpoint Experience (STE) contributed to 25.6% of the variance in Customer Trust (R^2 = 0.256), while sustainability Touchpoints Experience and Customer Trust explained 38.0% of variance in Dining Loyalty (R^2 = 0.380). The equivalent adjusted R^2 scores were 0.254 and 0.376. Therefore, according to Haier et al. (2022), these values possess moderate explanatory power and indicate that sustainability related customer experiences are important factors that influence customer trust and dining loyalty in the restaurant context.

Model fit was assessed using the SRMR, NFI, and discrepancy measurements. A satisfactory match between the proposed model and the real data was demonstrated through the SRMR values of 0.065, which falls below the necessary threshold of 0.08 (Hu & Bentler, 1999). Furthermore, the NFI rating of 0.873 shows a good level of model fit. The discrepancy measurements (d ULS = 0.444; d G = 0.108) also additionally demonstrates that the model does not lack a substantial misspecification.

The PLS predict method was employed to evaluate the model's predictive value in addition to the exploratory power. Customer Trust and Dining Loyalty indexes showed all positive Q^2 predict values ranging from 0.109 to 0.193. Positive Q^2 predict values indicate the model's predictive utility for endogenous constructs (Shmueli et al., 2019). In addition, the PLS-SEM prediction errors (RMSE) were consistently lower than those from the benchmark linear model (LM), suggesting the model offers predictive power. These findings usually demonstrate that the model offers adequate predictive ability, excellent fit and adequate exploratory power.

Table 6
Predictive relevance through PLS Predict

Measure	Value
R^2 (Customer Trust)	0.256
Adjusted R^2 (Customer Trust)	0.254
R^2 (Dining Loyalty)	0.38
Adjusted R^2 (Dining Loyalty)	0.376
SRMR	0.065
NFI	0.873
d_ULS	0.444
d_G	0.108

4.6. Mediation Analysis: The Role of Customer Trust

To examine the mechanism through which Sustainability Touchpoint Experience (STE) influences Dining Loyalty, the mediating role of Customer Trust was examined using Smart PLS bootstrapping methodology. Following Hair et al., (2022) recommendation, the direct, indirect, and total effects were examined, and to determine the magnitude of the mediation effect, the Variance Accounted for (VAF) was calculated.

Table 7 shows a positive and statistically significant indirect impact on STE and dining loyalty through customer trust ($\beta = 0.217$, $t = 8.095$, $\rho < 0.001$). It indicates that sustainability experiences enhance dining loyalty by encouraging customer trust. Dining loyalty is both positively and significantly imparted on STE ($\beta = 0.276$, $t = 6.203$, $\rho < 0.001$), suggesting that it affects both directly and indirectly through trust among customers.

The total effect of STE on Dining Loyalty was 0.493, resulting in a calculated VAF of 44.0%, indicating that the relationship between STE and dining loyalty is partially mediated through customer trust. Hair et al., (2022) claim that partial mediation is shown with VAF values around 20% to 80%. Therefore, Hypothesis H5 is supported.

These findings demonstrate that sustainability related experience enhance customer loyalty not only directly by affecting their actions and intentions, but also indirectly by building trust in the restaurant. This stresses the importance of customer trust as a key relational mechanism through which sustainability initiatives turn into good customer outcomes.

Table 7
Mediation Analysis Results.

Hypothesis	Relationship	Direct Effect (β)	Indirect Effect (β)	Total Effect (β)	*t*-value (Indirect)	*p*-value (Indirect)	VAF (%)	Mediation	Result
H5	STE → Customer Trust → Dining Loyalty	0.276	0.217	0.493	8.095	< 0.001	44	Partial	Supported

4.7. Importance-Performance Map Analysis (IPMA)

To add to the structural model results, an Importance-Performance Map Analysis (IPMA) was conducted using Dining Loyalty as the target construct. While the structural model assesses the significance of the relationships amongst the constructs, IPMA evaluates each construct's importance (total effect) and performance (average latent variable score), identifying managerial priorities for improving customer outcome (Hair et al., 2022).

The study constructs performance values and significance are presented in the Table 8. Sustainable Touchpoint Experience (STE) scored the highest significance (0.600), indicating that increasing customer overall sustainability experiences is expected to culminate in the greatest boost in dining loyalty. Customer trust scored second (0.319), showing its essential importance as a relational mechanism which transforms sustainability experience into customer loyalty.

Food Touchpoint is the most significant among the first-order sustainability dimensions (0.222), followed by Planet Touchpoint (0.156), People Touchpoint (0.154), and Governance Touchpoint (0.112). These findings are consistent with the higher-order construct assessment, that demonstrated that Food Touchpoint enjoyed the most significant part in the development of Sustainability Touchpoint Experience. Although the constructs' performance scores were usually close, Food Touchpoint has the lowest performance (47.881), whereas Governance Touchpoint has the highest performance (50.714). This indicates that further improvements in food-related sustainability practices, such as sustainability sourcing, menu transparency and responsible food management, are going to result in the greatest improvements in customer sustainability experience and resulting dining loyalty.

Overall the IPMA findings add to the structural model by transforming statistically significant relationships into actionable managerial priorities. Based on the study, restaurant managers should continue to enhance the Sustainability Touchpoint Experience while emphasizing on food-related sustainability initiatives to boost customer confidence and dinning loyalty.

Table 8
Importance- Performance Map Analysis (Target construct: Dining Loyalty).

Construct	Importance	Performance
Sustainability Touchpoint Experience	**0.6**	**48.356**
Customer Trust	0.319	50.028
Food Touchpoint	0.222	47.881
Planet Touchpoint	0.156	50.207
People Touchpoint	0.154	50.251
Governance Touchpoint	0.112	50.714

5. Discussion

This study aimed to develop and validate a Sustainable Touchpoint Experience (STE) as a higher-order customer-centric sustainability construct, and also to explore its effect on consumer confidence and dining loyalty in the restaurant industry. The outcomes provide numerous theoretical and managerial insights into how sustainable initiatives influence consumer choices in addition to providing sustainable empirical backing to the proposed conceptual model.

First the findings confirm that Food, People, Planet and Governance Touchpoints collectively form the Sustainability Touchpoint Experience (STE), that validates its conception as a hierarchical component model. Food Touchpoint were found to have been the most accurate measure of STE among these variables. This finding is in accordance with research on hospitality that show food is the main service offered by restaurants and is the most apparent illustration of sustainability practice (Filimonau et al., 2020; Han et al., 2019). Customer evaluations of sustainability performance are directly affected on their increasing understanding of ethical production, local ingredients, responsible sourcing, and food waste reduction methods.

Second, the results indicate that customers trust is significantly boosted through the Sustainability Touchpoint Experience. Restaurants are regarded as more trustworthy, transparent and socially aware if they consistently address and carry out environmentally friendly procedures across all customer touchpoint. These findings support relationship marketing theory, which argues that consistent and dependable interactions between companies and their customers build confidence. Furthermore they complement the theory of sustainability metrics as signs of long-term commitment and integrity in the organizations.

Third it was found the Dining Loyalty was significantly affected immediately through Sustainability Touchpoint Experience. Customers are more likely to go back to restaurants and recommend others to them when they experience sustainability throughout their dining experience. This outcome supports studies on customer experience and sustainable consumption showing that sustainability has evolved beyond an operational practice to a vital component of value creation and customer relationship management.

The mediation study further demonstrates that the relationship between Dining Loyalty and Sustainability Touchpoint Experience is partly mediated through Customer Trust. Sustainability Experience boost loyalty indirectly by establishing trust among customers even when they directly encourage repeat customers. While recognizing that other phycological mechanism might also have a part in the formation of loyalty the calculated VAF value indicates partial mediation, indicating that trust is an important means through which long-term experience turn into good behaviour outcomes.

Finally by identifying managerial priorities, the IPMA results extend the structural model. The most important variable in explaining loyalty is Sustainability Touchpoint Experience, that was subsequently followed by Customer Trust. Improvements in sustainable food sourcing, quality and transparency are likely to result in the greatest boosts to customer loyalty, based on Food Touchpoint, who demonstrated the greatest importance among the first-order sustainability dimensions but fairly low performance. On the reverse conjunction managers should ought to concentrate on improvements in the food-related components of sustainability while preserving visible practices, as Governance, People and Planet Touchpoints demonstrated relatively outstanding results but lower importance. These findings together emphasize the significance of combining managerial and explanatory analysis to support environmentally conscious decision making in the hospitality sector.

6. Theoretical and Practical Implications

6.1. Theoretical Implications

This distinctive study contributes to the thriving literature on customer experience, sustainability and hospitality in a broad aspect. Sustainability Touchpoint Experience (STE), a higher-order customer centric sustainability construct, is initially introduced and empirically verified. This research defines sustainability as an integrated customer experience that results from interactions with Food, People, Planet and Governance Touchpoints, while previous studies have primarily examined sustainability from organization or operational perspective.

Second by demonstrating that sustainability experiences emerge across many service interactions rather than through single sustainability initiatives, the study extends the literature on customer journeys and customer experiences. A theoretically informed framework for integrating multiple sustainability dimensions into one unified experiential construct is provided through the hierarchical component model approach.

Third, by identifying Customer Trust as an essential psychological mechanism that links sustainability experience with customer loyalty, this study advances relationship marketing theory. The mediation analysis demonstrates that sustainability initiatives impact behavioural results giving a more comprehensive overview of loyalty development in hospitality settings, directly as well as indirectly through the development of trust. Finally, through the use of Importance-Performance Map Analysis (IPMA), the study extends beyond hypothesis testing in conventional PLS-SEM applications to provide strategic ranking of sustainability dimensions. This combination of managerial and explanatory analysis provides methodological value to sustainability research.

6.2. Practical Implications

The findings offer plenty of beneficial implications for restaurant managers as well as other hospitality workers. First rather than becoming a collection of separate environmental initiatives, sustainability should be treated as an integrated customer experience. Regarding the quality of food offerings, employee interactions, environmental initiatives, and corporate governance, managers ought to make sure that sustainability practices are consistently communicated and experienced.

Second, the importance of accessible sustainability communication is highlighted through the substantial effect of Sustainability Touchpoint Experience on Customer Trust. To improve customer confidence, restaurants should ought to provide trustworthy data on waste reduction ethical business practices, sustainable sourcing and environmental responsibilities.

Third, Food Touchpoint was the highest managerial priority, based on the IPMA information. The greatest improvements in customer loyalty will probably have to result through investments in locally sourced ingredients, sustainable procurement, food safety, nutritional quality and transparent food information. While the performance in Governance, People and Planet Touchpoints were largely satisfactory, customer relationship outcomes could be improved by maintaining these standards together alongside targeted improvements in food-related sustainability.

Finally the findings demonstrate that rather than being created simply for marketing or regulatory compliance, sustainability initiatives should be integrated into a long-term customer interaction approach. A comprehensive sustainability experience may improve a restaurants long-term competitiveness, encourage repeat customers, and improve trust among customers.

7. Conclusion

Sustainability Touchpoint Experience (STE), a higher order customer centric sustainability construct in the restaurant industry, was developed and empirically validated in this study. The study demonstrated that customers interactions with Food, People, Planet and Governance Touchpoints lead to sustainability experiences, drawing on literature on customer journey, customer experience, and sustainable consumption.

The findings that were generated using PLS-SEM and information collected from 400 dining customers in eastern India, confirmed that every one of the four sustainability touchpoints make a significant contribution to the Sustainability Touchpoint Experience. Furthermore, dining loyalty and customer trust are significantly boosted through sustainability Touchpoint Experience, and the relationship between sustainability experience and loyalty is primarily controlled by customer trust. The IPMA findings demonstrate that Food Touchpoint is the most important sustainable dimension for improving customer loyalty, and the predictive assessment further demonstrates satisfactory out of sample predictive capacity.

Overall, by providing Sustainability Touchpoint Experience as a theoretically grounded higher order construct that integrates different sustainability variables into one consumer experience framework, the study improves hospitality sustainability research. The study offers a comprehensive overview of how sustainability experiences translates into stronger customer relationships and offers practical recommendations for sustainability oriented restaurant management by combining hierarchical component modelling a mediation analysis, predictive assessment and IPMA.

8. Limitations and Future Research

Considering its contributions, this paper presents a selection of significant weaknesses that offer possibilities for additional research. First the empirical investigation was limited to customers of the restaurants in the eastern Indian states of Odisha and West Bengal, which may limit the findings relevance to other geographical regions and hospitality contexts. Future study ought to verify the proposed model across a range of different countries, cultural settings, and hospitality sectors, such as quick-service restaurants, hotels, and cafes.

Second since the study employed a cross-sectional research method, it wasn't possible to investigate whether customer perceptions evolved over time. Deeper comprehension of the way sustainability experiences influence loyalty and trust in enduring customer relationships might be achieved through longitudinal studies.

Third, the sole variable which was demonstrated to facilitate the association between Dining Loyalty and Sustainability Touchpoint Experience was Customer Trust. To develop a deeper understanding of the psychological mechanisms behind sustainable behaviour among consumer, future research ought to look at additional mediators such as customer satisfaction perceived value, customer engagement or emotional attachment.

Finally, although IPMA was utilized in this study to identify managerial priorities, segmentation methods such as Multi-Group Analysis (MGA) might be utilized in future research to add to these findings as well as examine whether demographic variables such as age, gender, or income moderated the relationships within the proposed model. The practical relevance of Sustainability Touchpoint Experience across different customer groups could be further strengthened through such assessments.

Declarations

Consent to participate:

Informed consent was obtained from all participants involved in the study and they were made familiar with the research purpose before completing out the questionnaire. No personally identifiable information, like names or contact information, was collected in an effort to protect participants privacy and confidentiality. Furthermore, participants were informed that their responses would be kept confidential and employed solely for research.

Ethical Approval:

The study procedure was reviewed and approved by the ABA Research Ethics Committee, Academy of Business Administration Research Ethics Committee, Balasore, Odisha, India (Ref. No. ABA/REC-576/26). This study was conducted in accordance with the ethical standards of the ABA Research Ethics Committee, Academy of Business Administration, Balasore, Odisha, India, and all applicable institutional ethical guidelines involving human participation.

Consent to Publish:

Not applicable

Disclosure statement:

No potential conflict of interest was reported by the author(s). All views and opinions are stated by the author without any influence of any specific official stance or policy of any related group.

Data availability:

The dataset analysed and generated during the study are available from the corresponding author upon reasonable request. The data are not made publicly available to preserve participant's confidentiality and anonymity.

Acknowledgement:

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Clinical Trial Registration:

Not Applicable

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Figures

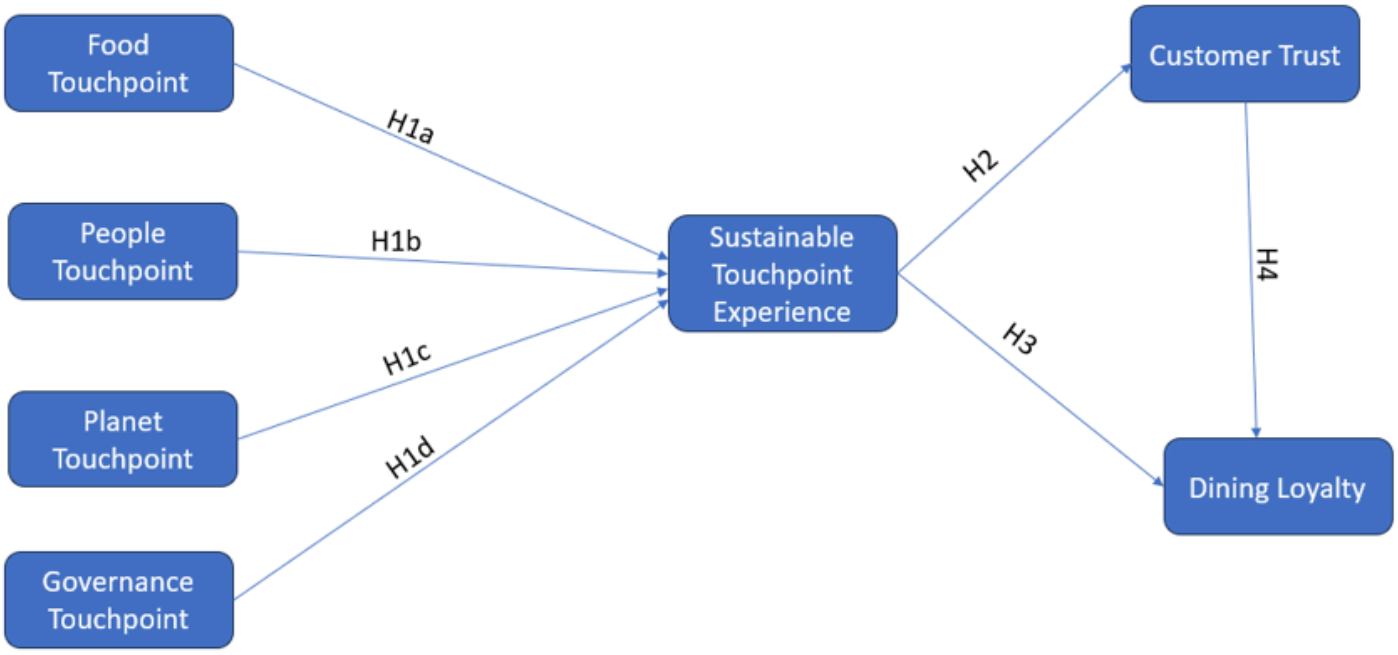

Figure 1

Proposed conceptual framework of Sustainable Touchpoint Experience (STE)

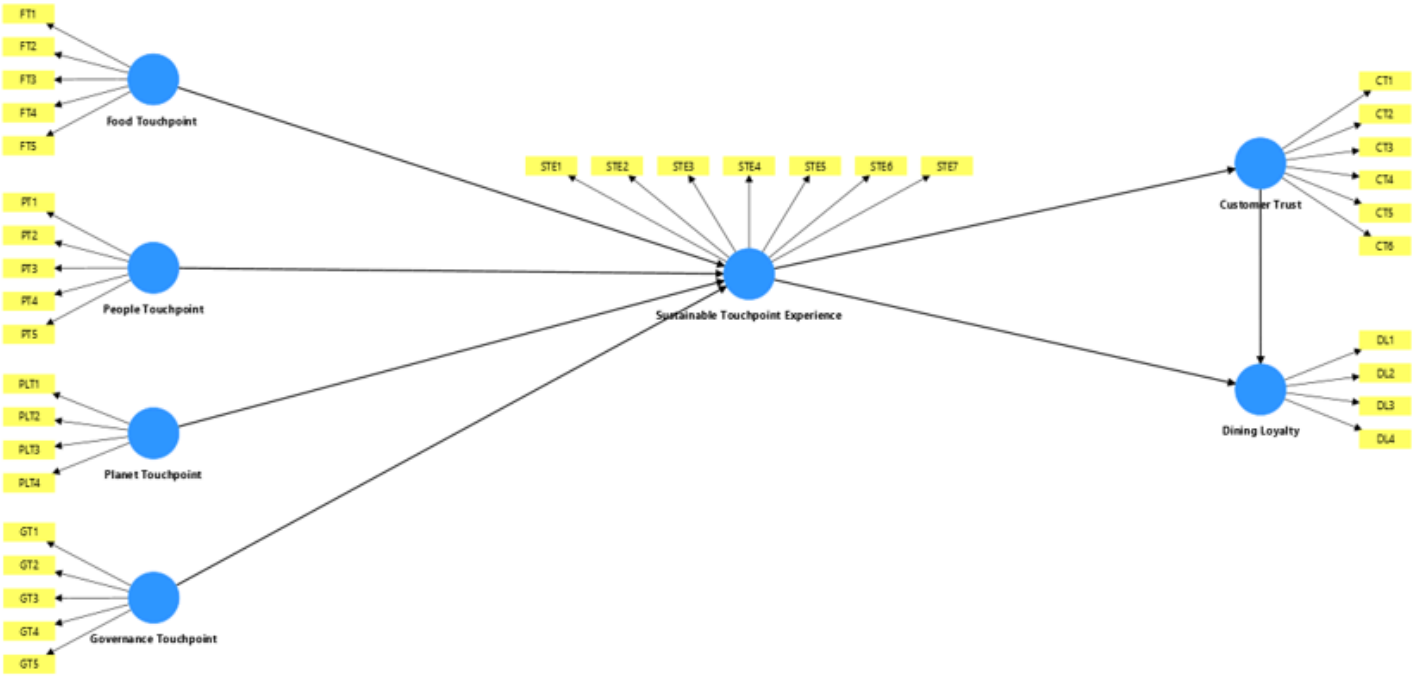

Figure 2

Proposed Research Model

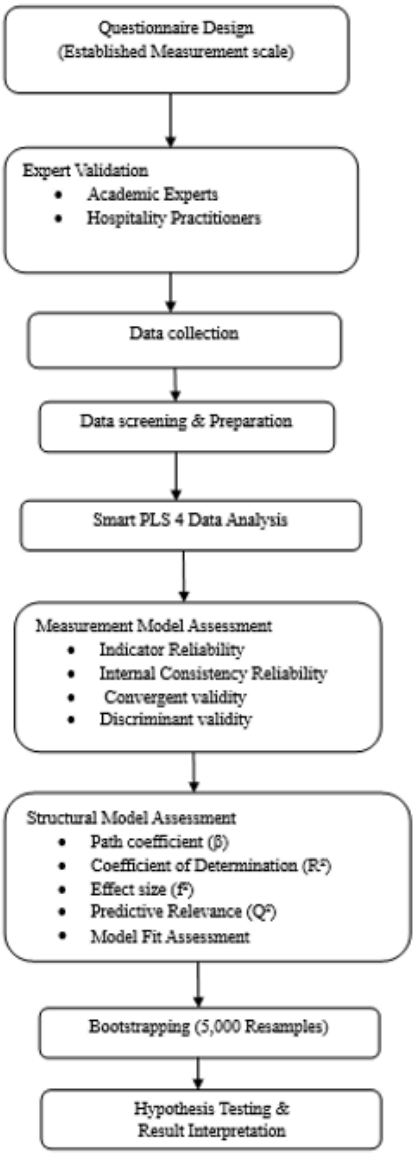

Figure 3

Data Analysis Procedure adopted in the study

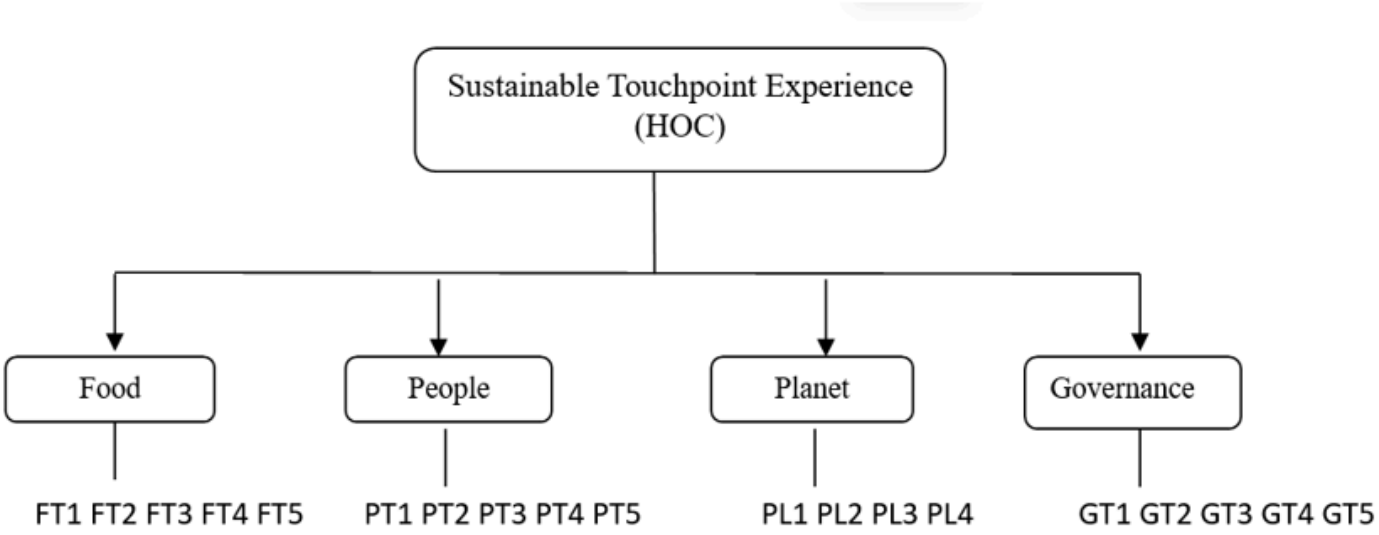

Figure 4

Hierarchical component structure of Sustainability Touchpoint Experience

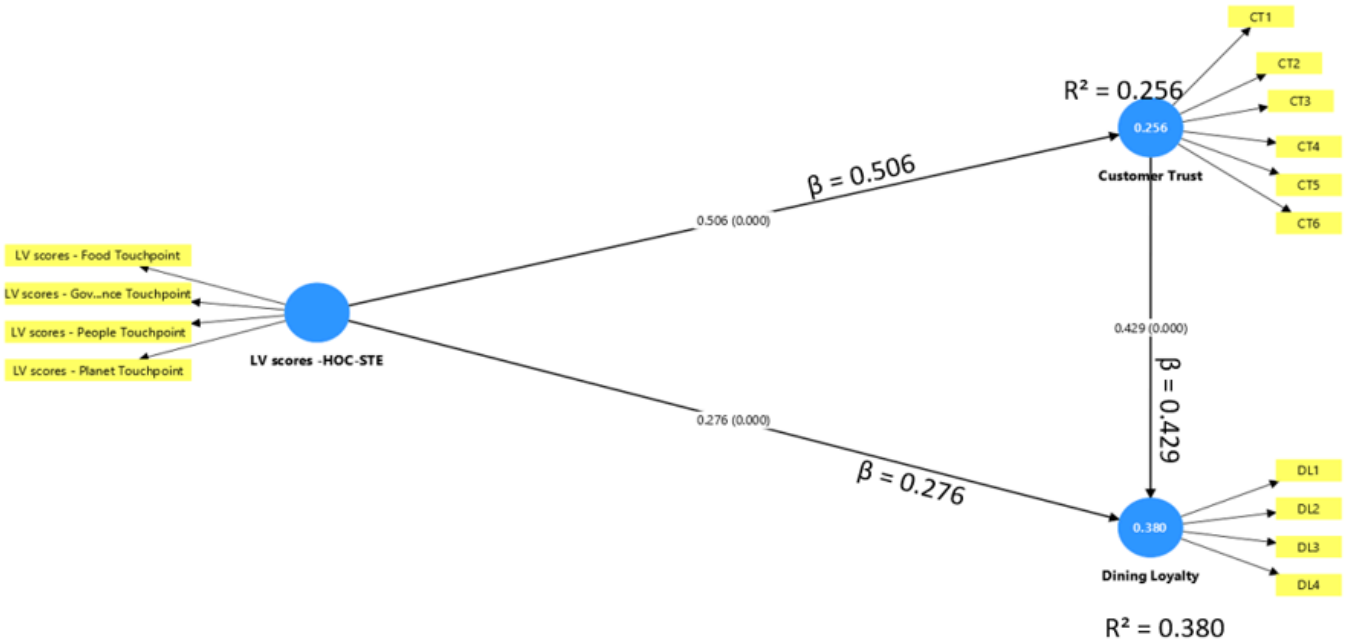

Figure 5

Structural Model with β coefficient and R² values

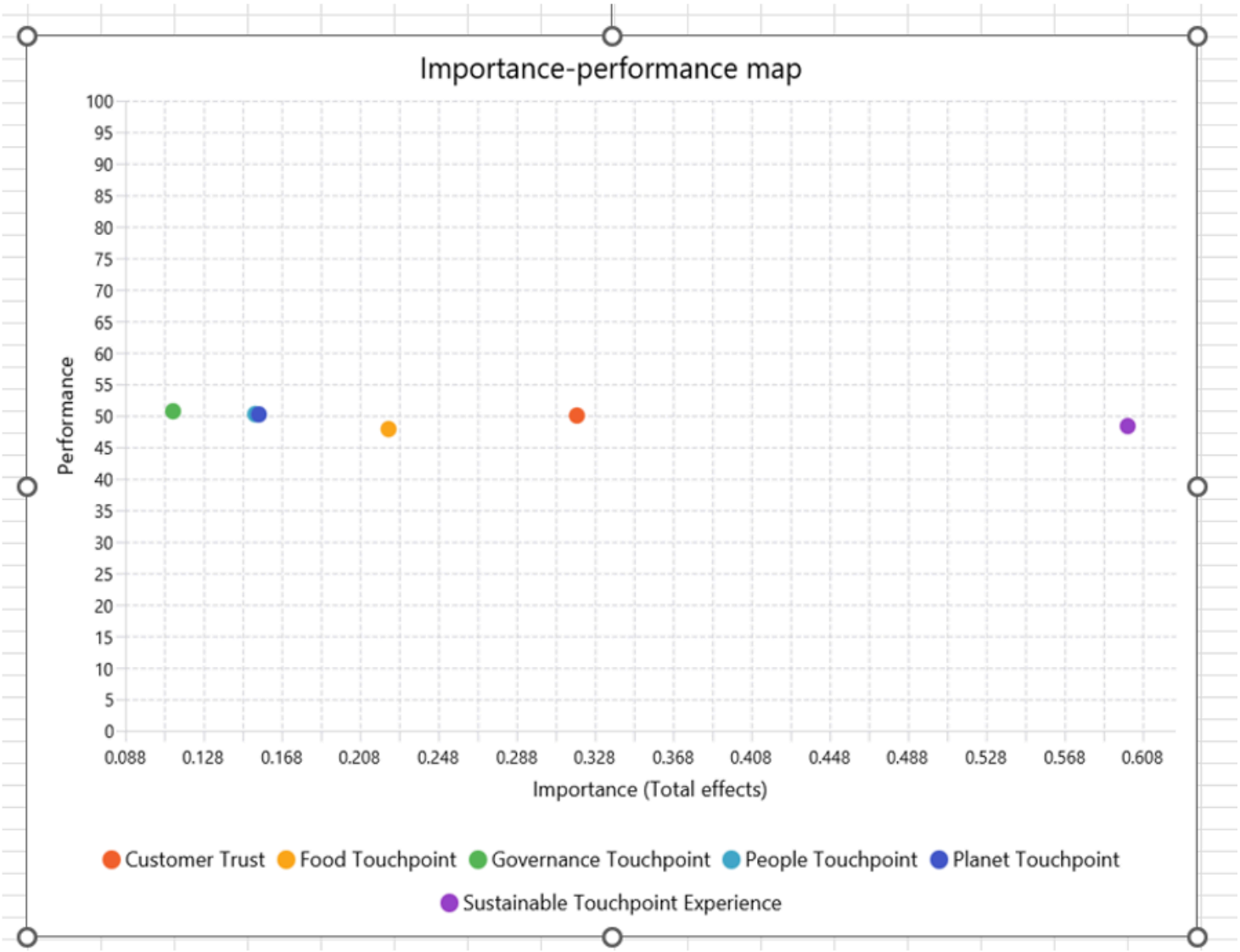

Figure 6

Construct – Level Importnace-Performance Map for Dining Loyalty.