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Customer Satisfaction as the Common Transmission Mechanism Linking Green Servicescape to eWOM and Revisit Intentions: Evidence from Eco-Friendly Coffee Shops

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Abstract

Specialty coffee has become a dense, image-conscious segment of southeast Asian food service, and operators increasingly rely on sustainability-oriented design to differentiate their premises. Research on green service environments has concentrated on hotels and full-service restaurants and tends to assume that satisfaction carries environmental cues into every behavioral response in the same way, without testing whether transmission differs between online advocacy and repeat patronage. Drawing on the Stimulus–Organism–Response framework, with Attention Restoration Theory and Signaling Theory informing specific expectations, the study treated green servicescape as the stimulus, satisfaction as the organismic response, and eWOM intention and revisit intention as behavioral responses. Data from 413 customers of eco-friendly coffee shops in Northeastern Thailand were analyzed through covariance-based structural equation modeling with bootstrapped indirect effects and a formal contrast between them. Satisfaction carried most of the association between the environment and each outcome, direct associations were weak or absent, and the contrast gave no evidence that its mediating role differs across outcomes, although modest differences cannot be excluded. The results limit the explanatory reach of signaling accounts of eWOM in this market and identify satisfaction as the principal channel through which green design reaches behavior. For operators, investments that visibly improve the customer experience can serve online advocacy and repeat patronage together.

Keywords: green servicescape; customer satisfaction; eWOM intention; revisit intention; mediation analysis; S-O-R framework; Thailand; emerging economy

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1. Introduction

Specialty coffee has become a fixture of southeast Asian food service. Thailand's registered coffee establishments grew from 13,000 units in 2018 to more than 30,000 by 2023. Eco-friendly cafés make up a growing share of new entrants in secondary cities [1]. That growth reflects a wider shift. Young consumers now choose where to eat and drink partly on ecological grounds. Ecological positioning and identity fit now matter as much as product quality, sometimes more [2,3]. Inside this commercial landscape, the physical "servicescape" [4] has become the main lever. Through it, eco-friendly coffee shops signal value, build loyalty, and generate social media buzz. Its sustainability-focused variant, the "green servicescape," is worth studying both theoretically and commercially [5,6].

The green servicescape is defined as the environmentally sustainable physical setting within which the services company operates. This includes not only sustainable designs in terms of ambient, spatial, and facility factors but also the symbols employed by the organization to show its commitment to the environment [4,7]. The specialty coffee shop gives special meaning to this concept since it is both a retail shop where product attributes and atmosphere influence purchase decision-making and a leisure establishment where consumption for expression and social media posting are equally important [8,9]. The traditional retail servicescapes are often evaluated based on function and aesthetics [10,11]. The green servicescape of coffee shops operates in a different manner. The green servicescape operates through two distinct channels. The first is that of an environmental stimulus. This stimulates positive emotions via biophilic cues in the environment [12]. The second channel is that of a credibility cue. This conveys information about organizational values to environmentally conscious consumers, while simultaneously encouraging them to post information online about their experience [13,14]. Both of these channels work simultaneously, which means that the effects of the green servicescape cannot be understood in isolation from retail atmosphere frameworks or hospitality servicescape theories.

The impact of physical environment on consumer behavior is an area widely explored by researchers in both fields of retail and hospitality. Nevertheless, a significant gap exists between them. Neither field has recognized the specialty coffee shop as a distinct foodservice retail environment. According to Baker et al.'s research on retail atmospherics, environmental dimensions have an influence on emotions, which have an impact on consumer behavior within stores [10]. Ryu & Jang's DINESCAPE model also confirmed the same pattern for restaurants. However, none of these models was developed for the green service environment [9].

Research on the green servicescape has been done mainly in hotel and restaurant environments [15,16]. However, the specialty coffee shop environment has received little attention despite its uniqueness. It is a special consumption context where people come frequently, use social media actively, buy goods expressively, and influence each other through electronic word-of-mouth. The transformation from a green environment to a revisitation intention, or even to digital advocacy, need not involve the same process as in a hospitality scenario where repeat purchase is unlikely. The importance of habitual congruence and episodic satisfaction will be different based on frequency of purchase. So far, no prior research study has examined whether these processes would show symmetry or asymmetry depending on the behavioral outcome.

The literature over the past decade provides a fairly consistent view. Green servicescapes are likely to improve customer outcomes in hospitality scenarios. Olorunsola et al. found that a green physical environment in eco-centric hotels enhances guests' evaluative outcomes and loyalty intentions [16]. Eren et al. showed that green service quality predicts both customer satisfaction and return intention [15], with satisfaction partially mediating the relationship. This study extends that dual-channel finding. Wichitsathian and Suvittawat added Thai evidence. They showed that servicescape dimensions shape eWOM and behavioral loyalty through customer satisfaction [1]. Green servicescapes clearly help. But three gaps in the literature still need attention.

First, the three-dimensional green servicescape construct has not been validated in a southeast Asian retail food service context. Ecological interpretations there may not match those built into scales developed in Western and east Asian settings [6,17,18]. Second, eWOM intention has drawn little attention as an outcome of green servicescape [19,20]. This is despite eWOM arguably being the main reputational lever for eco-friendly cafés among socially active young Thai consumers. Third, the S-O-R mediation structure in this literature has a real theoretical gap. Prior work either studies one behavioral response at a

time, or it assumes customer satisfaction mediates every outcome the same way. The motives behind eWOM and revisiting differ [2,15]. This study explores all three gaps together, in eco-friendly specialty coffee shops in Northeastern Thailand.

The study pursues three objectives. First, it evaluates a three-dimensional measure of green servicescape in Northeastern Thai specialty coffee. This extends evidence on its measurement to an emerging southeast Asian economy, where the scale has not previously been validated. Second, it tests a dual pathway S-O-R model. The model links green servicescape to eWOM intention and revisit intention through customer satisfaction, moving past earlier, more descriptive uses of S-O-R in green hospitality research. Third, it tests whether customer satisfaction transmits the effect of green servicescape to the two behavioral intentions to a different degree, using a formal contrast between the two indirect effects.

This research contributes to retailing, hospitality management, and green consumer behavior scholarship in four ways. First, it offers an empirical measurement model of green servicescape in a southeast Asian specialty coffee retail setting. It builds on Jang [6,7], extending their measures to an emerging-economy market in the region.

Second, it finds no evidence that customer satisfaction carries the effect of green servicescape to eWOM intention and to revisit intention to different degrees, which is compatible with S-O-R transmission in sustainability-positioned service settings running through a shared evaluative channel, although the data do not establish that the two channels are identical [21,22]. Third, it qualifies the reach of Signaling Theory: in this sample, eco-signals embedded in the servicescape show no direct association with eWOM intention once satisfaction is accounted for. Whether this pattern reflects green identities that are still forming in this market is an open question that the present design did not measure [13,14,23]. Fourth, it demonstrates that a parsimonious, admissible measurement model of green servicescape can be estimated in a developing-economy setting, and it reports the diagnostic checks used to verify admissibility. The findings also offer operators of specialty coffee shops guidance on where green design investment is likely to matter.

This paper continues as follows. Section 2 discusses the relevant theories and literature related to the constructs of this research. Section 3 frames eight hypotheses and illustrates the research conceptual framework. Section 4 details the methodology adopted for the study, including the population, sampling procedure, measurements, and data analysis method. Section 5 presents the findings based on Confirmatory Factor Analysis and the structural model. Section 6 discusses these results. Section 7 presents the study's conclusion.

2. Theoretical Background and Literature Review

2.1. Theoretical Background

This research uses a multi-theoretic approach based on three complementary theories. The first is Stimulus–Organism–Response (S-O-R) theory, which offers the overall structural foundation for the theoretical model. The second is Attention Restoration Theory (ART), which explains the psychological process through which the green environment produces positive affective experiences. Third is signaling theory, which clarifies the direct motivation to create eWOM due to the green servicescape.

2.1.1. Stimulus–Organism–Response (S-O-R) Framework

The S-O-R paradigm, first pioneered by Mehrabian and Russell [22] in environmental psychology, underpins the current model. The S-O-R framework has been widely applied to physical service environments and has evolved substantially. Baker et al. first demonstrated that ambient, design, and social stimuli jointly influence customers' quality inferences and store image evaluations [10]. Ryu and Jang subsequently extended this logic to the restaurant context through their DINESCAPE instrument, confirming that atmospheric

dimensions, including facility aesthetics, ambiance, lighting, and spatial layout, systematically generate emotional states that mediate behavioral intentions [9]. Stimuli quality is considered to be a key antecedent of customer value [21]. The research design adopted for the green context is similar in structure, as environmental triggers are connected with sustainability-based performance measures [24]. In this research, S-O-R is used as the structure connecting the green servicescape (S) to customer satisfaction (O) and further to eWOM and revisit intention (R).

2.1.2. Attention Restoration Theory (ART)

Attention Restoration Theory [12] provides the neuropsychological mechanism through which green environmental stimuli produce positive affective outcomes. According to the theory, the normal functioning of our brain leads to exhaustion of directed attentional resources due to directed attention fatigue, which occurs through gradual depletion of cognitive capabilities via inhibition of competing stimuli [25]. Natural and nature-inspired environments facilitate recovery through four restorative properties (fascination, being-away, extent, and compatibility) that engage in voluntary, bottom-up attentional processes, thereby reducing cognitive load, lowering stress-related arousal, and generating positive diffuse affect [26,27]. These restorative effects have been documented across diverse settings, including urban parks, hospital interiors with natural views, and biophilic workspace designs [28–30]. They have since been extended to commercial service environments. In these settings, natural materials, indoor plants, and organic spatial forms produce measurable improvements in customer mood and service evaluations [6,26,31].

Within the integrated framework of the current study, ART motivates the expectation that green servicescape attributes (S) are associated with customer satisfaction (O). It explains why green environmental stimuli create positive feelings. These include natural products, sustainable furniture, signage, and biophilic lighting, which are the main antecedents of global satisfaction ratings [32]. This mechanistic linkage is absent from the S-O-R framework when considered in isolation. Its inclusion distinguishes the present model from prior green servicescape studies that assert, rather than explain, the stimulus-to-organism relationship [5,16]. It is important to state the status of this framework in the present design: restorative experience was not measured, so ART is used here to motivate H1 and not as a process the study tests. Establishing the restorative mechanism would require measures of fascination, being away, extent, and compatibility, which we identify as a priority for future work.

2.1.3. Signaling Theory

The theory was first developed for labor market economics. It has subsequently been used widely in consumer behavior and service marketing [13,14]. In the field, firms employ visible investments to signal qualities and values to their external stakeholders. The signals include advertising expenditures, store quality, and environmental certification [33,34]. In service marketing, physical servicescape attributes serve as quality signals. Customers cannot directly observe the internal attributes and values until consumption. These signals help reduce this information asymmetry [4,35,36]. In green servicescapes, certain attributes serve as signaling cues. These are recycled materials, energy-saving lighting systems, visible efforts in waste reduction, environmental labels, and environmental knowledge of employees [2,16]. Signaling Theory is especially applicable to the eWOM path in the current model. If green servicescape signals are viewed by consumers as credible indicators of the establishment's commitment to the environment, two responses are proposed to follow: consumers develop positive attitudes towards the organization and become willing to diffuse these signals through their social network, by way of online reviews, social media,

and digital recommendations [19,20]. In this account, eWOM acts as secondary signaling. Consumers become volunteer bearers of the organization's green identity to others who have not yet used the service. Green identity expression has been documented as a component of consumer self-expression in visual social networking sites [8]. The proposed transmission would operate through identity congruence and value-expressive motivation, and would be distinct from the satisfaction-based channel motivated by ART. We state this as a theoretical proposition rather than an established mechanism: neither identity congruence nor value-expressive motivation is measured in the present design, and H2 tests only whether a direct association survives once satisfaction is accounted for.

2.1.4. Theoretical Integration and Conceptual Positioning

Together, these three theories provide the model's structure and mechanism. The architecture of the model is provided by S-O-R [22]. ART provides the pathway from stimulus to satisfaction. The signaling theory suggests a pathway between stimulus and eWOM that goes beyond satisfaction. The combination addresses the lack of green servicescape scale validation in the southeast Asian markets [5,37]. It also responds to growing scholarly attention to the service environment as an object of sustainable hospitality management [15,16]. Two mechanisms invoked in this section, restorative experience and identity congruence, were not measured. They motivate expectations and inform interpretation without being tested, so the hypotheses that follow concern associations among the measured constructs only. Table 1 maps each theory onto the model constructs and hypothesized pathways.

Table 1. Theoretical framework to model constructs and hypothesized pathways mapping.

Theoretical Framework	S-O-R Component	Construct(s) Addressed	Explanatory Role
Mehrabian & Russell [22]	S → O → R (full structure)	Green Servicescape (S); Customer Satisfaction (O); eWOM & Revisit Intention (R)	Provides overarching architectural logic linking environmental stimuli to internal states and behavioral outputs.
Kaplan & Kaplan [12]	S → O (mechanism)	Green Servicescape → Customer Satisfaction	Explains the psychological mechanism through which green environmental cues generate the positive affective states that underlie customer satisfaction.
Spence [14]	S → R (direct path)	Green Servicescape → eWOM Intention	Explains why green servicescape elements may directly motivate identity-expressive eWOM transmission, independent of affective restoration.

2.2. Green Servicescape

Green servicescape research builds on Bitner's original servicescape construct. It extends the construct to capture the sustainable design of ambient conditions [4], space, and signage [7,17]. It also frames eco credentials as credibility signals that shape consumer trust [14,23]. The empirical record is fairly consistent. Sustainability-oriented service environments produce positive customer outcomes across hospitality contexts. This holds from eco hotels to green restaurants [15,16,38]. Second-order measurement approaches to the construct are also gaining traction. Specifications of the broader dining environment have also gained empirical support [18].

Yet, the current body of research has not sufficiently considered the specialty coffee shop setting. The retail food service operation has received far less academic scrutiny than hotels and restaurants despite its popularity [15,16]. Customers frequent coffee shops once or twice a week, or even daily. In the current study, 70.91% of respondents who reported

their visit frequency went to a coffee shop one to three times per week. They base their decisions heavily on peer eWOM on visual social media. The physical environment plays a double role for them, as it acts both as a place of consumption and as an identity marker [8,9]. This suggests that such customers' consumption behavior is more similar to that of specialty retail consumers than to that of destination tourists.

The preceding account has two implications for this setting. First, visit frequency is high, so a return route that does not depend on episodic satisfaction, such as habitual identity congruence, is at least plausible and would correspond to partial mediation. Second, Thai youth have fully integrated social media into their café visits, so aesthetically distinctive green communication features may motivate eWOM directly, although this would likely hold only once a green consumer identity has taken hold among the target audience. No prior study has tested either implication empirically in southeast Asia's specialty coffee retail sector.

2.3. Customer Satisfaction

Customer satisfaction is a measure consumers form after consuming a product or service. This is due to a comparison between expectation and actual performance [32]. In green services, customer satisfaction serves as an organismic reaction through which environmental stimuli influence behavior. The restorative processes presented by Kaplan and Kaplan [12] provide the psychological mechanism for this translation: natural design elements are argued to replenish depleted directed-attention resources, producing reduced mental fatigue that manifests as positive affect. Elshaer et al. [39] extended this reasoning directly into a hotel setting, finding that guests exposed to higher-quality biophilic design reported greater well-being and perceived value, outcomes the authors attributed explicitly to attention-restorative processes operating within the service environment rather than to aesthetic preference alone. This affective pathway does not operate in isolation. Combined with the functional evaluation of sustainable practices [40] and quality comparisons against non-green alternatives [41], it converges into the holistic satisfaction evaluation that customers ultimately report. Recent hospitality studies continue to reaffirm the role of customer satisfaction in mediating the effect of service quality on behavior, including in restaurant settings [31,42]. According to Oliver [32], satisfaction remains the best predictor of repeat purchases and long-term loyalty behavior [18].

2.4. Electronic Word-of-Mouth (eWOM)

eWOM intention captures a customer's willingness to share opinions and experiences online. This happens through reviews, social posts, and recommendations [19]. It functions as an increasingly important driver of purchase decisions across service categories [20,43]. Through the Theory of Planned Behavior, it is theorized as a deliberate intention shaped by attitude and social norms [44].

Satisfaction is the most consistently documented antecedent of eWOM. Satisfied customers feel a social obligation to share that experience. This is reinforced by self-enhancement motives tied to how sharing reflects on their own identity [19,45]. This satisfaction-eWOM link has been replicated across restaurant and hospitality settings [8,46].

Beyond the satisfaction-mediated pathway, the physical servicescape may also predict eWOM intention directly through signal transmission. Offline servicescape elements have been shown to motivate online content generation over and above their effect through satisfaction, because distinctive and values-resonant environments create moments that customers are intrinsically motivated to document and share [47]. Signaling Theory implies that this mechanism should be stronger in green settings, where customers who read eco-credentials as credible signals may relay them across their own networks [13,20]. Whether

they do so is likely to depend on how far environmental values have become part of their self-concept, since pro-environmental self-identity predicts behavior consistently only for some types of action [23,48].

The direct pathway to eWOM is therefore conditional on customer characteristics outside the present model, making its strength an empirical question in a market where environmentally oriented consumption is still developing. This study uses five items adopted from Hennig-Thurau et al. [19] and Ananda et al. [47] to assess eWOM intention. The five variables include online recommendation, social sharing, photo/video uploading, reviewing activities, and check-ins. Although eWOM is important from a business perspective for the target market segment, it has rarely been used as a dependent variable in the green servicescape literature.

2.5. Revisit Intention

Revisit intention refers to a customer's subjective probability of returning to the same service establishment. It is the most proximal behavioral predictor of actual repeat patronage and long-term revenue sustainability [36]. Within the S-O-R framework, revisit intention constitutes the second behavioral response (R) construct. It is grounded in Ajzen's Theory of Planned Behavior [44] in which satisfaction serves as the primary attitudinal antecedent of behavioral intention [32]. One of the most empirically robust propositions in the hospitality literature is the satisfaction–revisit intention relationship. In their study, Han and Ryu [49] found that satisfaction mediates the relationship between environmental quality and revisit intention. Ryu et al. [31] showed that servicescape quality influences both revisit intention and positive word-of-mouth through satisfaction in a dual-outcome model that clearly anticipates the current model. This relationship has been demonstrated in various service settings, including Thai coffee shops, where Wichitsathian and Suvittawat [1] found that satisfaction is the main driver of how environmental quality affects behavioral loyalty.

Beyond the satisfaction-mediated pathway, the servicescape also directly influences revisit intention. Harris and Ezeh demonstrated that environmental dimensions predict behavioral loyalty independent of satisfaction [11]. In green restaurants in Istanbul, Eren et al. examined how perceived service quality shapes green restaurant image and revisit intention, placing the image customers form of the restaurant, rather than their satisfaction, at the center of the behavioral process [15]. Self-congruity theory offers one account that bypasses satisfaction: customers tend to return to settings whose image matches how they see themselves, so environmentally conscious customers may revisit eco-friendly establishments partly as an expression of environmental identity [2,50]. Accordingly, green servicescape is expected to influence revisit intention both directly and indirectly through customer satisfaction, forming the basis for Hypotheses 3, 5, and 7.

2.6. Research Gaps and Theoretical Positioning

The review above highlights three interconnected gaps, all of which motivate the current study. First, the green servicescape construct has not been validated in the southeast Asian retail foodservice context, which affects the construct validity of any structural estimation based on constructs developed in Western or east Asian hospitality contexts (Section 2.2). Second, the literature has overlooked eWOM intention, the main reputation tool for eco-friendly cafés among socially engaged young people in Thailand, as an outcome of green servicescape (Section 2.4). Thirdly, no previous research has modeled both the eWOM and revisit intention pathways together and submitted the difference between the two mediated effects to a formal contrast test; existing studies use a single-outcome design, or infer a difference between pathways from differing significance levels, or rely on the outdated Baron and Kenny [51] causal-steps approach. These gaps collectively lead to

eight hypotheses and a dual-pathway model presented in Section 3. Table 2 summarizes selected empirical evidence on green servicescape and customer behavioral outcomes.

Table 2. Overview of selected empirical evidence on green servicescape and customer behavioral outcomes.

Author(s)	Context	Framework	Key Constructs	Principal Findings	Gap Addressed
Bitner [4]	Service environments (conceptual)	Servicescape	Ambient, spatial, signs	Physical environment shapes customer responses	Foundational construct
Han & Ryu [49]	Restaurants, USA	S-O-R	Environment, satisfaction, loyalty	Satisfaction mediates environment → loyalty	Mediation mechanism
Ryu et al. [31]	Restaurants, USA	S-O-R	Environment, satisfaction, behavioral intentions	Environment → satisfaction → revisit + WOM	Dual behavioral outcomes
Harris & Ezeh [11]	Restaurants, UK	Servicescape	Servicescape, loyalty	Servicescape directly predicts loyalty	Direct servicescape → behavior
Gupta et al. [38]	Green restaurants, India	S-O-R, ART	Green servicescape, experience	Green environments produce restorative benefits	ART mechanism
Shim et al. [52]	Coffee shops (online panel)	Corporate Social Responsibility (CSR)/Triple Bottom Line theory	CSR dimensions (price fairness, quarantine/hygiene, eco-friendliness), reuse intention	Eco-friendliness (CSR) showed no significant effect on reuse intention	CSR ≠ servicescape
Olorunsola et al. [16]	Eco-hotels	Servicescape	Green environment, experience	Green environments enhance experiential evaluations	Green hospitality context
Jeong et al. [17]	Café setting	Green image	Eco-friendly practices, green image, customer attitudes	Perceived eco-friendly practices shape green image, which in turn shapes customer attitudes	Green cues in café context
Eren et al. [15]	Green restaurants, Turkey	Service quality	Green service quality, green restaurant image, revisit intention	Green restaurant service quality shapes restaurant image and revisit intention	Non-satisfaction route in green context
Wichitsathian & Suvittawat [1]	Service establishments, Thailand	S-O-R	Servicescape, satisfaction, eWOM, loyalty	Servicescape → eWOM and loyalty through satisfaction	Thai context, dual outcomes

3. Hypotheses Development and Conceptual Framework

3.1. Direct Effects of Green Servicescape

Green servicescape creates positive diffuse affect. This occurs through the process of restorative attention explained under ART [12]. Such affect is the major antecedent to customer satisfaction [32]. Studies conducted in hotels, restaurants, and cafés indicate that green atmospherics have a positive impact on customer satisfaction above and beyond the impact of regular service quality [2,7]. Therefore,

H1: *Green servicescape has a significant positive direct effect on customer satisfaction.*

According to Signaling Theory, green servicescape components are observable indicators of a firm's environmental commitment, and customers who find those indicators credible may pass them on through social media as a form of self-presentation, independently of their satisfaction with the visit [13,14]. Young coffee shop customers, who use social media heavily, have ready channels for such sharing [46,47]. We note that the identity mechanism itself is not measured in this study; H2 tests only whether a direct association remains once satisfaction is accounted for. Hence:

H2: *Green servicescape has a significant positive direct effect on customers' eWOM intention.*

Self-congruity theory suggests a further route from green servicescape to revisit intention. Customers are drawn back to settings whose image fits their self-concept, and those who hold environmental values may return to eco-friendly establishments because the setting affirms that self-image, somewhat independently of how satisfied they were on a given visit [2,50]. As with H2, the proposed mechanism is not measured here; H3 tests only whether a direct association remains once satisfaction is accounted for. Thus:

H3: *Green servicescape has a statistically significant positive direct effect on customers' revisit intention.*

3.2. The Effect of Customer Satisfaction on Behavioral Outcomes

Customer satisfaction affects eWOM communication through reciprocity and self-enhancement. Customers who are satisfied with their purchases feel a social responsibility to share their positive experience with others. Communication of these experiences enhances the identity of customers through social expression [19,45]. Prior studies have consistently shown that customer satisfaction is among the top factors that predict eWOM intention in coffee shops and restaurants [1,8]. Thus:

H4: *Customer satisfaction has a statistically significant positive direct effect on customers' eWOM intention.*

Among the attitudinal factors, customer satisfaction is the strongest driver of revisit intention. It is the fulfillment response that creates behavioral predisposition toward repeat visits [32,36]. This relationship has been observed in restaurant settings [31,49] and in the Thai service context [1]. Hence:

H5: *Customer satisfaction has a significant positive direct influence on customers' revisit intention.*

3.3. Mediating Effect of Customer Satisfaction

The restorative qualities of a green servicescape are expected to generate positive affect that feeds into overall satisfaction, which in turn stimulates eWOM through reciprocity and self-enhancement motives [12,19]. H2 proposes a direct signaling route in parallel.

Because that route depends on customers holding environmental values strongly enough to share green cues as self-expression [23], its strength relative to the satisfaction route is uncertain in an emerging market such as Northeastern Thailand. Customer satisfaction is therefore expected to mediate the relationship, with the extent of mediation left as an empirical question. Therefore:

H6: *Customer satisfaction mediates the association between green servicescape and customers' eWOM intention.*

Customer satisfaction is also expected to mediate the relationship between green servicescape and revisit intention. Affective states created by the green environment are converted into an overall satisfaction judgment, which then shapes the intention to return [32,36]. Because H3 proposes a self-congruity route to revisit intention that does not pass through satisfaction [2,50], both routes are expected to operate together, implying partial rather than full mediation. Therefore:

H7: *Customer satisfaction mediates the effect of green servicescape on customers' revisit intention.*

Finally, because the two mediated pathways have been treated in the prior literature as though they differ, we state that comparison as a hypothesis in its own right and submit it to a formal test rather than inferring it from a difference in significance levels. Figure 1 summarizes the eight hypotheses, including the contrast tested in H8.

H8: *The indirect effect of green servicescape on eWOM intention through customer satisfaction differs from the indirect effect on revisit intention through customer satisfaction.*

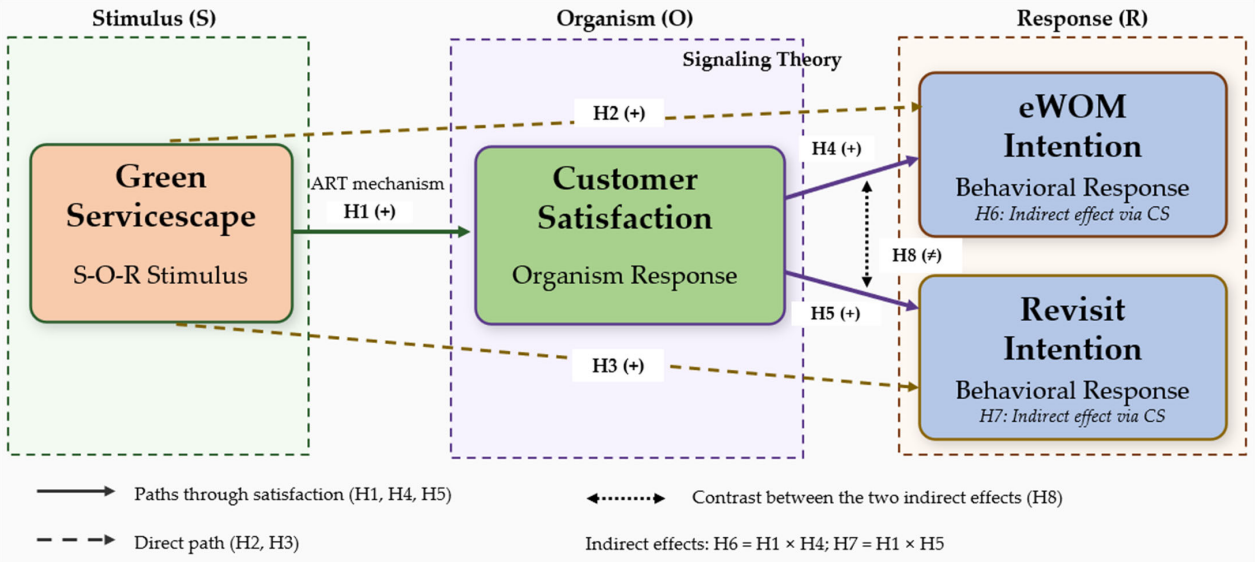


Figure 1. Conceptual framework: Green servicescape, customer satisfaction, eWOM intention, and revisit intention.

4. Methods

4.1. Research Design

This research adopted a quantitative, cross-sectional research design. It tested the hypothesized relationships between green servicescape, customer satisfaction, eWOM intention, and revisit intention. A survey-based explanatory approach fits the task well. The focal constructs are latent variables, inferred from self-reported perceptions and behavioral

intentions [53]. The post-positivist epistemological stance treats constructs as measurable through validated scales. It then subjects the resulting data to inferential statistical analysis. The cross-sectional design also matches the dominant methodological approach in the green servicescape and service marketing literature [1,15].

4.2. Population, Sampling, and Data Collection

The target population comprised customers aged 18 years or older who had visited an eco-friendly coffee shop in Northeastern Thailand within the month before participating. Northeastern Thailand offered a suitable setting for this inquiry. Its specialty coffee market has expanded steadily since 2018, with eco-friendly establishments multiplying in secondary urban centers, and its consumer base combines a high proportion of young adults with growing social media engagement and rising environmental awareness. These characteristics make green servicescape cues both salient to customers and likely to be shared online, yet the region has received little attention in published green servicescape research [1]. Because the study examined customers' perceptions rather than the attributes of particular establishments, respondents were recruited based on their consumption experience rather than through a sample of shops. The questionnaire began with a standard definition of an eco-friendly coffee shop (Appendix A), followed by screening questions confirming that respondents were at least 18 years old and had visited a coffee shop meeting this definition in Northeastern Thailand within the month before participating. The instructions for the evaluative sections then asked respondents to keep in mind a coffee shop in Northeastern Thailand that they had visited during that month when rating each item. As these instructions followed the definition and screening questions, respondents rated the items after being oriented to the eco-friendly features specified in the definition, and the one-month reference period limited the recall bias associated with longer windows.

A non-probability design combining eligibility screening with convenience recruitment suited the study's hypothesis-testing purpose. Customers of eco-friendly coffee shops do not form an enumerable population from which a probability sample could be drawn, and screening on recent patronage ensured that every respondent had direct experience of the setting under investigation [53]. Since the analysis sought to test structural relationships among latent variables rather than to estimate population parameters, the theoretical relevance of respondents took precedence over statistical representativeness [53,54]. Data were collected between November 2025 and January 2026 through two concurrent channels that used an identical instrument. In the on-site channel, respondents were approached at eco-friendly coffee shops in Udon Thani, Khon Kaen, and Nakhon Ratchasima, which represent the upper, central, and lower northeastern regions, respectively, and completed the questionnaire by scanning a QR code that opened the online form. On-site recruitment took place at eight coffee shops in these three provinces, which were selected on the basis of explicit sustainability positioning and visible green servicescape elements and which met the definition of an eco-friendly coffee shop given in Appendix A. In the online channel, we distributed the same form through Facebook community groups and the LINE application. Together, the two channels yielded 436 responses. Because both channels delivered the questionnaire through Google Forms, they shared the same definition of eco-friendly coffee shops, the same screening questions, and the same item sequence, and the form accepted only one response per Google account to prevent duplicate submissions. Responses from both channels were written to a single response file under one administrator account, so the channel of origin was not recorded, and the two subsamples could not be compared separately.

A pilot study with 30 respondents confirmed item clarity and initial reliability. Cronbach's alpha for the pilot constructs ranged from 0.71 to 0.89. Of the 436 responses received,

23 were removed at screening (nine failed the patronage filter and 14 showed patterned responding, defined as identical answers across all 30 scale items), leaving 413 complete cases for analysis. A further five cases were excluded by listwise deletion when the demographic control variables were entered (one case missing gender, four missing visit frequency), giving $n = 408$ for the control-variable model reported in Section 5.3.

4.3. Measurement Instrument

Green servicescape was specified as a latent construct with three dimensions, each represented in the model by the mean of its five items derived from Bitner's [4] typology of ambient conditions, spatial layout and functionality, and signs, symbols, and artifacts. Because no established instrument captured all three dimensions in their sustainability-oriented form for the coffee shop setting, the research team developed 15 items for this study, five per dimension. Items for green ambient conditions addressed air quality, lighting, temperature, acoustics, and scent; their sensory content followed the ambiance and lighting dimensions of DINESCAPE [9] and was reframed around the green atmospheric cues examined by Jang [6]. Items for green spatial layout and functionality covered furniture arrangement, the use of recycled materials, provision for waste separation, and indoor greenery, reflecting the eco-friendly practices documented in café and hotel settings [7,17]. Items for green signs, symbols, and artifacts assessed eco-signage, environmental certification, sustainable artifacts, and the shop's environmental communication, corresponding to the communicative dimension of green servicescape identified by Jang [6]. The complete measurement instrument is presented in Table 3.

Table 3. Measurement instrument.

Construct	Role	Dimension	Items	Source(s)
Green Servicescape	Stimulus (S)	Green Ambient Conditions	5	Bitner; Ryu & Jang [9]; Jang [6]
		Green Spatial Layout	5	Bitner; Jeong et al. [17]; Mishra & Gupta [7]
		Green Signs & Artifacts	5	Bitner [4]; Jang [6]
Customer Satisfaction	Organism (O)	Unidimensional	5	Oliver [32]
eWOM Intention	Response (R)	Unidimensional	5	Hennig-Thurau et al. [19]; Ananda et al. [47]
Revisit Intention	Response (R)	Unidimensional	5	Eren et al. [15]; Wichitsathian & Suvittawat [1]

Note. Green servicescape items were developed for this study based on the conceptual dimensions and attributes reported in the cited sources.

Customer satisfaction was measured with five items from Oliver [32] that captured overall evaluative judgment across decision satisfaction, service quality, functional fulfillment, comparative evaluation, and experiential consistency. eWOM intention was measured using five items adapted from Hennig-Thurau et al. [19] and Ananda et al. [47]. These assessed online recommendation, social sharing, photo and video posting, review writing, and check-in behavior. Revisit intention was measured using five items adapted from Eren et al. [15] and Wichitsathian and Suvittawat [1]. These assessed spontaneous return, future visit planning, destination preference, first-choice selection, and revisit intention under competitive pressure. All items were worded in Thai by the research team, who drew on the dimensions of the cited sources for the green servicescape items and adapted the satisfaction, eWOM, and revisit items from the cited scales. Because the questionnaire was administered only to Thai customers and no translated instrument was used, back-translation was not applied, and item clarity was checked in the pilot study described in Section 4.2.

4.4. Data Analysis Strategy

Analysis proceeded in five phases. Phase 1 screened for missing data, multivariate outliers (Mahalanobis distance, $p < 0.001$), and distributional normality, and assessed multivariate normality through Mardia's coefficients [55]. It also tested for common method bias, using Harman's single-factor test with a 50% threshold [56]. Phase 2 assessed the measurement model's psychometric properties using confirmatory factor analysis with maximum-likelihood estimation in the SEMLj module of jamovi 2.7 (The jamovi project, Sydney, Australia), which calls the R package lavaan 0.6.17 (Ghent University, Ghent, Belgium), against these criteria: Cronbach's alpha at or above 0.70, composite reliability at or above 0.70, standardized factor loadings at or above 0.50, and average variance extracted (AVE) at or above 0.50 [53,57]. Discriminant validity was assessed using the Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT), which needed to fall below 0.85 [58]. Model fit relied on chi-square/df, CFI, TLI, RMSEA with a 90% confidence interval, and SRMR. Because Mardia's coefficient indicated significant multivariate kurtosis, robust (MLR) statistics were reported alongside normal-theory values. Green servicescape was specified as a first-order latent variable with three indicators, each the mean of the five items in its dimension, retaining all 15 items while keeping the number of estimated parameters proportionate to the sample. Residual covariances were freed only where a pair was within a construct, positive, and attributable to identifiable overlap in item wording; cross-construct and negative residual covariances were not admitted.

Phase 3 verified solution admissibility by inspecting the smallest eigenvalue of the residual and latent covariance matrices, the sign and significance of every residual variance, and whether any standardized residual covariance fell outside the interval from −1 to 1. Phase 4 estimated the structural model following Anderson and Gerbing's two-step procedure [54]. It reported unstandardized (B) and standardized (β) coefficients, standard errors of the unstandardized coefficients, confidence intervals for the standardized coefficients, and R-squared values, interpreted against Cohen's benchmarks [59]. Phase 5 tested mediation (H6, H7) and the contrast between the two mediated pathways (H8) using percentile bootstrap intervals from 5000 resamples [60]. Mediation was supported when the confidence interval excluded zero, and mediation type was classified using the typology of Zhao, Lynch and Chen [61]. The variance-accounted-for index was not used because it is unstable when a direct effect approaches zero.

5. Results

5.1. Preliminary Analysis and Data Screening

Before structural analysis, the dataset underwent a multi-stage screening procedure. Of the 413 responses retained after screening, which confirmed patronage of an eco-friendly coffee shop in Northeastern Thailand within the preceding month, ten were identified as multivariate outliers according to the Mahalanobis distance criterion ($p < 0.001$; $\chi^2(30) > 59.703$). These cases were retained in the primary analysis and excluded in a sensitivity analysis reported in Section 5.5.

The analytical sample is therefore $n = 413$. No missing values were detected across any of the 30 scale items. Five cases were excluded by listwise deletion when the demographic control variables (FREQ, AGE, GENDER) were entered in the structural model, giving $n = 408$ for that model. Table 4 summarizes the socio-demographic and behavioral profile of the participants.

Table 4. Sociodemographic and behavioral characteristics of the respondents ($n = 413$).

Characteristic	*n*	%
Gender		
Female	241	58.50
Male	162	39.32
Other/gender-diverse	9	2.18
Age group		
Under 20 years	45	10.89
20–30 years	174	42.13
31–40 years	112	27.12
41–50 years	78	18.89
51 years or above	4	0.97
Educational attainment		
Below bachelor's degree	78	18.89
Bachelor's degree	250	60.53
Above bachelor's degree	85	20.58
Occupation		
Student	44	10.65
Private company employee	81	19.61
Freelance/self-employed	43	10.41
Business owner	81	19.61
Government employee	91	22.04
Civil servant/state enterprise	73	17.68
Café visit frequency		
1–3 times per week	290	70.91
4–7 times per week	83	20.29
More than 7 times per week	36	8.80
Regional domicile (Northeastern Thailand)		
Upper sub-region	131	31.72
Central sub-region	174	42.13
Lower sub-region	108	26.15

Note. $n = 413$. Percentages are calculated on valid responses within each category, and minor rounding adjustments were applied so that each category sums to 100.00. Gender is missing for one respondent ($n = 412$) and café visit frequency for four respondents ($n = 409$).

The sample was predominantly female (58.50% of those reporting gender), and the largest age group was 20–30 years (42.13%). Most respondents held a bachelor's degree (60.53%), government employees formed the largest occupational group (22.04%), and most visited cafés 1–3 times per week (70.91% of those who reported frequency). The Central Northeastern subregion, which encompasses Maha Sarakham, Khon Kaen, and Roi Et, accounted for 42.13% of respondents.

Mardia's coefficients indicated significant multivariate non-normality (skewness b1 = 203.54, $p < 0.001$; kurtosis b2 = 1112.65, z = 35.40, $p < 0.001$) [62], so robust MLR

statistics are reported alongside normal-theory values throughout. Multicollinearity was not a concern: the variance inflation factors of the four constructs ranged from 1.24 to 1.45, well below the conventional threshold of 3.3 [63]. The Kaiser–Meyer–Olkin measure of sampling adequacy was KMO = 0.872 [64]. Bartlett's test of sphericity was statistically significant, $\chi^2(435) = 8299.449$, $p < 0.001$. Harman's single-factor test yielded a first factor variance of 29.94%, well below the 50% threshold [56].

An additional test for common method variance (CMV) was conducted using the common latent factor (CLF) procedure proposed by Podsakoff et al. [56]. An unobserved latent factor with paths to all 30 observed indicators was estimated alongside the substantive measurement model, and the resulting parameter estimates were compared with those from the baseline model. The largest change in any standardized parameter estimate was $\Delta\beta = 0.03$, and no parameter reversed sign or changed significance status. We therefore report this magnitude without invoking a numerical cutoff, since we are not aware of a published benchmark that establishes one; readers may judge the change against the structural estimates reported in Section 5.3. Taken with Harman's test, the evidence does not suggest that common method bias threatens the validity of the structural estimates, although we note that the CLF procedure is itself contested and that no marker variable was included in the instrument.

5.2. Measurement Model: Confirmatory Factor Analysis (Step 1)

The measurement model produced these fit indices: chi-square(125) = 453.737, chi-square/df = 3.63, CFI = 0.941, TLI = 0.928, RMSEA = 0.080 (90% CI [0.072, 0.088]), SRMR = 0.051. Under robust (MLR) estimation, the corresponding values are CFI = 0.944, TLI = 0.931, and RMSEA = 0.078. CFI and TLI meet the conventional 0.90 benchmark [65]. The SRMR is comfortably within the 0.08 threshold [66] and RMSEA sits at the boundary of the acceptable range. The CFI and TLI are slightly under the standard 0.95 criterion value. However, this is expected for a model of this complexity [67]. They do pass the 0.85 acceptable value criterion [66,68]. To show what the four freed residual covariances contribute, the same model estimated without any residual covariances gives chi-square(129) = 576.665, CFI = 0.920, TLI = 0.905, RMSEA = 0.092, and SRMR = 0.055; the reported specification therefore improves fit without relying on a large set of freed parameters. Table 5 presents the fit indices.

Table 5. Model fit analysis across estimations.

Fit Index	Measurement Model	With controls	No Residual Cov.	Threshold
n	413	408	413	-
χ^2	453.737	579.109	576.665	-
df	125	170	129	-
χ^2/df	3.63	3.41	4.47	≤5.0
CFI	0.941	0.928	0.920	≥0.90
TLI	0.928	0.913	0.905	≥0.90
RMSEA	0.080	0.077	0.092	≤0.08
90% CI [RMSEA]	[0.072, 0.088]	[0.070, 0.084]	[0.084, 0.099]	—
SMSEA	0.078	0.075	0.090	≤0.08
Estimated parameters	64	82	60	-
Smallest eigenvalue, Θ	0.105	0.102	0.105	>0
Solution admissible	Yes	Yes	Yes	-

Solution admissibility was verified for every model reported. The smallest eigenvalue of the residual covariance matrix was 0.105 for the measurement model, 0.102 for the model with control variables, and 0.103 for the sample with ten multivariate outliers excluded ($n = 403$), and the smallest eigenvalue of the latent covariance matrix was positive in every case. All residual variances were positive and significant at $p < 0.001$, and every standardized residual covariance fell within the admissible interval from −1 to 1. Goodness-of-fit indices of the GFI family are not reported, because they are sensitive to sample size and to the number of estimated parameters and are not recommended in current reporting practice [69]. A further point speaks to the relationship between the two estimation steps: once the residual covariance between eWOM intention and revisit intention is freed, the structural portion of the model is saturated, so the structural model reproduces the measurement model's fit exactly (chi-square = 453.737 on 125 degrees of freedom in both cases), which confirms that the structural model is correctly nested within the measurement model.

Table 6 provides the standardized factor loadings, AVE, and composite reliability of each construct [57].

Table 6. Confirmatory factor analysis: standardized factor loadings, AVE, CR, and Alpha.

Construct	Indicators	Std. λ Range	AVE	CR (ω)	α
Green Servicescape	GACp, GSLp, GSSp	0.655–0.815	0.548	0.785	0.775
Customer Satisfaction	CS34–CS38	0.729–0.848	0.618	0.876	0.893
eWOM Intention	EW39–EW43	0.878–0.937	0.815	0.945	0.960
Revisit Intention	RI44–RI48	0.628–0.866	0.596	0.861	0.886

All average variance extracted values exceed the 0.50 criterion for convergent validity [57] and all composite reliabilities exceed 0.70. The same holds when the model is estimated with no residual covariances (AVE = 0.548, 0.628, 0.828, and 0.608, respectively), so convergent validity does not depend on those parameters. Four residual covariances were freed during estimation, each of which is positive, lies within a single construct, and corresponds to identifiable overlap in item wording: CS34-CS35 (both express a global evaluative judgment of the choice), EW40-EW42 (both concern narrating or writing a positive account), EW41-EW43 (both concern posting images and checking in), and RI47-RI48 (both frame return as a preference over competing outlets). We did not free cross-construct residual covariance; since a residual association between an antecedent item and an outcome item would concede covariance, the structural model cannot explain and would contaminate the mediation estimates. We also found that the composite reliability of eWOM intention (0.945) is high enough to suggest item redundancy rather than construct breadth, and we recommend shortening the scale in future applications.

Table 7 presents the latent correlation matrix with the square root of AVE on the diagonal. Every diagonal value exceeds the corresponding off-diagonal correlation, satisfying the Fornell–Larcker criterion. All six pairwise HTMT ratios are below the 0.85 threshold, the maximum being 0.513 between green servicescape and customer satisfaction [58]. Discriminant validity is therefore supported on both criteria.

Table 7. Latent correlations, square root of AVE and HTMT ratios.

Construct	GREEN	CS	eWOM	RI
Panel A. Latent correlations and √AVE				
Green Servicescape (GREEN)	0.740			
Customer Satisfaction (CS)	0.506	0.786		
eWOM Intention (eWOM)	0.273	0.424	0.903	
Revisit Intention (RI)	0.348	0.493	0.513	0.772
Panel B. HTMT ratios				
Green Servicescape (GREEN)	-			
Customer Satisfaction (CS)	0.513	-		
eWOM Intention (eWOM)	0.282	0.414	-	
Revisit Intention (RI)	0.357	0.463	0.478	-

Note. Diagonal (bold) = square root of AVE. Below diagonal = latent correlations from the measurement model. Discriminant validity is supported when the diagonal exceeds all off-diagonal values in the same row and column, which holds throughout. HTMT ratios are reported in the lower panel; all are below 0.85. All correlations $p < 0.001$.

5.3. Structural Model Results (Step 2)

With measurement model fit confirmed, the structural model was estimated. Because the structural portion is saturated once the residual covariance between eWOM intention and revisit intention is freed, its fit is identical to that of the measurement model (chi-square(125) = 453.737, CFI = 0.941, TLI = 0.928, RMSEA = 0.080, SRMR = 0.051).

Demographic characteristics were not part of the hypothesized model. Because the sample was weighted toward younger, female, and university-educated respondents, and because age, gender, and usage frequency have been linked to online sharing in hospitality and tourism [70–74], a second estimation added gender, age band, and visit frequency as predictors of all three endogenous variables ($n = 408$). This specification served as a sensitivity analysis rather than a test of additional hypotheses [75,76].

That model fits adequately as well: chi-square(170) = 579.109, chi-square/df = 3.41, CFI = 0.928, TLI = 0.913, RMSEA = 0.077 (90% CI [0.070, 0.084]), SRMR = 0.050, with robust CFI = 0.931. Table 8 reports results from both estimations.

H1 was supported: green servicescape was positively associated with customer satisfaction (beta = 0.506, 95% CI [0.407, 0.602], $p < 0.001$). H2 was not supported; the direct association between green servicescape and eWOM intention was not significant (beta = 0.078, 95% CI [−0.039, 0.192], $p = 0.217$). H3 was supported, although the estimate is small and its interval is narrow: green servicescape showed a significant direct association with revisit intention (beta = 0.132, 95% CI [0.003, 0.259], $p = 0.039$). H4 was supported: customer satisfaction was positively associated with eWOM intention (beta = 0.384, 95% CI [0.281, 0.485], $p < 0.001$). H5 was supported: customer satisfaction was positively associated with revisit intention (beta = 0.426, 95% CI [0.307, 0.543], $p < 0.001$).

The pattern among the control variables is itself informative. All three demographic controls were significantly associated with eWOM intention (age beta = −0.188, visit frequency beta = −0.163, and gender; all $p < 0.001$), while none predicted customer satisfaction or revisit intention. Adding the controls raised the variance explained in eWOM intention from 0.184 to 0.289, whereas the increase for the other two outcomes was marginal. Intended online sharing is therefore associated with respondent characteristics, whereas satisfaction and return intention are not. The focal estimates are stable across the two specifications: the

association between green servicescape and customer satisfaction is beta = 0.506 without controls and beta = 0.507 with them.

Table 8. Structural model assessment and hypothesis testing.

Path	B	SE	β	95% CI (β)	*p*	Decision
Model 1: without control variables (n = 413)						
H1: GS → CS	0.824	0.106	0.506	[0.407, 0.602]	<0.001	Supported
H2: GS → eWOM (direct)	0.210	0.171	0.078	[−0.039, 0.192]	=0.217	Not supported
H3: GS → RI (direct)	0.256	0.124	0.132	[0.003, 0.259]	=0.039	Supported
H4: CS → eWOM	0.635	0.104	0.384	[0.281, 0.485]	<0.001	Supported
H5: CS → RI	0.508	0.076	0.426	[0.307, 0.543]	<0.001	Supported
Model 2: with demographic controls (n = 408)						
GS → CS	0.828	0.106	0.507	[0.401, 0.611]	<0.001	Supported
GS → eWOM (direct)	0.263	0.162	0.098	[−0.022, 0.215]	=0.104	Not supported
GS → RI (direct)	0.306	0.125	0.157	[0.028, 0.283]	=0.014	Supported
CS → eWOM	0.596	0.099	0.362	[0.257, 0.461]	<0.001	Supported
CS → RI	0.483	0.076	0.406	[0.290, 0.529]	<0.001	Supported
Gender → CS	−0.069	0.051	−0.064	[−0.157, 0.029]	=0.177	n.s.
Age → CS	−0.044	0.039	−0.055	[−0.148, 0.039]	=0.252	n.s.
Frequency → CS	0.073	0.043	0.082	[−0.011, 0.174]	=0.087	n.s.
Gender → eWOM	−0.312	0.078	−0.177	[−0.261, −0.092]	<0.001	Sig.
Age → eWOM	−0.249	0.059	−0.188	[−0.273, −0.102]	<0.001	Sig.
Frequency → eWOM	−0.240	0.065	−0.163	[−0.248, −0.077]	<0.001	Sig.
Gender → RI	−0.101	0.060	−0.079	[−0.171, 0.012]	=0.091	n.s.
Age → RI	0.067	0.045	0.069	[−0.022, 0.161]	=0.140	n.s.
Frequency → RI	0.042	0.050	0.039	[−0.053, 0.131]	=0.405	n.s.

Note. B = unstandardized coefficient; SE = standard error of B; β = standardized coefficient; CI = 95% confidence interval for β. GS = green servicescape; CS = customer satisfaction; eWOM = eWOM intention; RI = revisit intention.

Table 9 reports R-squared values for the endogenous constructs, for the model without controls and for the model with them.

Table 9. Coefficient of determination (R^2) for endogenous constructs.

Endogenous Construct	R^2 (No Controls, n = 413)	R^2 (with Controls, n = 408)
CS—Customer Satisfaction	0.256	0.271
eWOM—eWOM Intention	0.184	0.289
RI—Revisit Intention	0.256	0.271

5.4. Mediation and Contrast Analysis

Table 10 reports the bootstrapped indirect, direct, and total effects together with the formal contrasts between the two mediated pathways, based on 5000 percentile resamples [60]. Mediation was classified following Zhao et al. [61]: a confidence interval for the indirect

effect that excluded zero indicated mediation, which was indirect-only when the direct effect was not significant and complementary when the direct effect was significant and had the same sign as the indirect effect. Decisions on H1 to H5 are given in Table 8 and those on H6 to H8 in Table 10.

Table 10. Mediation and contrast analysis.

Effect	β (No Controls)	95% CI	*p*	β (with Controls)	*p*	Decision
Indirect: GS → CS → eWOM	0.195	[0.137, 0.260]	<0.001	0.184	<0.001	Supported (indirect-only)
Indirect: GS → CS → RI	0.216	[0.145, 0.298]	<0.001	0.206	<0.001	Supported (complementary)
Direct: GS → eWOM	0.078	[−0.039, 0.192]	=0.217	0.098	=0.104	-
Direct: GS → RI	0.132	[0.003, 0.259]	=0.039	0.157	=0.014	-
Total: GS → eWOM	0.273	[0.163, 0.375]	<0.001	0.282	<0.001	-
Total: GS → RI	0.348	[0.233, 0.451]	<0.001	0.363	<0.001	-
Contrast of indirect effects (H8)	−0.021	[−0.096, 0.047]	=0.586	−0.022	=0.535	Not supported
Contrast of direct effects	−0.054	[−0.192, 0.089]	=0.460	−0.059	=0.424	-
Contrast of total effects	−0.075	[−0.180, 0.031]	=0.174	−0.082	=0.120	-

Note. GS = green servicescape; CS = customer satisfaction; eWOM = eWOM intention; RI = revisit intention. Coefficients are standardized (β). The model without controls used $n = 413$ and the model with demographic controls $n = 408$. Confidence intervals are percentile bootstrap intervals based on 5000 resamples for the model without controls. Contrasts are the eWOM effect minus the RI effect, so a negative value indicates a larger effect on RI. Mediation type follows Zhao et al. [61]. A dash indicates that no hypothesis decision applies to the row.

H6 was supported. The indirect association between green servicescape and eWOM intention through customer satisfaction was positive and significant (beta = 0.195, 95% CI [0.137, 0.260]), while the direct path remained non-significant (beta = 0.078, 95% CI [−0.039, 0.192]). In the typology of Zhao, Lynch, and Chen [61], this is indirect-only mediation.

H7 was also supported. The indirect association between green servicescape and revisit intention through customer satisfaction was positive and significant (beta = 0.216, 95% CI [0.145, 0.298]), and the direct path remained significant (beta = 0.132, 95% CI [0.003, 0.259]), which corresponds to complementary mediation. The direct component is, however, small and unstable: it falls below conventional significance when multivariate outliers are excluded ($n = 403$, Section 5.5; beta = 0.120, $p = 0.063$), so we describe it rather than build an interpretation on it. Because the classification depends on whether the direct path crosses a significance threshold, the labels indirect-only and complementary describe the pattern of estimates and do not show that the two outcomes differ in mediation structure.

H8 was not supported. The contrast between the two indirect effects was small and non-significant (beta difference = −0.021, 95% CI [−0.096, 0.047], $p = 0.586$). The contrasts between the two direct effects (beta difference = −0.054, 95% CI [−0.192, 0.089], $p = 0.460$) and between the two total effects (beta difference = −0.075, 95% CI [−0.180, 0.031], $p = 0.174$) were likewise non-significant. The same pattern held in the model with demographic controls (indirect contrast beta = −0.022, $p = 0.535$; direct contrast $p = 0.424$; total contrast $p = 0.120$) and in the sample with the ten multivariate outliers excluded ($n = 403$; indirect contrast beta = −0.014, $p = 0.669$). The contrast therefore provides no

evidence that satisfaction transmits the association between green servicescape and the two behavioral outcomes to different degrees. A non-significant contrast does not establish equivalence [77], and the interval for the contrast is compatible with differences of roughly one tenth of a standard deviation in either direction, which is nearly half the size of either indirect effect.

5.5. Sensitivity Analyses

Three checks tested the robustness of these results. First, excluding the ten multivariate outliers ($n = 403$) did not change the conclusion: CFI = 0.934, TLI = 0.919, RMSEA = 0.085, SRMR = 0.056; the indirect effects remained significant (beta = 0.205 and 0.220), and their contrast remained non-significant ($p = 0.669$). The direct association with revisit intention fell to beta = 0.120 ($p = 0.063$) in this sample, which is the basis for the caution expressed about that coefficient. Second, adding demographic controls left the focal estimates essentially unchanged while raising the explained variance in eWOM intention, as reported in Section 5.3. Third, estimating the measurement model without any residual covariances gave CFI = 0.920 and left every AVE above 0.50, confirming that neither the fit nor the validity evidence depends on the four freed parameters.

6. Discussion

This study examined the association between green servicescape and customer satisfaction, eWOM intention, and revisit intention among customers of eco-friendly coffee shops in Northeastern Thailand, using the Stimulus–Organism–Response model as its organizing framework. The study supported six of the eight hypotheses. H2, the direct association between green servicescape and eWOM intention, and H8, which tested whether the two mediated pathways differ, were not supported. The absence of a detectable difference is the study's central finding, although a non-significant contrast cannot by itself establish that the pathways are equivalent.

Hypothesis 1 was supported: green servicescape was positively associated with customer satisfaction (beta = 0.506, $p < 0.001$). The finding is consistent with evidence from Korea [2], Turkey [15], and India [38], and with Wichitsathian and Suvittawat for the Thai service environment [1]. Green servicescape thus operates as the principal antecedent of the organism-level response in the S-O-R structure. Attention Restoration Theory offers a plausible account of why this association arises, through the restorative properties of fascination, being away, extent, and compatibility described by Kaplan and Kaplan [12]. We emphasize that the present design does not measure restorative experience and therefore cannot establish that this is the operative mechanism; what the data show is that even modest interventions such as eco-friendly products, waste separation facilities, and biophilic features are associated with higher satisfaction in a frequent consumption environment.

Hypothesis 2 was not supported: the direct association between green servicescape and eWOM intention was not significant (beta = 0.078, 95% CI [−0.039, 0.192]). Green servicescape is thus associated with eWOM intention through satisfaction rather than in addition to it. Signaling Theory would predict that credible eco-signals prompt consumers to relay those signals to their networks [13,14]. The present results give no evidence of such transmission in this setting once satisfaction is accounted for. Two readings are available, and the data cannot distinguish them. The signaling route may require a degree of consumer identification with the cause that is not yet widespread in this market [23,48], or it may not operate in this consumption context at all. Because green consumer identity was not measured here, we present the first reading as a hypothesis for future testing rather than as a conclusion, and we note that establishing it would require the construct to be measured directly.

The control variables offer an account grounded in measured quantities. All three demographic controls were significantly associated with eWOM intention (age beta = −0.188, visit frequency beta = −0.163, and gender; all $p < 0.001$), and their inclusion raised the explained variance in eWOM intention from 0.184 to 0.289, while none of the three predicted satisfaction or revisit intention. Intended online sharing in this sample is therefore associated with respondent characteristics to a degree that satisfaction and return intention are not. Because the focal estimates were essentially unchanged when these characteristics were controlled (Section 5.3), the pattern bears on who intends to share online and not on whether the service environment prompts sharing directly.

Hypothesis 3 was supported: green servicescape showed a significant direct association with revisit intention (beta = 0.132, 95% CI [0.003, 0.259], $p = 0.039$), indicating that some part of the association with return intention does not pass through episodic satisfaction. The estimate is small, its confidence interval reaches almost zero, and it loses significance when multivariate outliers are excluded (beta = 0.120, $p = 0.063$), so we report it with corresponding caution. A self-congruity account, such as lifestyle congruence, as proposed by Eren et al. [15] for Turkish eco-restaurants and by Harris and Ezeh [11] for UK restaurants, would be consistent with the sign of the estimate, but the present design measured neither environmental identity nor lifestyle congruence and so cannot support that explanation. The direct association with revisit intention does not differ significantly from the direct association with eWOM intention (contrast beta = −0.054, $p = 0.460$), so the data give no basis for characterizing the two outcomes as differing in this respect.

Hypothesis 4 was supported: customer satisfaction was positively associated with eWOM intention (beta = 0.384, $p < 0.001$). In the S-O-R paradigm, this link represents the organism-to-response transmission, in which the positive state associated with the green environment translates into intended eWOM behavior. Hennig-Thurau et al. [19] offer two accounts of why satisfaction may induce eWOM: reciprocity and self-enhancement. Under the reciprocity principle, customers who enjoy a good experience feel socially obliged to share it with their contacts, whereas under the self-enhancement account, sharing a favorable experience lets customers present themselves as discerning consumers [19,45].

This result aligns with previous research in restaurant settings, where a strong relationship between customer satisfaction and eWOM was found [8,46], and it replicates the findings of Wichitsathian and Suvittawat [1], who showed that customer satisfaction is the main way environmental factors affect online advocacy in Thailand. The effect size ($\beta = 0.384$) is similar to those found previously in hospitality studies [8,46].

Hypothesis 5 was supported, as customer satisfaction was positively associated with revisit intention (beta = 0.426, $p < 0.001$). This reproduces one of the most consistently documented relationships in the hospitality literature. Satisfaction is a core attitudinal antecedent of behavior under the Theory of Planned Behavior [32,44] and denotes the fulfillment response that gives rise to a behavioral predisposition to revisit. Han and Ryu [49] reported the same pattern in restaurants, where satisfaction mediates the relationship between physical environmental quality and revisit intention; Ryu et al. [31] replicated it for restaurant settings; and Wichitsathian and Suvittawat [1] confirmed it for Thai service settings.

The coefficient for H5 (beta = 0.426) is nominally larger than that for H4 (beta = 0.384), which might suggest that satisfied customers are readier to return than to post online. We examined this comparison through the contrast between the two indirect effects, which is not significant (beta difference = −0.021, 95% CI [−0.096, 0.047], $p = 0.586$). The apparent gap therefore provides no evidence of a difference between the two outcomes, although the interval does not exclude a modest one.

Together, H6, H7, and H8 produce the study's central result. Customer satisfaction carries a significant indirect association with eWOM intention (beta = 0.195, 95% CI [0.137,

0.260]) and with revisit intention (beta = 0.216, 95% CI [0.145, 0.298]), and a formal contrast detects no difference between these two indirect effects (beta difference = −0.021, $p = 0.586$). The pattern is the same for the direct and total effects and under the robustness specifications reported in Sections 5.4 and 5.5. These results are compatible with customer satisfaction functioning as a shared transmission channel: the data give no indication that the route by which a green service environment reaches online advocacy differs from the route by which it reaches repeat patronage. A non-significant contrast does not establish equivalence, however, and the interval leaves room for a modest difference in either direction [77].

This result carries a methodological lesson as well as a substantive one. A comparison between a significant and a non-significant coefficient is not a test of the difference between them [78], and had we relied on the difference in significance levels, or on a comparison of variance-accounted-for percentages, we would have reported an outcome-specific mediation structure that the data do not support. We therefore recommend that studies comparing mediated pathways across outcomes report an explicit contrast test, and we report ours as a formal hypothesis so that readers can see it was tested.

Taken together, the findings present a coherent picture of green servicescape as an antecedent whose behavioral consequences run predominantly through a shared evaluative channel in a frequent, high-volume retail foodservice setting. The environment is associated with satisfaction, and satisfaction is associated with both behavioral intentions, with no detectable difference in the strength of the two indirect associations. For operators, this simplifies rather than complicates the decision problem: green design investments that demonstrably raise satisfaction can be expected to support online advocacy and repeat patronage alike, and there is no evidence here for separating satisfaction-optimizing from identity-reinforcing strategies. The contribution to the S-O-R literature is correspondingly that transmission paths should be compared statistically before they are theorized as outcome-specific.

7. Conclusions

This research investigated the effect of green servicescape on customer satisfaction, eWOM intention, and revisit intention among eco-friendly coffee shop customers in Northeastern Thailand. The investigation integrated the S-O-R framework through structural equation modeling. The study supported six of the eight hypothesized relationships. Green servicescape was positively associated with customer satisfaction, which in turn predicted both eWOM and revisit intentions; customer satisfaction also showed a significant indirect association with each outcome. H2 and H8 were not supported. The H8 contrast, which tested whether those two indirect associations differ, was small and non-significant under every specification examined, including models with demographic controls and with multivariate outliers excluded. Customer satisfaction therefore appears to operate as a shared transmission channel, since no outcome-specific difference was detected. The non-significant direct association between green servicescape and eWOM intention is consistent with this reading: in this market, online advocacy in response to an eco-friendly service environment appears to require satisfaction as an intermediary. As sustainability becomes a more prominent axis of competitive positioning in Asia-Pacific food service, recognizing that satisfaction appears to carry these effects through a shared channel matters for providers deciding where to invest.

7.1. Theoretical Contributions

This study contributes to theory in four ways.

First, it offers an admissible measurement model of green servicescape for a southeast Asian specialty coffee retail setting, with supporting validity evidence, retaining all 15 items

and reporting the diagnostic checks used to establish admissibility. It builds on Jang [6] and Mishra and Gupta [7], extending their measures to a regional emerging economy market.

Second, the study tests, rather than infers, whether the mediating role of satisfaction differs across behavioral outcomes, and finds no evidence that it does. This contribution is of a particular kind: it does not support a distinction that the literature has tended to assume, and it replaces that assumption with a directly tested comparison whose power to detect small differences is limited. Studies that compare mediated pathways across outcomes should submit the comparison to a contrast test rather than infer it from differing significance levels.

Third, the non-significant direct path between green servicescape and eWOM intention limits the reach of Signaling Theory in this setting. Eco-signals embedded in the service environment show no association with intended online advocacy once satisfaction is accounted for. Identifying why would require measuring the identity mechanism that signaling accounts invoke, which this study did not do; we therefore state the limit rather than explain it.

Fourth, the study contributes a methodological observation of practical value to the field. Reporting admissibility diagnostics alongside fit indices, as done in Section 5.2, allows readers to judge whether acceptable fit reflects a proper solution, and we recommend that such diagnostics be reported routinely.

7.2. Practical Implications

Green Design Investment Strategy for Operators: The finding that green servicescape significantly predicts customer satisfaction ($\beta = 0.506$, $p < 0.001$) is consistent with the view that investments in green and communicative design raise satisfaction and should not assume that investing in one dimension alone will raise satisfaction. Because the three dimensions entered the model as composites of a single construct, the model does not rank their relative importance, and operators should treat ambient, spatial, and communicative cues as components of one perceived green environment.

Strategy for eWOM Generation: customer satisfaction drives the measurable association between green servicescape and eWOM intention, so green design features generate online advocacy to the extent that customers notice and value them, not merely because they are present. Features that are visible and experienced, such as indoor greenery, natural materials, and comfortable sustainable furnishing, are therefore a higher priority for this purpose than features that are merely documented. Operators should also note that intended online sharing in this sample varied more with customer characteristics than with the service environment.

Revisit Loyalty: the association between green servicescape and revisit intention likewise runs predominantly through satisfaction. We detected a small direct association, but it was not stable across specifications, so we do not recommend that operators treat green credentials as a driver of return visits independent of the experience they deliver. The practical implication is the simpler one: investments that raise satisfaction support both online advocacy and repeat patronage, and there is no evidence here that the two require separate strategies.

Policymakers and Industry Associations: The findings offer insights into using policy measures to strategically strengthen green servicescape investment by specialty coffee SMEs. Given that satisfaction-driven eWOM serves as the key online reputation mechanism for environmentally friendly firms, green certification schemes that enhance the visibility and credibility of environmental credentials, such as certified eco-labels, sustainability rankings, and other forms of digital recognition, would yield the highest social value in terms of destination image and customer trust building. The evidence reported here

suggests that such schemes work through the customer experience rather than around it: credentials that customers notice and value are the ones associated with behavioral outcomes. Policymakers in Northeastern Thailand and comparable emerging markets should therefore consider integrating verifiable green servicescape criteria into incentive schemes for the hospitality industry.

7.3. Limitations and Directions for Future Research

Several weaknesses can be identified, which point to promising areas for future studies.

A cross-sectional design limits conclusions about causality and the temporal sequence the S-O-R framework assumes. The framework posits that environmental stimuli precede internal states, which in turn precede behavioral responses, but data collected at a single point in time cannot establish that precedence. Reverse and reciprocal specifications, particularly between satisfaction and revisit intention, remain compatible with these data. Throughout this paper, we have therefore used associational rather than causal language. Longitudinal and experimental designs are the route to resolving this.

The study's sample is geographically and demographically skewed. It is biased toward Northeastern Thailand, as well as toward younger, female, university-educated respondents in that region. This sample aligns with the target segment of eco-friendly coffee consumers. Nevertheless, these findings cannot be generalized to other generations, educational backgrounds, and regions of Thailand where green awareness may differ. Future studies could conduct this research in central Thailand, such as Bangkok and Chiang Mai, as well as in Vietnam, Indonesia, and Malaysia.

Convenience sampling is another reason why population-level generalizability cannot be claimed. Future research should adopt probability sampling schemes. Such schemes can include stratification by establishment type, geographic sub-region, and demographic groups. This will enhance external validity. It will also allow for testing the effect of demographic differences on the Signaling Theory boundary condition proposed in this study—emergent vs. consolidated green identity, which this study did not set out to investigate. Because the on-site and online respondents completed the same self-administered web form and their submissions were pooled without a channel identifier, differences in measurement properties between recruitment routes could not be examined. Mode effects in mixed-mode surveys are generally traced to differences in how questions are presented and how respondents are contacted [79]. Identical presentation narrows the scope for such effects, although the two routes may still have attracted different kinds of respondents. Future studies should record the recruitment channel so that measurement invariance can be tested directly.

All variables were based on self-reported data gathered within one session. This introduces the usual common method bias problem, even with the precautions applied in this study (Harman's single-factor test, in which the first factor accounted for 29.94% of the variance against the 50% threshold, and the CLF procedure, in which the largest change in any standardized estimate was $\Delta\beta = 0.03$). Using a longitudinal design to measure green servicescape during service consumption and intention later can address consistency effects between perception and intention.

The non-significant direct relationship between green servicescape and eWOM intention (H2) allows more than one interpretation, and the present design cannot adjudicate between them. One possibility is that identity-based signaling requires a degree of consumer identification with environmental causes that is still developing in this market; another is that the signaling route does not operate in this consumption context. Testing the first would require measuring green consumer identity directly, which we recommend as the single most useful addition to a replication of this study.

Three further limitations bear on the interpretation of the findings. First, the study measures customers' perceptions of a green servicescape, not the establishments' objective environmental performance. Greenery, eco-friendly design, and environmental signage may raise perceptions without corresponding to a measurable reduction in environmental impact, meaning the mechanism documented here rewards the appearance of environmental commitment as readily as its substance. Perceived authenticity is the likely boundary condition on this, and greenwashing the practical risk; joint measurement of perceived and independently audited greenness is a priority for future research. Second, the eWOM items were treated as reflective indicators of a single construct on the grounds that they are interchangeable manifestations of an intention to share the experience online [80]. A formative treatment would be defensible if the channels were theorized as distinct, and the very high composite reliability observed here suggests that a shorter scale would serve as well. Third, the net-effects estimation used here identifies average associations and cannot recover the configurations of conditions jointly sufficient for an outcome; a configurational study of green servicescape attributes would be a valuable complement to this one.

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Data Availability Statement: Data supporting these results are available from the authors on request, subject to confidentiality considerations.

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Appendix A. Definition of an Eco-Friendly Coffee Shop Provided to Respondents

The following definition was presented to respondents at the beginning of the questionnaire, before the screening questions. It is translated here from the original Thai.

An "eco-friendly coffee shop" refers to a coffee shop whose operations or physical environment are managed with consideration for reducing environmental impact and promoting efficient resource use. Examples include energy conservation; using natural light or energy-efficient equipment; using natural or recycled materials; reducing and separating waste; reusing materials or equipment; adding green spaces within the shop; and communicating in ways that encourage customers to participate in environmental conservation.

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