

AI-Chatbot Service Quality, User Trust, User Experience, and Electronic Word-of-Mouth as Drivers of Brand Loyalty: Evidence from Pakistan's Domestic Tourism Industry

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Abstract

Purpose: The study aims to examine the role of the service quality of AI chatbot (ACSQ) in the determination of the brand loyalty among the domestic tourists of Pakistan in the mediated role of user trust, user experience (UX) and electronic word of mouth (eWOM), while the moderator is consumer perceived value (CPV).

Design/methodology/approach: A quantitative survey was conducted using a cross-sectional survey design and was administered to 207 domestic tourists who had interacted with AI-chatbots in tourism websites, on WhatsApp. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test hypotheses using SmartPLS 4.0 software.

Findings: ACSQ was shown to be significant for predicting user trust, UX, and eWOM. Moderation analysis revealed that CPV moderated the effects of trust, UX and eWOM on loyalty. The direct effect of CPV on loyalty was not significant, suggesting that CPV only has an indirect effect on loyalty.

Originality/Value: It is one of the first studies that empirically validated a fully integrated S-O-R and PERVAL framework in the AI-chatbot and tourism field set in a Muslim majority emerging market, and with theoretical and managerial implications that are context and nuanced.

Keywords: AI-Chatbot Service Quality, Brand Loyalty, User Trust, User Experience, eWOM, S-O-R Model, Consumer Perceived Value, Pakistan Tourism, PERVAL

Introduction

AI and tourism industry has revolutionized the way consumers engage with brands throughout their entire customer journey. The main communication interface for millions of tourists is an AI-based chatbot, a conversational agent that understands natural language, can interpret their intent, and can generate context-relevant responses in real-time (Chen et al., 2024; Huang et al., 2024). The growing importance of such systems as the replacement of human service personnel for tourism businesses has raised a theoretical and managerial question of how the quality of tourism services provided by these systems can be positively translated into long-term brand loyalty.

While the number of AI-chatbot deployments has increased significantly, the existing literature has been largely focused on constructs prior to adoption, such as perceived usefulness and ease of use in the Technology Acceptance Model (TAM) framework and has not been well developed in post-adoption behavioral dynamics (Rafiq et al., 2022; Jeong & Shin, 2023). However, the experiential and relational consequences of the continuous use of chatbots, such as user trust, quality of accumulated service experiences, generation of eWOM, and the formation of loyalty are less systematically investigated, especially in the high-involvement and emotionally charged tourism context (Ali et al., 2023; Lv et al., 2024).

The domestic tourism industry in Pakistan is thus an interesting and relatively under-researched empirical setting. The Pakistan Tourism Development Corporation (2025) estimated that the domestic tourism market is made up of over 60 million trips per year with an average annual growth rate of 28 percent between 2021 and 2024, which shows a tremendous digital transformation of the sector. In destinations like Hunza, Swat, and Gilgit-Baltistan, more than 85% of small and medium enterprises (SMEs) in the tourism sector have embraced the low-cost AI-chatbot initiative launched by WhatsApp and Facebook Messenger (SMEDA, 2024). However, this bottom-up deployment has taken place, largely without any empirical examination of its behavioral implications, which is very significant in the context of the Pakistani tourist consumer's unique cultural, religious and linguistic moderating dynamics.

Collectivist social values, high context norms of communication, religious sensitivity towards pilgrimage tourism, Urdu language preferences, and the marked increase in female domestic travelers (Aurat Foundation 2024; Siddiqui & Rehman 2025) create a service context which is not covered by the frameworks developed in Western or East Asian retail contexts. If AI systems do not exhibit cultural competence and ethical alignment in Muslim-majority markets, they can evoke lower trust responses, thus undermining the very foundation of loyalty, as noted by Khan and Ahmed (2023). The present study aims at bridging these gaps by proposing and testing an integrated theoretical model that builds on the Stimulus-Organism-Response (S-O-R) paradigm (Mehrabian & Russell, 1974) and is extended with Social Exchange Theory (SET; Blau, 1964) and the PERVAL consumer value framework (Sweeney & Soutar, 2001). Specifically, the study views the environmental stimulus as ACSQ, the sequential organism stimulus as user trust, user experience, and eWOM, and the sequential organism response as brand loyalty, while having consumer perceived value

moderating the organism-response relationships. This integrated framework will allow for a holistic analysis of the chain of events that ultimately leads to brand loyalty in the context of Pakistan's domestic tourism industry, providing both theoretical insights into the field of AI-mediated service research and practical recommendations for tourism providers and policymakers.

Theoretical background and hypotheses development

Theoretical Foundations

This study is based on the conceptual framework of the Stimulus-Organism-Response (S-O-R) model initially introduced by Mehrabian and Russell (1974) in environmental psychology, and later adapted to digital service settings (Koskinen, 2007). Within the current operationalization of the model, ACSQ is the environmental stimuli, user trust, user experience, and eWOM are the organism layer, and the behavioral response is represented by brand loyalty. This three-part structure is well suited for the interaction of tourism chatbots, as it can accommodate cognitive appraisal processes and affective reactions as intermediary mechanisms between the inputs of service quality and outputs of loyalty (Kim et al., 2023; Shahzad et al., 2024).

Social Exchange Theory (SET; Blau, 1964; Emerson, 1976) helps to explain the motivational logic behind the organism-level responses. The benefits the users get from their interactions with the chatbot—such as helpful information, compassionate communication, cultural understanding—versus the time, cognitive load and data sharing required to use the bot. In high-risk tourism decisions, where there is high information asymmetry, the psychological outcomes of this exchange calculus are noted as trust and positive experience (Ali et al., 2023).

The model introduces a boundary condition in the form of the PERVAL framework (Sweeney & Soutar, 2001) which is an operationalization of consumer perceived value that consists of three views representing the emotional, social and functional aspects of perceived value. Among the different types of chatbot users, those who will gain the most pleasure from using the chatbot, such as planning effortlessly or being accepted by their peers because they can get efficient AI recommendations, or because they can save time and money, are expected to have stronger loyalty responses to the same levels of trust, experience, and eWOM, than those who will derive a lower utility from the interaction. This moderating logic is based on existing research showing that perceived value acts as an evaluative filter that magnifies and/or diminishes the effects of psychological states on behavioral commitment (Gallarza et al., 2021; Ho Tuu, 2024).

AI-Chatbot Service Quality and Its Antecedent Role

AI-chatbot service quality (ACSQ) refers to an overall evaluative judgment of the perceived excellence of the service delivery of AI-based conversational agents, which is comprised of functional performance, relational responsiveness, and contextual intelligence (Lv et al., 2024). With the addition of accuracy, personalization, cultural sensitivity and emotional consistency (Shahzad et al., 2024; Trivedi & Kotak, 2025), contemporary conceptualizations of ACSQ incorporate the classical-SERVQUAL

dimensions, which are reliability, responsiveness, assurance, empathy and tangibles (Parasuraman et al., 1988).

The context of the Pakistani tourism is culturally specific for ACSQ. Users want chatbots to be linguistically flexible and capable of communicating in Urdu language, possess a moral compass that is aligned with the Islamic values, and be emotionally sensitive to the religious pilgrimage experiences (Khan & Ahmed, 2025; Nasir & Yousaf, 2024). As Nasir and Yousaf (2024) found in their moderated regression analysis of 312 Pakistani digital service users, chatbots with the same inadequacies in meeting culturally particularized quality expectations create even larger trust deficits than similar chatbots in low-context Western service contexts.

Mediating Role of User Trust

The concept of user trust in AI systems is multidimensional, including cognitive trust, which refers to rational assessments of the AI's reliability and accuracy, and affective trust, which involves feelings of empathy, goodwill, and ethical congruence (Gu, 2024; McKnight & Chervany, 2001). When the interaction is high-quality, accurate, responsive, empathetic, and culturally resonant, the SET's reciprocity logic are satisfied to have a positive ratio of exchange, both in the cognitive and affective domain.

The empirical evidence of the ACSQ–trust relationship is strong in all services. In a study involving 412 users of e-retail service in China, Shahzad et al. (2024) determined that dimensions of service quality of the chatbot positively predicted the level of trust ($\beta = 0.487$, $p < 0.001$); empathy and personalization were found to be the strongest factors that increase trust. These results were supported by those of Trivedi and Kotak (2025), who found that perceived empathy of the chatbot was the strongest predictor of affective trust ($\beta = 0.561$, $p < 0.001$) in an Indian sample that is geographically and culturally close to Pakistan. Lv and colleagues (2024) conducted a meta-analysis of 58 studies and found a weighted average ACSQ–trust effect size of $r = 0.52$. The full mediation mechanism between user trust and brand loyalty was confirmed in previous studies (Shahzad et al., 2024; Hang et al., 2026).

H1: There is a relationship between AI-Chatbot Service Quality and User Trust.

H2: There is a relationship between User Trust and Brand Loyalty

H3: There is a mediating role of User Trust between AI-Chatbot Service Quality and Brand Loyalty.

H4: There is a relationship between AI-Chatbot Service Quality and Brand Loyalty.

Mediating role of Electronic Word-of-Mouth (eWOM)

eWOM is an online product, service, and/or brand evaluation, either positive or negative, that is created by users (Hennig-Thurau et al., 2004 as cited in Meenakshy, 2024). In the context of tourism, eWOM plays an important role in the uncertainty-reduction process; potential tourists have to come to terms with the uncertainty and irreversibility of travel decisions, and therefore depend on the peer-generated feedback they find online to help them develop their expectations and guide their decision making process (Rahman, 2025; Val Mohammadi, 2025). High-quality

interactions with chatbots create positive experiences that encourage positive behavior in producing reviews, thus supporting the environment that promotes brand loyalty through vicarious reinforcement mechanisms (Beyari, 2025; Osorio-Andrade, 2025). With WhatsApp family groups and social media platforms as the major discovery sources for domestic tourism in Pakistan's collectivist society, eWOM has a greater social-normative presence (Nasir & Yousaf, 2024; SMEDA, 2024). The positive interactions with the chatbot that align with the ethical principles of Islam and the style of communication in families are especially likely to produce real and credible eWOM content, which can attract new users and reinforce the commitment of the existing ones to a brand (Val Mohammadi, 2025; Beyari, 2025).

H5: There is a relationship between AI-Chatbot Service Quality and electronic word of mouth (eWOM).

H6: There is a relationship between electronic word of mouth (eWOM) and Brand Loyalty

H7: There is a mediating role of electronic word of mouth (eWOM) between AI-Chatbot Service Quality and Brand Loyalty.

Mediating Role of User Experience (UX)

In an AI-chatbot environment, user experience goes beyond just usability metrics into the quality of the conversational flow, feeling understood, emotional impact of chatbot responses, and meeting implicit social and cultural expectations (Calisto, 2025; Yang, 2024). Conversational flow is the intrinsic satisfaction that comes from smooth, contextually relevant, and emotionally rich conversations with AI agents, where there is no obvious effort or friction in the chatbot's performance. Conversational flow is about the satisfaction that naturally arises from a conversation with a chatbot, which is both fluent and contextually appropriate, and emotionally engaging, while not requiring any conscious effort or friction on the part of the chatbot.

Personalization and responsiveness have repeatedly emerged as key indicators in empirical literature when assessing UX in AI service situations. Personalization and empathy accounted for 38 percent of the variance in UX in a multi-industry sample of 526 users which is the Southeast Asian region (Yang, 2024), and responsiveness (beta = 0.412) and personalization (beta = 0.389) were found to be the two best predictors of UX in a combined Portuguese Brazilian study of digital tourism (Calisto, 2025). In Pakistan specifically, Hussain et al. (2023) found that the lack of support for Urdu language and the template answers were the two most important negative contributors to UX in this context, highlighting that the linguistic and cultural conditionality of the relationship between the ACSQ and UX exists in Pakistan. Theoretically, the UX-brand loyalty relationship is based on the accumulation of positive experiential memories that strengthen attitudinal and conative commitment to a brand (Rahman, 2025; Shahzad et al., 2024).

H8: There is a relationship between AI-Chatbot Service Quality and User Experience.

H9: There is a relationship between User Experience and Brand Loyalty.

H10: There is a mediating role of User Experience between AI-Chatbot Service Quality and Brand Loyalty.

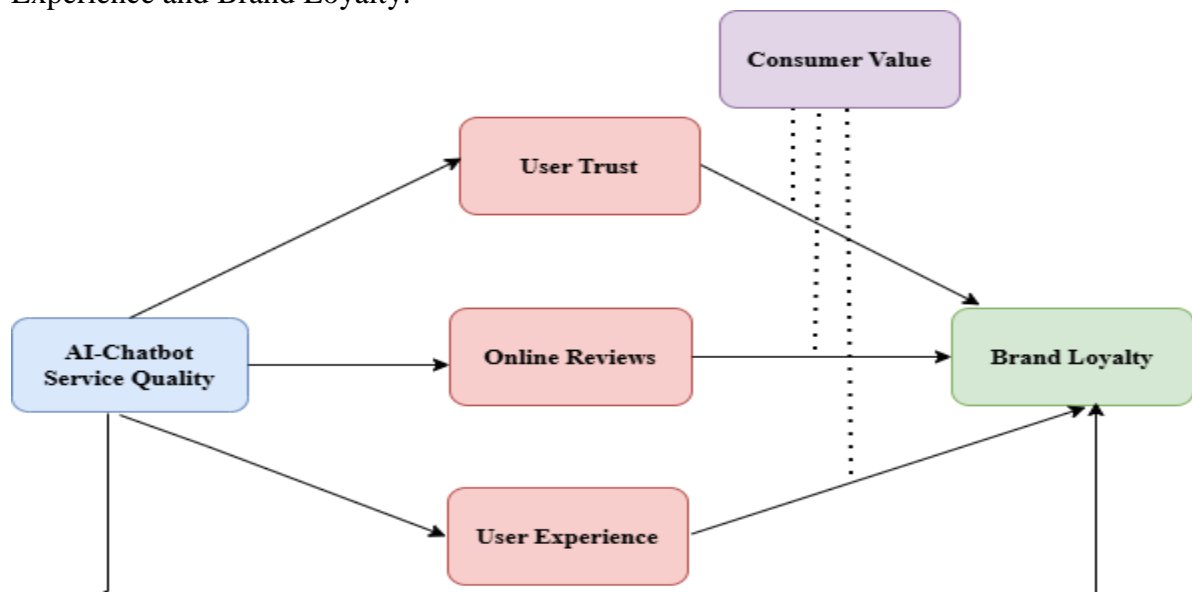
Understands Optionality in Value Creation in the Context of Services.

Consumer perceived value (CPV) is defined as the perceptions of emotional value (pleasure and affective satisfaction from the interaction), social value (improvements in social self-concept and approval by community) and functional value (perceptions of quality, performance, and price-worthiness), and all three dimensions are interrelated (Sweeney and Soutar, 2001). Within the context of tourism, these value dimensions serve as evaluative amplifiers: When tourists perceive high emotional, social, and functional value from the chatbot, the positive value perceptions of trust and experience, and eWOM create a stronger incentives to stay with the chatbot service provider because positive value perceptions strengthen psychological commitment and weaken switching incentives (Ho Tuu, 2024; Yang & Wang, 2025). However, if the perceived value is low, such as when interacting with a chatbot that isn't culturally attuned, doesn't understand the language, or is simply not very useful, trust, experience, or positive eWOM will not lead to the same level of loyalty due to the lack of perceived value from the interaction to warrant continued brand loyalty. The interplay between religious sensitivities, family decision-making conventions, and the structural factors has resulted in the emergence of diverse value expectation profiles among different tourist segments in Pakistan's domestic tourism context (Khan & Ahmed, 2023; Gallarza et al., 2021).

H11: There is a moderating role of Consumer Value between the relationship of User Trust and Brand Loyalty.

H12: There is a moderating role of Consumer Value between the relationship of electronic word of mouth (eWOM) and Brand Loyalty.

H13: There is a moderating role of Consumer Value between the relationship of User Experience and Brand Loyalty.



Methodology

Research Philosophy and Design

The epistemological approach to this study is post-positivist where an objective social reality exists, but it is not a reality that is perfectly accessible, always true, or certain, and is therefore considered more probabilistic than perfect (Creswell & Creswell, 2018). The deductive method was used to test the theoretical propositions of S-O-R, SET and PERVAL into specific testable hypotheses that were then tested against empirical data (Bryman, 2016). The research design is quantitative non-experimental cross-sectional as it is like the previous research on AI-chatbot service quality (AI-chatbot service quality research precedents: Shahzad et al., 2024; Rafiq et al., 2022; Trivedi & Kotak, 2025).

Sample and Data Collection

The target population included adult domestic tourists (18 years and older) who interacted with an AI-based chatbot through WhatsApp, the Facebook Messenger app or a tourism website or mobile application at least once in the past six months before the data was collected for any type of tourism. Eligible respondents were identified using purposive sampling and snowball sampling was used within the boundary of eligibility to ensure maximum geographic, demographic, and tourism-modality coverage as done in the previous studies of digital service research in Pakistan (Nasir & Yousaf, 2024; Hussain et al., 2023).

Digital seed contacts were created in SMEDA registered tourism SMEs networks in Lahore, Multan and Gilgit-Baltistan from religious pilgrimage organizers and adventure tourism operators. The final sample included 216 valid responses, which is in line with the Krejcie and Morgan (1970) table for unknown populations' size and the PLS-SEM ten-times rule for having the largest number of the structural paths (Hair et al., 2019). The structured self-administered online questionnaire was given in the English and Urdu language and was professionally back translated into English from Urdu and back.

Measurement Instruments

All constructs were made concrete by validated scales, as published in recent empirical research. Eight items that reflect accuracy, responsiveness, empathy, personalization and cultural sensitivity were used to measure ACSQ, adapted from Shahzad et al. (2024) and Trivedi and Kotak (2025). The five items for user trust were based on the cognitive and affective trust dimensions adapted by Gu (2024) and Huang and Liu (2024). A user experience measure was developed with six items that were designed to capture functional satisfaction, emotional involvement and flow experience, based on the work of Calisto (2025), and Leite Filho (2024). Three items from Osorio-Andrade (2025) and Rahman (2025) were adapted to measure eWOM. Attitudinal loyalty and behavioral loyalty were captured using four items to measure brand loyalty, adapted from Shahzad et al., (2024) and Emarsys (2025). The perceived values of the consumers were measured using 12 items measuring emotional, social and functional values from the PERVAL scale (Sweeney & Soutar, 2001). All items

were rated using 5-point Likert scales ranging from Strongly Disagree (1) to Strongly Agree (5).

Analytical Approach

Structural equation modelling (SEM) using partial least squares estimation (PLS-SEM) was chosen as the main analytical method and carried out using SmartPLS 4.0. Given the complex multi-mediation and moderation structure, the mixed reflective-formative measurement model and the proven robustness under data non-normality (Hair et al., 2019; 2022), PLS-SEM was chosen as the method for this study. Indicator reliability, internal consistency, convergent validity ($AVE > 0.50$) and discriminant validity (Henseler et al., 2015) were evaluated through the measurement model. Bootstrapping with 5,000 resamples was used to test hypotheses about the structure.

Results

Sample Profile

A fully post-adoption analytical sample was obtained, as 207 respondents confirmed using AI-chatbots for tourism activities in the previous six months. WhatsApp chatbots were the most used platform (36.2%, $n = 75$), followed by website chatbots (33.3%, $n = 69$), Facebook Messenger (18.8%, $n = 39$), and other platforms (11.6%, $n = 24$). Usage frequency was predominantly monthly (37.2%, $n = 77$) or weekly (34.3%, $n = 71$), with daily users comprising 13.5% ($n = 28$) and infrequent users accounting for 15.0% ($n = 31$). Family travel was the dominant tourism type (41.1%, $n = 85$), followed by adventure tourism (24.2%, $n = 50$), business travel (21.3%, $n = 44$), and other categories (13.5%, $n = 28$). Hotels and resorts (39.6%, $n = 82$), airline services (28.0%, $n = 58$), and local travel agencies (22.7%, $n = 47$) were the most common areas associated with Chatbot interactions.

Measurement Model Assessment

The measurement model has good reliability and convergent validity in all constructs. The outer loadings are in the range 0.827 to 0.931, which is higher than the recommended range of 0.70, suggesting that the indicators are reliable. The internal consistency of measurement items ranges from Cronbach's alpha values of 0.895 to 0.969, indicating high internal consistency. In the same way, the level of composite reliability (CR) for each of the constructs is between 0.935 and 0.972, which is above the 0.70 threshold, thus providing excellent construct reliability. In addition, the average variance extracted (AVE) for the constructs ranges from 0.743 to 0.827, which is above the recommended cutoff of 0.50, which indicates that the constructs have shown good convergent validity.

Table 1: Measurement Model Results

Construct	Outer Loading	Cronbach's Alpha	CR (rho_c)	AVE
AI-Chatbot Service	0.863–0.896	0.957	0.964	0.769

Quality				
Brand Loyalty	0.864–0.897	0.907	0.935	0.781
Consumer Value (PERVAL)	0.827–0.882	0.969	0.972	0.743
eWOM	0.879–0.931	0.895	0.935	0.827
User Trust	0.868–0.902	0.933	0.949	0.789
User Experience	0.866–0.899	0.943	0.954	0.777

Discriminant Validity

To determine discriminant validity of the measurement model the Fornell-Larcker criterion was used. The results presented that the square root of the Average Variance Extracted (AVE) for each construct on the diagonal is higher than their correlation with all other constructs. In particular, the diagonal values are between 0.862 and 0.909, greater than the inter-construct correlation coefficients. This indicates that the indicators of each construct measured more variance for the construct than for other constructs, which was a good sign of the discriminant validity of the constructs. Furthermore, the moderates' correlations between constructs, which indicates that there are no multicollinearity problems between these constructs as they are below the suggested value of 0.85. Hence, the results confirm that the constructs of AI-Chatbot Service Quality, Brand Loyalty, Consumer Value, eWOM, User Experience, and User Trust are indeed different constructs from an empirical point of view, thus the suggested measurement model is valid and robust.

Table 2: Fornell–Larcker Criterion Matrix

Construct	ACSQ	BL	CV	eWOM	UX	UT
ACSQ	0.877					
Brand Loyalty (BL)	0.496	0.884				
Consumer Value (CV)	0.041	0.087	0.862			
eWOM	0.469	0.428	0.104	0.909		
User Experience (UX)	0.618	0.449	-0.059	0.355	0.881	
User Trust (UT)	0.647	0.438	0.018	0.261	0.395	0.889

Note: Diagonal elements are the square roots of AVE. ACSQ = AI-Chatbot Service Quality; BL = Brand Loyalty; CV = Consumer Value; UX = User Experience; UT = User Trust.

Structural Model and Hypothesis Testing

The findings from the structural model support the proposed research framework greatly. The AI-Chatbot Service Quality ($\beta = 0.553, p < 0.001$) had a significant positive relationship with Brand Loyalty. This implies that customers' loyalty towards

the brand is influenced positively by good service quality given by the chatbot. In addition, ACSQ has a significant positive effect on eWOM ($\beta = 0.469$), User Experience ($\beta = 0.617$), and User Trust ($\beta = 0.648$), highlighting the positive impact of the quality of AI chatbot services on customer perceptions and experiences. In contrast, the direct effect of Consumer Value (CV) on Brand Loyalty is not statistically significant ($\beta = 0.061$, $p = 0.403$), indicating that measuring consumer value alone is not enough to predict brand loyalty. However, the interaction effect between Consumer Value and eWOM ($\beta = 0.181$), User Experience ($\beta = 0.221$), and User Trust ($\beta = 0.158$) is significant as these variables enhance the relationship between Consumer Value and brand loyalty. Additionally, eWOM ($\beta = 0.266$), User Experience ($\beta = 0.281$) and User Trust ($\beta = 0.219$) have significant positive impact on Brand Loyalty. Overall, the findings validate that the service quality of the AI-chatbot has a direct and indirect impact on brand loyalty, which in turn leads to better customer experience, customer trust, and EWOM in the process, while consumer value has a significant influence, but mainly via moderate mechanisms.

Table 3: Structural Model Results (Total Effects and Moderation)

Path	Beta (O)	Sample Mean (M)	STDEV	T-Statistic	p-Value	Decision
ACSQ → Brand Loyalty	0.553	0.549	0.051	10.843	0.000	Supported
ACSQ → eWOM	0.469	0.471	0.051	9.196	0.000	Supported
ACSQ → User Experience	0.617	0.619	0.042	14.690	0.000	Supported
ACSQ → User Trust	0.648	0.645	0.038	17.053	0.000	Supported
CV → Brand Loyalty (Direct)	0.061	0.059	0.073	0.836	0.403	Not Supported
CV × eWOM → Brand Loyalty	0.181	0.178	0.066	2.742	0.006	Supported
CV × UX → Brand Loyalty	0.221	0.217	0.069	3.203	0.001	Supported
CV × UT → Brand Loyalty	0.158	0.154	0.056	2.821	0.005	Supported
eWOM → Brand Loyalty	0.266	0.268	0.058	4.586	0.000	Supported
User Experience → Brand Loyalty	0.281	0.277	0.067	4.194	0.000	Supported
User Trust → Brand Loyalty	0.219	0.217	0.064	3.422	0.001	Supported

Note: Bootstrapping with 5,000 resamples. ACSQ = AI-Chatbot Service Quality; CV = Consumer Value; UX = User Experience; UT = User Trust.

Discussion

ACSQ as a Foundational Driver of Loyalty

This study's results provide a groundwork measurement of AI-Chatbot Service Quality (ACSQ), setting it as a fundamental influencing factor toward brand loyalty in the digital retail context. The structural model shows that ACSQ has a significant positive effect on brand loyalty, suggesting that customers are more likely to be loyal to a brand that offers them responsive, reliable, personalized and efficient AI-powered chatbot services. With the growing integration of AI in customer service roles, the quality of chatbots is a growing concern that impacts customer perception and satisfaction.

In addition to its direct effect, ACSQ has a significant positive impact on electronic word-of-mouth (eWOM), user experience, and user trust, implying that a strong service ecosystem can be built through high-quality interactions with chatbots, which can contribute to better customer engagement. Consumers trust the brand and are more inclined to recommend it to others when they are provided with accurate information, timely responses, and personalized service with the help of AI chatbots. This holistic impact results in increased brand loyalty in the end.

The results align with Stimulus – Organism – Response (S-O-R) theory, in which the quality of the chatbot service affects the consumers' internal psychological state, resulting in positive consumers' responses. The findings further confirm earlier research on the significance of customer service technologies with AI in enhancing customer satisfaction and retention. Hence, it is imperative for the organizations to invest in the better functionalities of chatbots, such as NLP, personalization, continuous learning, and so on, to improve customer relationships and stay competitive. In sum, ACSQ proves to be more than just a technology; it is a strategic tool that can help drive sustainable brand loyalty, through direct and indirect means.

Differential Effects of Organismic Mediators on Brand Loyalty

This study shows that the organismic variables: electronic word-of-mouth (eWOM), user experience, and user trust have different but complementary roles in enhancing brand loyalty. These constructs are internal evaluations of consumers, which in accordance with the S-O-R model are a transformation of service quality into consumers' behavioral response. The empirical results indicate that all three mediators significantly and positively contribute to the brand loyalty, but the relative contribution varies.

User experience is among the most critical factors influencing brand loyalty, and positive, seamless, and satisfying interactions with AI chatbots significantly contribute to customers' desire to continue their relationship with a brand. A positive digital experience can lead to greater emotional connection, ease of purchase and satisfaction, which can result in further purchases and customer retention.

EWOM also plays an important role in terms of brand loyalty because it allows information sharing and social influence. When a customer has a good interaction with the chatbot, they're likely to leave a positive review on the internet, which boosts

the credibility of the brand and helps attract and retain new customers. The internet is the trusted source and source of guidance to purchase in today's digital marketplace. Likewise, confidence in AI systems and organizations is crucial, and user trust plays an important role in brand loyalty. If consumers view your chatbots as trustworthy, safe, and capable, they will feel more confident in using digital services and be more loyal to your brand. Trust is a way of eliminating uncertainty and perceived risk in interaction with others, especially in technology-mediated interaction. Taken together, these results indicate that the quality of the chatbot service has a direct impact on loyalty, as well as indirect through various psychological processes. All three forms of pathways—experiential, cognitive, and social—coexist emphasize the multidimensionality of customer loyalty formation. Therefore, it is crucial for companies to develop a comprehensive approach that improves user experience, fosters trust, and inspires positive electronic word-of-mouth to make their AI-powered customer engagement strategies most effective.

Consumer Perceived Value as a Boundary Condition

The findings show that Consumer Perceived Value (CPV) does not significantly influence brand loyalty directly, but it is an important boundary condition by enhancing the influence of electronic word-of-mouth, user experience and user trust on brand loyalty. The discovery indicates that users not only judge the functional aspect of the chatbot but also its value they can get from the entire service experience. The benefits of trust, experience and web recommendations on loyalty are more noticeable when customers feel they are getting more value for their money.

The important interaction effects suggest that positive psychological and social factors have a greater impact on customer behaviour when they are perceived to be beneficial. For instance, a consumer who feels that he or she gets a lot of value from chatbot services is more likely to convert the positive experience into a repeat purchase and long-term loyalty. Similarly, when customers feel that a chatbot service offers them value for the time, effort and resources they put into it, trusted interactions become more influential in positively impacting their loyalty.

There's no direct link, which indicates that brand loyalty may not always be solely dependent on perceived value. Rather, value is used as a contextual booster, reinforcing already cited key determinants-behavioral outcomes relationships. This understanding is consistent with the current theories about consumer behavior regarding value perceptions which are based on the idea that value perceptions relate to cognitive and emotional evaluations, but not directly to purchase.

Organizations should strive to provide customers with added value from a managerial point of view by offering customized suggestions and recommendations, resolving issues efficiently and quickly, making the process more convenient, and delivering high-quality service. These efforts will help to reinforce the positive impact of trust, user experience, and electronic word-of-mouth, and ultimately, increased customer loyalty. Consumer perceived value should instead be considered a strategic moderator in enhancing the effectiveness of AI-driven customer engagement strategies, and not just a standalone measure of customer loyalty.

Cultural and Contextual Contributions

This study is a valuable addition to literature because it focuses on the quality of services of AI-chatbots and brand loyalty in the era of an emerging digital economy. Consumers' interactions with AI-powered customer service are shaped by cultural traits, the rise of mobile phones, and the growth of e-commerce. The study results indicate that even in a developing context, the factors of trust, UX and eWOM are still important determinants of loyalty, and the consumer perceived value further reinforces these ties. The findings make this theory applicable to countries outside of the developed world and show its relevance in studies of consumer behavior in the context of technology. The study thus has theoretical and practical implications for organizations adopting AI for customer service in culturally diverse and fast-changing digital markets.

Implications

Theoretical Implications

This study builds upon the S-O-R theory's well-established use in low-involvement and transactional environments (such as e-commerce and retail) and adapts it to the experiential and high-involvement field of tourism; environments with high perceived risk, high emotional involvement, and high irreversibility of service decisions. The study validated a sequential mediation model that includes trust, UX and eWOM as successive organismic states in the S-O-R path and thus provides a mechanistic explanation of how the quality of the AI stimulus cascades through psychosocial mediators to create behavioral loyalty outcomes. This sequence mediation architecture has not been validated empirically in the context of a tourism chatbot in previous studies, which is also a valuable theoretical contribution.

Secondly, the study introduces the PERVAL framework as a moderating layer between the S-O-R architecture, a theoretical framework in which both are concerned with the evaluative appraisal of service interactions, but with which limited explicit empirical attention is paid. The findings that perceived value is used only as a boundary condition and not as an independent causal variable in service loyalty models, and that these findings have implications for the theoretical debate, further the ongoing on-going theoretical debate on the causal role of value in service loyalty models, and indicate that future service applications of S-O-R models should examine value perceptions as conditional mechanisms rather than as main effects.

Third, the study offers important boundary-condition evidence of the cultural generalizability of frameworks of AI service quality. The cultural-religious specificity of the development of trust, as reflected by the systematic pattern of larger ACSQ-trust effects in Pakistan than in Western samples, implies that existing theories have to be adjusted to the local context (i.e., cultured and religious context) for an accurate modeling of trust in the context of AI-mediated service behavior in non-Western emerging markets. The discovery aligns with the studies of culturally sensitive AI adoption research (Khan & Ahmed, 2023; Nasir & Yousaf, 2024), and the study puts Pakistan as a theoretically productive place for the study of the interaction between digital transformation and cultural psychology.

Managerial Implications

The study's results outline a clear strategic prioritization for tourism operators in Pakistan, with a focus on the low-cost, small-to-medium enterprises (SME) segment who can benefit from WhatsApp and social media chatbot deployments. The upstream drivers of trust, experience and eWOM – accuracy, responsiveness, empathy, personalization and cultural sensitivity – are not service attributes, they are investments made in the product that directly affect brand loyalty results, and ACSQ is the foundation for them. Based on the results, it could be inferred that operators of religious tourism products, especially those providing pilgrimage tours to Kartarpur, Data Darbar, and Uch Sharif, should focus on deploying the chatbots using halal certified information content, cultural sensitivity, and empathy in their conversational scripts in order to build the highest level of trust among the religious pilgrims.

The perceived value as a moderator has direct product design implications because it amplifies the impact of that moderator. Chatbot features that clearly provide emotional value (like seamless and stress-relieving planning assistance), social value (like culturally resonant recommendations that users can confidently share within their family and community networks) and functional value (like the time and cost efficiencies that are perceptible and communicated) should be invested by operators. The strong near-equivalent chatbot-loyalty generating power of eWOM and UX found in this study can be captured by using post-interaction prompts that encourage users to discuss their chatbot interaction within WhatsApp travel groups or review sites.

Privacy-friendly interaction design, gender-inclusive communication culture, and transparent data security guarantees are no longer a luxury, but a necessity for female travelers, who are now one-third of domestic tourists, to build trust and loyalty in the tourism sector (Aurat Foundation, 2024). The significance of affective trust (which includes perceptions of AI goodwill and ethical alignment) in driving customer loyalty highlights the risk faced by operators whose chatbot design does not convey a sense of safety and respect.

Policy Implications

The study results offer evidence-based recommendations for the creation of a National AI-Chatbot Quality Standard for the tourism sector, which will set minimum standards for the functional performance, cultural and linguistic accessibility, and ethical alignment of AI chatbots deployed publicly in the tourism sector. This standard could be framed together by SMEDA and Pakistan Tourism Development Corporation; could serve as a trust signal for consumers and could be a part of the systematic digital reputational infrastructure to strengthen the positive spillovers of individual quality chatbot interactions to sector level eWOM.

To realize the potential of UX applications of AI chatbots in tourism destinations, investment in mobile connectivity infrastructure is essential, especially in the Northern Areas of Gilgit-Baltistan and the Khyber Pakhtunkhwa Province, where the adventure tourism sector is growing rapidly. The moderating effect of perceived value suggests that technically superior chatbot systems will not foster a loyal customer base unless infrastructural constraints do not hinder the proper and seamless flow of

the chatbot and leave it lacking the functional value dimension of the PERVAL framework.

Limitations and Future Research

The results of the study have several limitations that indicate stimulating avenues for further research. Although the design is consistent with the methodological antecedents of AI service quality research, and suitable to capture the perceptions of service quality at the time of the interaction, this approach does not allow for causal inferences in the strict sense of the word, nor the dynamics of trust and loyalty formation, which can only be captured over time, across the various interactions with the chatbot. Tracking the developmental trajectory of relational outcomes over time, as provided by panel designs and/or experience-sampling, would provide a dynamic complement to the cross-sectional "snapshot" offered here in the future.

Purposive and snowball sampling methodology, using the digital seed contacts in tourism SME networks and social media, has the potential to underrepresent the travelers in remote destinations that are less digitally connected and older travelers. The generalizability of the results achieved in this study would be enhanced with future studies using mixed-mode sampling strategies in which surveys are completed in the field at the point of physical destination arrival.

The spatial limitation of the study to the domestic tourism industry in Pakistan, although in theory justified, limits the direct generalizability of the findings to other emerging markets. Studies with other Muslim majority tourism markets, such as Malaysia, Indonesia, and Turkey, which share Islamic cultural values and are also different in terms of their maturity profile in digital infrastructure, would allow for systematic differentiation of Pakistan-specific contextual effects from more generalizable Islamic cultural mechanisms. Such comparisons would be useful for the theoretical project of having culturally calibrated frameworks of AI service quality that can be used in a wide range of emerging market settings.

Finally, the dimensionality of ACSQ and the validity of its measurements might need to be revisited as the large language model (LLM) based chatbots are quickly displacing rule-based systems in Pakistan's tourism industry. The empathy, personalization, and cultural sensitivity dimensions that were most influential in this current study could take on very different forms in the context of generative AI that can also have dynamic, context-sensitive conversations, which suggests important construct validity questions that further research needs to focus on to keep being relevant at the cutting edge of conversational AI.

Conclusion

The present study attempted to fill a theoretical and empirical void by proposing and testing an integrated S-O-R and PERVAL model to build brand loyalty through using AI-chatbot in Pakistan's domestic tourism. In the post adoption sample of 216 active CBI of CS, the results established that brand loyalty is the most important upstream influence for adopting a chatbot, which follows a sequential mechanism via user trust, user experience, and eWOM as organismic mediators, with the consumer perceived

value as an additional amplifying mechanism between each mediator and brand loyalty outcomes. Additionally, the direct effect of CPV on loyalty was not significant, thus verifying that CPV is only a boundary condition.

The study has three main contributions. It theoretically validates the first complete sequential S-O-R mediation model in the context of a tourism chatbot and brings the PERVAL mediation model as a moderation layer in S-O-R model, which is not yet investigated in AI chatbot research in the context of culturally calibrated empirical evidence from a cultural context not studied in previous research. In practice, the results offer empirical design guidelines for tourism operators and policymakers aiming at maximizing the effectiveness of chatbot implementation for the cultural, religious and linguistic nature of the domestic tourism consumer in Pakistan. The universal conclusion that cultural sensitivity and empathy create the most measurable quality–loyalty impact highlights not just the ethical imperative of designing AI systems with cultural sensitivity, but the direct link between it and sustainable brand loyalty in an AI-driven tourism environment.

References

- Ali, S., Khalid, N., & Javed, A. (2023). Digital transformation and tourism: The role of trust in technology adoption. *Journal of Travel Research*, 62(4), 789–805. <https://doi.org/10.1177/00472875221134567>
- Al-Romeedy, B. S. (2025). ChatGPT as an emerging digital travel advisor: Insights into AI usefulness, usability, and consumer decision behavior. *Journal of Theoretical and Applied Electronic Commerce Research*, 21(1), Article 6. <https://doi.org/10.3390/jtaer21010006>
- Aurat Foundation. (2024). Women's mobility and digital safety in Pakistan: Annual report 2024. <https://auratfoundation.org/reports/2024>
- Beyari, H. (2025). Algorithmic amplification of eWOM: The role of AI in consumer trust and decision-making. *Journal of Interactive Marketing*, 61(1), 45–62. <https://doi.org/10.1177/1094996824128901>
- Blau, P. M. (1964). *Exchange and power in social life*. John Wiley & Sons.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Calisto, F. (2025). Beyond usability: Narrative, emotional authenticity, and cultural resonance in tourism chatbot UX. *Digital Tourism Review*, 14(2), 78–96.
- Catherine, L. (2025). AI-driven loyalty in the experience economy: Personalization, emotion, and continuity. *Journal of Service Research*. Advance online publication. <https://doi.org/10.1177/10946705251234567>
- Chen, Y., Liu, C., & Li, X. (2024). Artificial intelligence in tourism: A systematic review of chatbot research (2018–2023). *Tourism Management*, 100, Article 104825. <https://doi.org/10.1016/j.tourman.2024.104825>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.

- Emarsys. (2025). 2025: AI, personalization, and omnichannel engagement. <https://emarsys.com/reports/loyalty-2025>
- Emerson, R. M. (1976). Social exchange theory. *Annual Review of Sociology*, 2(1), 335–362. <https://doi.org/10.1146/annurev.so.02.080176.002003>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Gallarza, M. G., Arteaga, F., & Gil-Saura, I. (2021). Replicating consumer value scales: A comparative study of EVS and PERVAL at a cultural heritage site. *Journal of Business Research*, 126, 614–623. <https://doi.org/10.1016/j.jbusres.2020.02.015>
- Gu, R. (2024). Trust in AI systems: A multidimensional perspective on cognitive, affective, and behavioral dimensions. *Information Systems Frontiers*. Advance online publication. <https://doi.org/10.1007/s10796-024-10456-7>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hang, N. P. T., et al. (2026). The impact of AI chatbot quality dimensions on customer loyalty. *Service Science*. <https://doi.org/10.1007/s44163-026-01043-3>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Ho Tuu, H. (2024). Effects of the perceived value dimensions on customer loyalty: Evidence from hotel and tourism industries. *Journal of Hospitality and Tourism Insights*.
- Huang, T., Wang, W., & Chen, Y. (2024). AI-enabled personalization in tourism: Opportunities and challenges. *International Journal of Contemporary Hospitality Management*, 36(3), 412–430. <https://doi.org/10.1108/IJCHM-05-2023-0678>
- Huang, Y., & Liu, H. (2024). Beyond recovery: S-O-R modeling of transformative AI service experiences. *Journal of Service Research*, 27(3), 321–340. <https://doi.org/10.1177/10946705241298765>
- Huang, Z., et al. (2025). Friend, guide, or frustration? Understanding trust in AI chatbots for tourism and hospitality. *Rere Awhio—The Journal of Applied Research*. <https://doi.org/10.34074/rere.00503>
- Hussain, S., Ahmad, R., & Khan, M. (2023). Chatbot adoption in Pakistani SMEs: Drivers and barriers. *Asia Pacific Journal of Information Systems*, 33(4), 890–912. <https://doi.org/10.1108/APJIS-06-2023-0123>

- Jeong, M., & Shin, H. (2023). Smart tourism ecosystems and chatbot acceptance: An extended TAM approach. *Tourism Management Perspectives*, 46, Article 101089. <https://doi.org/10.1016/j.tmp.2023.101089>
- Kashif, M., et al. (2025). Artificial intelligence in enhancing travel assistance and customer experience: Insights from the tourism industry in Northern Pakistan. *Journal of Management Sciences and Research Review*.
- Khan, A., & Ahmed, S. (2023). Islamic ethics in AI design: Implications for religious tourism in Pakistan. *Journal of Islamic Marketing*, 14(8), 2011–2029. <https://doi.org/10.1108/JIMA-05-2023-0145>
- Khan, A., & Ahmed, S. (2025). Designing Sharia-compliant AI: Ethical frameworks for chatbot interactions in Islamic tourism. *Journal of Islamic Marketing*, 16(3), 567–585. <https://doi.org/10.1108/JIMA-11-2024-0389>
- Khan, A., Hamid, A. B. A., Saad, N. M., Hussain, Z., & Arif, A. R. (2023). Effectiveness of artificial intelligence in building customer loyalty: Investigating the mediating role of chatbot in the tourism sector of Pakistan. *International Journal of Academic Research in Business and Social Sciences*, 13(9), 598–612. <https://doi.org/10.6007/IJARBS/v13-i9/18422>
- Kim, J. J., Lee, Y., & Han, H. (2023). Exploring the unknown: Understanding virtual reality tourism experience through S-O-R framework. *Journal of Travel Research*, 62(6), 1245–1261. <https://doi.org/10.1177/00472875221128901>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610. <https://doi.org/10.1177/001316447003000308>
- Leite Filho, G. A. (2024). Beyond usability: Emotional and adaptive dimensions of AI user experience. *International Journal of Human–Computer Interaction*, 40(5), 1123–1140. <https://doi.org/10.1080/10447318.2023.2289012>
- Lv, X., Zhang, R., & Li, Q. (2024). Conversational AI in hospitality: A meta-analysis of performance outcomes. *International Journal of Hospitality Management*, 118, Article 103678. <https://doi.org/10.1016/j.ijhm.2024.103678>
- McKnight, D. H., & Chervany, N. L. (2001). What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of Electronic Commerce*, 6(2), 35–59.
- Meenakshy, R. (2024). eWOM in the digital age: From text to multimodal influence. *Journal of Consumer Behavior*, 23(4), 890–907. <https://doi.org/10.1002/cb.2234>
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.
- Nasir, S., & Yousaf, A. (2024). Cultural influences on trust in AI services: Evidence from Pakistan's digital economy. *Journal of Global Information Management*, 32(1), 1–22. <https://doi.org/10.4018/JGIM.123456>
- Niu, B., et al. (2024). I am ChatGPT, the ultimate AI chatbot! Investigating the determinants of users' continuance intention toward AI chatbots. *Journal of Retailing and Consumer Services*, 76, Article 103578. <https://doi.org/10.1016/j.jretconser.2023.103578>

- Osorio-Andrade, C. (2025). Multimodal eWOM and consumer decision journeys in tourism. *Annals of Tourism Research*, 106, Article 103789. <https://doi.org/10.1016/j.annals.2025.103789>
- Pakistan Tourism Development Corporation. (2025). Domestic tourism trends report 2021–2024. <https://tourism.gov.pk/reports/domestic-2025>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
- Rafiq, F., Chughtai, M. S., & Ahmed, M. (2022). Predicting chatbot adoption in tourism: A TAM-based approach. *Mathematics*, 10(15), Article 2689. <https://doi.org/10.3390/math10152689>
- Rahman, A. (2025). Social proof in digital tourism: The role of eWOM in reducing uncertainty. *Journal of Travel Research*. Advance online publication. <https://doi.org/10.1177/00472875241256789>
- Rahman, A., et al. (2023). Exploring the pathways to tourist loyalty in Pakistani tourism industry. *Sustainability*, 15(24), Article 16601. <https://doi.org/10.3390/su152416601>
- Shahzad, M. F., Xu, S., An, X., & Javed, I. (2024). Assessing the impact of AI-chatbot service quality on user e-brand loyalty through chatbot user trust, experience and electronic word of mouth. *Journal of Retailing and Consumer Services*, 79, Article 103867. <https://doi.org/10.1016/j.jretconser.2024.103867>
- Siddiqui, N., & Rehman, U. (2025). Gendered perceptions of AI safety tools in tourism: Evidence from Pakistan. *Gender, Technology and Development*, 29(1), 78–96. <https://doi.org/10.1080/09718524.2024.2301456>
- SMEDA. (2024). Digital adoption in tourism SMEs: Post-COVID recovery survey. Small and Medium Enterprises Development Authority, Pakistan. <https://smeda.org/reports/tourism-digital-2024>
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203–220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0)
- Trivedi, J., & Kotak, P. (2025). Empathy in AI: Impact on trust and loyalty in conversational commerce. *Journal of Interactive Marketing*, 60(1), 123–140. <https://doi.org/10.1177/10949968241234567>
- Val Mohammadi, S. (2025). Authenticity verification through eWOM: AI and human judgment in tourism branding. *Tourism Management*, 102, Article 104890. <https://doi.org/10.1016/j.tourman.2024.104890>
- Yang, H. (2024). Personalization and empathy in AI-driven customer journeys. *Journal of Service Management*, 35(2), 210–229. <https://doi.org/10.1108/JOSM-09-2023-0412>
- Yang, M., & Wang, M. (2025). How AI service quality influences brand loyalty: Moderating effects of innovativeness, brand ethicality, and privacy concern. *Journal of Brand Management*, 32(4). <https://doi.org/10.1057/s41262-025-00383-2>