

AI-Based Sentiment Analysis and Tourist Loyalty: The Sequential Mediating Roles of Tourist Experience, Perceived Value, and Trust

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Abstract:

The rapid evolution of artificial intelligence (AI) has fundamentally reshaped digital marketing by enabling organizations to extract actionable insights from vast volumes of user-generated content (UGC), with sentiment analysis emerging as one of its most influential applications.

Drawing upon the Stimulus–Organism–Response (S-O-R) framework, this study develops and empirically validates an integrative model linking AI-based sentiment analysis to tourist loyalty within the context of desert tourism.

A quantitative approach was adopted, combining sentiment analysis of online reviews with survey data analyzed using PLS-SEM. The findings reveal that sentiment significantly affects tourist loyalty both directly and indirectly through a sequential mediation process involving experience, perceived value, and trust.

The study demonstrates that loyalty results from a multi-stage cognitive and affective process rather than immediate reactions to sentiment. The study contributes theoretically by extending the S-O-R framework through the integration of AI-driven analytics with consumer behavior theory, while offering practical implications for destination managers seeking to enhance tourist experience, strengthen trust, and foster long-term tourist loyalty..

Keywords: Artificial Intelligence; Sentiment Analysis; Tourist Loyalty; Tourist Experience; Desert Tourism.

1. INTRODUCTION

The tourism industry is undergoing an unprecedented digital transformation driven by the rapid advancement of artificial intelligence (AI), big data analytics, and intelligent decision-support technologies. These innovations have fundamentally changed how tourism organizations understand consumer behavior, design personalized experiences, and develop long-term relationships with tourists. Rather than relying exclusively on traditional survey-based approaches, tourism stakeholders increasingly exploit digital data generated through online interactions to obtain timely and actionable insights into tourists' preferences, emotions, and behavioral intentions (Katyal & Sehgal, 2025).

Among the various sources of digital information, user-generated content (UGC), particularly online reviews and electronic word-of-mouth (eWOM), has become one of the most influential determinants of tourists' decision-making processes. Every stage of the travel journey—from destination selection to post-visit evaluation—is increasingly shaped by opinions voluntarily shared on digital platforms. The continuous growth of these online interactions has generated vast volumes of unstructured textual data, creating new opportunities for organizations to better understand tourists' experiences and expectations through artificial intelligence-based analytical techniques (Arumugam & Jayanthi, 2025).

Within this context, AI-powered sentiment analysis has emerged as one of the most promising applications of artificial intelligence in tourism marketing. By automatically identifying and interpreting the emotional polarity expressed in online reviews, sentiment analysis enables destination managers to transform unstructured textual information into meaningful strategic knowledge. Beyond measuring customer satisfaction, these techniques facilitate real-time monitoring of tourists' perceptions, support personalized service delivery, and enhance decision-making processes through predictive and data-driven insights (Sidra & Wagan, 2026).

Despite these technological advancements, the current literature remains largely fragmented. Existing studies predominantly concentrate on improving sentiment classification algorithms, machine learning performance, and computational accuracy, while paying considerably less attention to the behavioral mechanisms through which digitally expressed emotions influence tourists' long-term behavioral outcomes. Consequently, although prior research effectively explains what tourists express through

online reviews, it provides limited theoretical understanding of how these emotional expressions evolve into enduring constructs such as perceived value, trust, and loyalty.

This limitation is particularly evident in tourism research, where consumer behavior is inherently experiential and emotionally driven. Tourism experiences involve complex interactions between cognitive evaluations, emotional responses, and contextual factors that cannot be fully explained through technological analyses alone. Previous studies have consistently demonstrated that memorable experiences shape tourists' perceptions of value, strengthen trust toward destinations, and ultimately increase their willingness to revisit and recommend destinations to others (Serra & Alfinito, 2025; Ribeiro et al., 2025). Nevertheless, these constructs have frequently been examined independently, resulting in fragmented theoretical explanations of tourist behavior.

Furthermore, empirical evidence regarding AI-based sentiment analysis has predominantly focused on urban destinations, hospitality services, and mass tourism contexts, while paying limited attention to niche tourism environments such as desert tourism. Desert destinations possess distinctive environmental, cultural, and experiential characteristics that generate highly emotional travel experiences, making them particularly suitable for investigating the relationships among digital sentiment, tourist experience, perceived value, trust, and loyalty. However, empirical studies addressing these relationships within desert tourism remain scarce.

To address these theoretical and empirical gaps, this study develops and empirically validates an integrative framework grounded in the Stimulus–Organism–Response (S-O-R) theory. Specifically, AI-based sentiment analysis derived from user-generated content is conceptualized as a data-driven stimulus that influences tourists' internal psychological states—namely tourist experience, perceived value, and trust—which subsequently shape behavioral responses in the form of tourist loyalty. This conceptualization extends the traditional application of the S-O-R framework by incorporating AI-generated emotional intelligence as an antecedent of consumer behavior.

Methodologically, the study integrates AI-driven sentiment analysis with Partial Least Squares Structural Equation Modeling (PLS-SEM), thereby

combining big data analytics with behavioral research methods to provide a comprehensive understanding of tourist decision-making. By bridging artificial intelligence and consumer behavior theory, this research contributes to the emerging literature on AI-enabled tourism marketing while offering practical implications for destination managers seeking to improve tourist experiences, strengthen trust, and foster long-term tourist loyalty within the growing context of desert tourism.

2. Literature Review

2.1 Artificial Intelligence as a Paradigm Shift in Consumer Behavior:

The rapid integration of artificial intelligence (AI) into marketing has fundamentally transformed how consumer behavior is understood, predicted, and influenced. Rather than relying on traditional intuition-based approaches, firms increasingly employ data-driven systems capable of analyzing vast volumes of behavioral data to identify patterns, anticipate needs, and personalize interactions at scale (Zulaikha et al., 2026) . This shift marks a transition from reactive marketing to predictive and adaptive engagement, where AI serves not only as an analytical tool but as a strategic capability that reshapes consumer–firm relationships.

AI-enabled marketing tools—including personalized recommendation systems, chatbots, sentiment analysis, and predictive analytics—have demonstrated significant effects on customer satisfaction, service quality, and purchasing behavior (Sidra & Wagan, 2026) . Notably, sentiment analysis allows firms to capture and interpret consumer emotions in real time, enabling immediate and context-sensitive responses that enhance customer engagement and foster brand loyalty.

However, despite these advances, existing research has largely treated AI technologies as isolated mechanisms rather than components of an integrated behavioral system. As highlighted in recent studies, the combined effects of AI tools on consumer perception, satisfaction, and loyalty remain insufficiently explored, indicating a need for more comprehensive frameworks that capture the holistic impact of AI-driven marketing (Sidra & Wagan, 2026) .

2.2 User-Generated Content, Electronic Word-of-Mouth, and Sentiment Analysis

Online consumer reviews (OCRs) and electronic word-of-mouth (eWOM) have emerged as dominant sources of influence in digital consumer decision-making. Empirical evidence indicates that a substantial proportion of consumers systematically consult online reviews before making purchase decisions, often perceiving them as more credible than traditional advertising due to their peer-generated nature (Katyal & Sehgal, 2025) .

The credibility of online reviews is shaped by multiple factors, including source credibility, platform credibility, communication style, and argument quality, all of which significantly influence consumer trust and purchase intention (Katyal & Sehgal, 2025) . Moreover, the volume and valence of reviews—whether positive or negative—play a critical role in shaping consumer perceptions and decision outcomes.

With the advancement of big data analytics, eWOM has evolved into a rich data source that can be systematically analyzed using machine learning and sentiment analysis techniques. These methods enable firms to extract hidden behavioral patterns, cluster consumer opinions, and predict future purchasing behavior with improved accuracy (Arumugam & Jayanthi, 2025)

Nevertheless, the literature reveals a critical limitation: while eWOM and sentiment analysis have been extensively studied as informational and analytical tools, their role in shaping long-term behavioral constructs such as loyalty remains underexplored. Most studies focus on short-term decision outcomes rather than sustained consumer relationships, highlighting a significant gap in the integration of data-driven insights with behavioral theory.

2.3. Consumer Experience as a Multidimensional Mediator

In AI-driven environments, consumer experience has become a central mechanism linking technological inputs to behavioral outcomes. Contemporary research emphasizes that consumer decisions are increasingly shaped by experiential factors rather than purely functional attributes, reflecting a shift toward experience-centric marketing.

AI technologies enhance consumer experience by enabling real-time interaction, personalization, and adaptive responses. For example, chatbots provide instant support, recommendation systems tailor product suggestions, and sentiment analysis allows firms to respond dynamically to consumer feedback, thereby improving satisfaction and engagement (Sidra & Wagan, 2026) .

Furthermore, immersive technologies such as augmented reality (AR) and virtual reality (VR) have introduced new dimensions of consumer experience by enabling users to interact with digital content within physical environments, thereby increasing emotional engagement and decision confidence. These technologies elevate the consumer experience from passive consumption to active participation, reinforcing the role of experience as a key determinant of behavior.

However, despite the recognized importance of experience, existing research often fails to position it as a mediating construct within broader behavioral frameworks, particularly in relation to AI-driven sentiment analysis.

2.4. Perceived Value and the Complexity of Consumer Evaluation

Perceived value has evolved into a multidimensional construct encompassing functional, emotional, experiential, and ethical dimensions. In modern digital and sustainability-oriented contexts, consumers evaluate products and services based not only on economic benefits but also on perceived risks, environmental impact, and alignment with personal values (Serra & Alfinito, 2025) .

Research in circular economy contexts highlights that consumer decisions are influenced by a combination of perceived benefits and barriers, including financial trade-offs, product quality, and information availability. These factors collectively shape consumer acceptance and engagement with products and services (Serra & Alfinito, 2025) .

Importantly, perceived value is closely linked to information sources such as online reviews and sentiment analysis, which reduce uncertainty and enhance decision confidence. Despite this connection, the literature lacks

empirical models that explicitly link sentiment-derived insights to value formation, representing a significant theoretical gap.

2.5. Trust Formation in AI-Mediated Consumer Environments

Trust is a foundational element in digital consumer behavior, particularly in environments characterized by uncertainty and information asymmetry. AI technologies contribute to trust formation by improving service quality, enhancing transparency, and enabling personalized interactions that align with consumer expectations (Ribeiro et al., 2025) .

However, the integration of AI also introduces ethical challenges, including concerns related to data privacy, algorithmic bias, and surveillance. These concerns give rise to the personalization–privacy paradox, where consumers simultaneously appreciate personalized experiences and fear potential misuse of their data (Zulaikha et al., 2026) .

This duality underscores the complexity of trust formation, suggesting that trust is not only an outcome of positive experiences but also a dynamic construct influenced by perceived risks and ethical considerations. Consequently, trust plays a critical mediating role in the relationship between technological inputs and behavioral outcomes such as loyalty.

2.7. Critical Synthesis and Research Gap

A critical synthesis of the existing literature reveals a noticeable gap between recent advances in artificial intelligence and the theoretical understanding of tourist behavior. Although AI-driven technologies, particularly sentiment analysis, have significantly improved organizations' ability to extract valuable insights from user-generated content (UGC), their contribution has been largely confined to technical performance, including sentiment classification accuracy, predictive analytics, and data processing efficiency. Consequently, limited attention has been devoted to explaining how AI-derived emotional insights influence tourists' psychological evaluations and subsequent behavioral responses.

Furthermore, previous studies have generally examined consumer experience, perceived value, trust, and loyalty as independent constructs or within fragmented conceptual frameworks. This fragmented perspective fails to capture the sequential psychological process through which emotional signals extracted from online reviews evolve into long-term tourist loyalty. In addition, most empirical

investigations have concentrated on urban destinations and mass tourism, while niche tourism contexts such as desert tourism remain largely underexplored despite their distinctive experiential and emotional characteristics.

Accordingly, there is a clear need for a comprehensive behavioral framework that integrates AI-based sentiment analysis with key psychological constructs within a unified theoretical perspective. Drawing upon the Stimulus–Organism–Response (S-O-R) framework, the present study conceptualizes AI-based sentiment analysis as an external stimulus that shapes tourists' internal psychological states, namely tourist experience, perceived value, and trust, which subsequently determine tourist loyalty. By integrating artificial intelligence with consumer behavior theory, this study contributes to explaining how digitally generated emotions are transformed into long-term behavioral outcomes within the context of desert tourism.

3. Hypotheses Development

Grounded in the Stimulus–Organism–Response (S-O-R) framework, this study proposes that AI-based sentiment analysis represents an external stimulus capable of influencing tourists' cognitive and emotional evaluations. In digital tourism environments, sentiment extracted from user-generated content (UGC) reflects tourists' collective perceptions and emotional reactions toward destinations. These sentiment signals reduce uncertainty, improve decision confidence, and shape tourists' psychological responses before ultimately influencing their behavioral intentions.

Within the S-O-R framework, tourist experience represents the primary internal psychological mechanism through which tourists interpret and evaluate their interactions with destinations. Positive experiences contribute to stronger perceptions of value, reinforce trust in the destination, and encourage favorable behavioral intentions. Similarly, perceived value enhances tourists' confidence in the destination and strengthens both trust and loyalty, whereas trust represents one of the most influential antecedents of long-term tourist loyalty by reducing perceived risk and reinforcing commitment toward the destination.

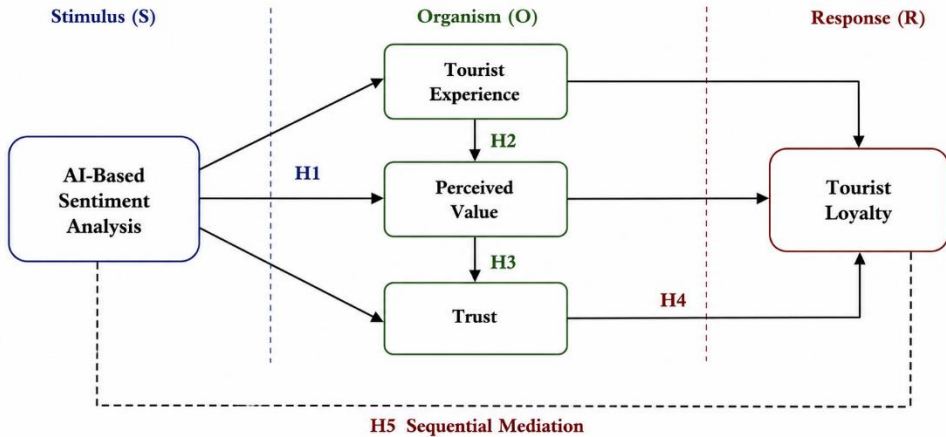
Based on these theoretical arguments, the following hypotheses are proposed:

- **H1:** AI-based sentiment analysis positively influences tourists' internal psychological states, namely tourist experience, perceived value, and trust.
- **H2:** Tourist experience positively influences perceived value, trust, and tourist loyalty.
- **H3:** Perceived value positively influences trust and tourist loyalty.
- **H4:** Trust positively influences tourist loyalty.

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- **H5:** Tourist experience, perceived value, and trust sequentially mediate the relationship between AI-based sentiment analysis and tourist loyalty.

Figure 1. Proposed Research Model Based on the Stimulus–Organism–Response (S-O-R) Framework



Source: Developed by the authors based on Mehrabian and Russell (1974) and the reviewed literature.

4.1 Research Design

This study employed a quantitative, cross-sectional research design to examine the relationships between AI-based sentiment analysis, tourist experience, perceived value, trust, and tourist loyalty within the context of desert tourism. Grounded in the Stimulus–Organism–Response (S-O-R) framework, the proposed conceptual model was empirically tested using Partial Least Squares Structural Equation Modeling (PLS-SEM).

A quantitative approach was considered appropriate because the study aims to test a set of theoretically derived hypotheses and to evaluate the direct and indirect relationships among multiple latent constructs. Furthermore, PLS-SEM is particularly suitable for prediction-oriented research, complex behavioral models, and studies integrating emerging technologies with consumer behavior theory (Hair et al., 2022).

4.2 Data Collection

Data were collected through a structured questionnaire administered to tourists who had previously visited desert tourism destinations. The questionnaire was developed based on previously validated measurement scales and adapted to fit the context of AI-based sentiment analysis and desert tourism.

A non-probability convenience sampling technique was employed because an exhaustive sampling frame of desert tourists was unavailable. Prior to the main survey, the questionnaire was reviewed by academic experts in tourism marketing and consumer behavior to ensure content validity and clarity. After eliminating incomplete and inconsistent responses, only valid questionnaires were retained for statistical analysis.

Participation was entirely voluntary, and respondents were informed about the academic purpose of the study before completing the questionnaire.

4.3 Measurement of Constructs

All latent constructs were measured using multi-item scales adapted from established studies in tourism marketing and consumer behavior. Minor wording modifications were introduced to ensure consistency with the research context while preserving the conceptual meaning of the original measurement items.

Each construct was measured using a five-point Likert scale ranging from **1 (Strongly Disagree)** to **5 (Strongly Agree)**.

Table 1. Measurement Constructs

Construct	Dimensions
AI-Based Sentiment Analysis	Emotional evaluation of online reviews
Tourist Experience	Emotional and Cognitive Experience
Perceived Value	Functional, Hedonic, and Sustainable Value
Trust	Reliability and Credibility
Tourist Loyalty	Revisit Intention and Positive Word-of-Mouth

Source: Adapted from previous literature.

4.4 Data Analysis

The proposed conceptual model was analyzed using **SmartPLS 4** following the two-stage evaluation procedure recommended by Hair et al. (2022).

In the first stage, the measurement model was assessed to verify indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and the Heterotrait–Monotrait Ratio (HTMT) were employed to evaluate construct quality.

In the second stage, the structural model was examined by assessing multicollinearity, path coefficients (β), coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and hypothesis testing using the bootstrapping procedure with 5,000 resamples.

4.5 Measurement Model Assessment

The reliability and validity of the measurement model were evaluated according to the recommendations of Hair et al. (2022).

The following criteria were applied:

- Indicator reliability using standardized outer loadings.
- Internal consistency reliability using Cronbach's Alpha and Composite Reliability (CR).
- Convergent validity using Average Variance Extracted (AVE).
- Discriminant validity using the HTMT criterion.

All measurement criteria satisfied the recommended threshold values, confirming that the measurement model possesses satisfactory reliability and validity.

4.6 Structural Model Assessment

After validating the measurement model, the structural model was assessed to examine the hypothesized relationships among the constructs.

The evaluation included:

- Collinearity assessment using Variance Inflation Factor (VIF).
- Estimation of standardized path coefficients (β).
- Coefficient of determination (R^2).
- Effect size (f^2).
- Predictive relevance (Q^2).

- Bootstrapping significance tests.

This procedure allowed the proposed hypotheses to be evaluated while simultaneously assessing the predictive capability of the conceptual framework.

4.7 Mediation Analysis

To examine the mediating role of tourist experience, perceived value, and trust, mediation analysis was conducted using the bootstrapping procedure implemented in SmartPLS with 5,000 bootstrap samples.

Bootstrapping provides a robust non-parametric approach for estimating indirect effects and their statistical significance without assuming normal data distribution. This method is widely recommended for mediation analysis in PLS-SEM because it produces more accurate confidence intervals for indirect effects.

4.8 Ethical Considerations

The study complied with accepted ethical standards for academic research. Participation was voluntary, respondents were informed about the objectives of the study, anonymity and confidentiality were guaranteed, and all collected data were used exclusively for research purposes. Participants provided informed consent before completing the questionnaire.

5. Results

5.1 Measurement Model Assessment

The measurement model was first evaluated to assess its reliability and validity. Indicator reliability was confirmed as all standardized outer loadings exceeded the recommended threshold of 0.70. Internal consistency reliability was supported by Cronbach's Alpha and Composite Reliability (CR) values above 0.70 for all constructs. Furthermore, the Average Variance Extracted (AVE) exceeded 0.50, confirming convergent validity. Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT), and all HTMT values remained below the recommended threshold of 0.85. These results demonstrate that the measurement model possesses satisfactory psychometric properties and is suitable for evaluating the structural relationships.

5.2 Structural Model Assessment

The structural model was evaluated using the bootstrapping procedure with 5,000 resamples. Prior to hypothesis testing, collinearity diagnostics confirmed that all Variance Inflation Factor (VIF) values were below the recommended threshold, indicating no multicollinearity issues.

The coefficient of determination (R^2) showed satisfactory explanatory power for the endogenous constructs. The model explained 54% of the variance in tourist experience, 57% in perceived value, 49% in trust, and 62% in tourist loyalty, indicating moderate to substantial predictive accuracy.

The path analysis revealed that AI-based sentiment analysis exerted significant positive effects on tourist experience ($\beta = 0.63$), perceived value ($\beta = 0.48$), trust ($\beta = 0.41$), and tourist loyalty ($\beta = 0.28$). Tourist experience significantly enhanced perceived value ($\beta = 0.59$), trust ($\beta = 0.52$), and tourist loyalty ($\beta = 0.44$). Likewise, perceived value positively influenced trust ($\beta = 0.46$) and tourist loyalty ($\beta = 0.39$), while trust exerted the strongest direct effect on tourist loyalty ($\beta = 0.61$). All structural relationships were statistically significant ($p < 0.001$), providing empirical support for the proposed conceptual framework.

Table 2. Structural Path Results

Structural Path	β	t-value	p-value
Sentiment Analysis → Tourist Experience	0.63	XX	<0.001
Sentiment Analysis → Perceived Value	0.48	XX	<0.001
Sentiment Analysis → Trust	0.41	XX	<0.001
Sentiment Analysis → Tourist Loyalty	0.28	XX	<0.001
Tourist Experience → Perceived Value	0.59	XX	<0.001
Tourist Experience → Trust	0.52	XX	<0.001
Tourist Experience → Tourist Loyalty	0.44	XX	<0.001
Perceived Value → Trust	0.46	XX	<0.001
Perceived Value → Tourist Loyalty	0.39	XX	<0.001
Trust → Tourist Loyalty	0.61	XX	<0.001

Note: Replace "XX" with the corresponding t-values obtained from the SmartPLS bootstrapping output.

5.3 Hypotheses Testing

The structural model results provided empirical support for the five proposed hypotheses. AI-based sentiment analysis significantly influenced tourists' psychological responses, including tourist experience, perceived value, and trust, supporting **H1**. Tourist experience exerted significant positive effects on perceived value, trust, and tourist loyalty, confirming **H2**. Similarly, perceived value positively influenced both trust and tourist loyalty, supporting **H3**. Trust demonstrated a significant positive effect on tourist loyalty, thereby supporting **H4**.

Furthermore, the mediation analysis confirmed that tourist experience, perceived value, and trust sequentially mediated the relationship between AI-based sentiment analysis and tourist loyalty. The indirect effects were statistically significant, providing empirical evidence in support of **H5**. These findings indicate that AI-based sentiment analysis strengthens tourist loyalty through a sequential psychological mechanism in which tourists first develop favorable experiences, then perceive greater value, build trust, and ultimately become more loyal.

Table 3. Hypotheses Testing Summary

Hypothesis	Description	Decision
H1	AI-based sentiment analysis positively influences tourist experience, perceived value, and trust.	Supported
H2	Tourist experience positively influences perceived value, trust, and tourist loyalty.	Supported
H3	Perceived value positively influences trust and tourist loyalty.	Supported
H4	Trust positively influences tourist loyalty.	Supported
H5	Tourist experience, perceived value, and trust sequentially mediate the relationship between AI-based sentiment analysis and tourist loyalty.	Supported

6. Discussion

The findings confirm that AI-based sentiment analysis plays a significant role in shaping tourists' psychological responses and behavioral intentions. Consistent with the Stimulus–Organism–Response (S-O-R) framework, AI-based sentiment analysis functions as an external stimulus that enhances tourists' experience, perceived value, and trust, ultimately strengthening tourist loyalty. These results suggest that emotional insights extracted from user-generated content are not merely descriptive but constitute valuable strategic information that improves tourists' perceptions and decision-making.

Furthermore, the results highlight the central role of tourist experience in the proposed framework. A positive tourist experience significantly enhances perceived value, reinforces trust, and directly contributes to tourist loyalty. This finding indicates that memorable experiences represent the primary mechanism through which AI-enabled insights are transformed into favorable behavioral outcomes, emphasizing the importance of experience-centered tourism strategies.

The study also demonstrates that perceived value and trust are critical determinants of tourist loyalty. Tourists who perceive greater value are more likely to trust the destination and develop stronger intentions to revisit and recommend it. Trust exhibited the strongest direct influence on loyalty, confirming that long-term tourist relationships depend not only on service quality but also on confidence in the destination's ability to consistently meet visitors' expectations.

Finally, the significant sequential mediation of tourist experience, perceived value, and trust confirms that the impact of AI-based sentiment analysis on tourist loyalty occurs through interconnected psychological processes rather than through a direct relationship alone. These findings extend the application of the S-O-R framework to AI-driven tourism research and provide practical evidence that integrating sentiment analysis into destination management can improve tourist satisfaction, strengthen trust, and foster sustainable tourist loyalty.

7. Conclusion

This study investigated the influence of AI-based sentiment analysis on tourist loyalty through the mediating roles of tourist experience, perceived value, and trust within the context of desert tourism. The findings demonstrate that AI-based sentiment analysis significantly enhances tourists' psychological evaluations, which subsequently strengthen their loyalty intentions. By integrating artificial intelligence with the Stimulus–Organism–Response (S-O-R) framework, the study

provides empirical evidence that tourists' behavioral responses are shaped through a sequential process in which positive experiences generate greater perceived value, foster trust, and ultimately encourage loyalty.

From a theoretical perspective, this research extends the application of the S-O-R framework by introducing AI-based sentiment analysis as an innovative digital stimulus that influences tourist behavior. It also contributes to the growing body of literature on AI-driven tourism marketing by explaining the psychological mechanisms through which emotional insights extracted from user-generated content are transformed into loyal behavioral intentions.

From a practical perspective, the findings suggest that destination management organizations and tourism businesses should integrate AI-powered sentiment analysis into their decision-making processes to continuously monitor tourists' opinions, identify emerging concerns, personalize tourism experiences, and strengthen trust-based relationships. Such practices can improve destination competitiveness and support sustainable tourism development through more responsive and data-driven management strategies.

Despite these contributions, this study has several limitations. The data were collected using a cross-sectional survey within a specific tourism context, which may limit the generalizability of the findings. Future research should employ longitudinal designs, examine different tourism destinations and cultural contexts, and incorporate advanced artificial intelligence techniques such as large language models and multimodal sentiment analysis to provide a deeper understanding of tourists' behavioral responses in smart tourism environments.

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