

The Role of Digital Platforms and Online User Interaction in Shaping Tourist Emotional Satisfaction

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ABSTRACT

Tourist experiences in the digital era are shaped not only by on-site physical interactions but are increasingly influenced by digital platforms, online reviews, and social media. Although the literature on digital tourism is growing rapidly, a gap remains in understanding how digital interactions holistically and integratively influence tourists' emotional satisfaction, particularly in coastal destinations. This study aims to examine the role of digital and information technology-based factors in shaping tourists' emotional satisfaction in coastal destinations by developing an integrated model that links the physical and social environments, digital experience quality, electronic word of mouth (e-WOM), digital destination image, and tourist engagement. Data were collected from 339 tourists who actively used digital platforms during their visits to a coastal destination in Indonesia. A mixed-method analytical approach was employed, combining Partial Least Squares Structural Equation Modeling (PLS-SEM) to test linear relationships and fuzzy-set Qualitative Comparative Analysis (fsQCA) to uncover complex configurational pathways leading to high emotional satisfaction. The findings indicate that digital experience quality and e-WOM significantly strengthen digital destination image, which in turn enhances tourist engagement and emotional satisfaction. Tourist engagement emerged as the strongest direct predictor of emotional satisfaction. The configurational analysis revealed multiple alternative pathways leading to high satisfaction, with digital destination image identified as a necessary condition across all configurations. This study offers theoretical contributions by integrating environmental psychology and digital tourism literature into a comprehensive model and by applying a mixed-method approach (SEM-fsQCA) capable of capturing causal complexity. Practically, the findings underscore the importance for destination managers to not only manage physical attractions but also to proactively build a strong digital destination image, encourage positive e-WOM, and create interactive and engaging digital experiences to enhance tourists' emotional satisfaction.

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1. INTRODUCTION

Coastal and marine tourism has emerged as one of the most dynamic sectors in global tourism development due to its significant economic, social, and environmental contributions [1], [2], [3]. Coastal destinations offer distinctive natural attractions, such as beaches, islands, and marine ecosystems that generate strong emotional and experiential value for tourists. In the digital era, however, tourists' perceptions and satisfaction are no longer shaped solely by on-site experiences but are increasingly influenced by digital interactions occurring before, during, and after travel [4], [5], [6].

Prior studies highlight the critical roles of digital experience quality, electronic word of mouth (e-WOM), and destination image in shaping tourists' behavioral and emotional responses. Tourists increasingly rely on digital platforms, online reviews, and social media to form expectations and evaluate destinations [7], [8], [9], [10]. Despite the expanding literature on digital tourism, empirical research that integrates coastal physical and social environments with digital experience mechanisms remains limited, particularly in coastal tourism contexts. Moreover, although destination image and satisfaction have been extensively examined, the role of tourist engagement as an intermediate psychological process remains underexplored. Tourists' emotional satisfaction is not merely a direct outcome of service quality but emerges through active engagement with destinations across both digital and experiential dimensions [11], [12].

Accordingly, this study develops and empirically tests an integrated conceptual model that examines (1) the effects of coastal physical and social environments on digital experience quality and e-WOM, (2) the mediating roles of digital experience quality, e-WOM, digital destination image, and tourist engagement, and (3) the moderating effects of technology readiness and online review reliance. The proposed research framework illustrating these relationships is presented in Figure 1.

While variance-based methods such as Structural Equation Modeling (SEM) are effective in identifying net causal effects, they are limited in capturing complex causal configurations. Tourist emotional satisfaction often arises from multiple interacting

conditions rather than single linear relationships. Therefore, this study integrates fuzzy-set Qualitative Comparative Analysis (fsQCA) with SEM to uncover alternative causal pathways leading to high emotional satisfaction, thereby providing a more comprehensive understanding of digital tourism behavior in coastal destinations.

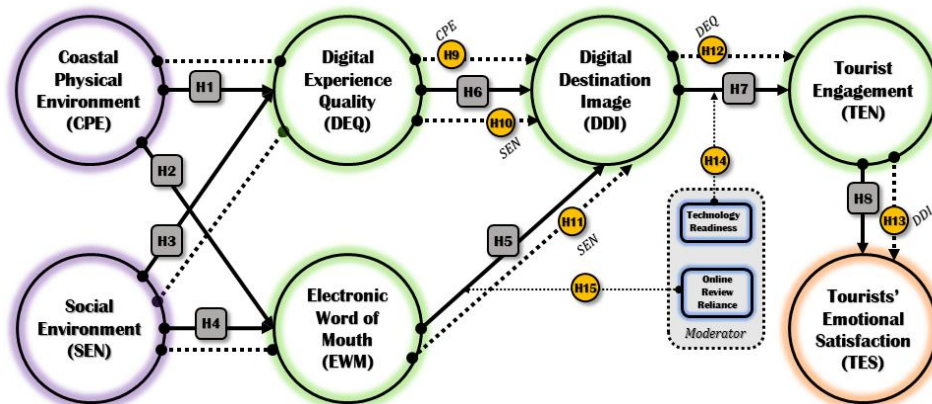


Figure 1. Research framework

The proposed research framework, as illustrated in Figure 1, was developed by the authors through a comprehensive synthesis of existing theories and empirical studies. Specifically, the relationships between the physical and social environments and digital experience mechanisms draw upon environmental psychology literature. The pathways connecting digital experience quality, e-WOM, and digital destination image are grounded in digital tourism and information technology adoption research. Finally, the mediating role of tourist engagement and its link to emotional satisfaction integrates concepts from customer engagement theory and destination marketing literature. Thus, this framework represents an integrated model that holistically captures the digital-physical nexus in coastal tourism

2. RESEARCH METHOD

2.1. Research Design

This study adopts a mixed-methods quantitative approach by integrating Structural Equation Modeling (SEM) and fuzzy-set Qualitative Comparative Analysis (fsQCA) [13], [14]. SEM is used to test linear relationships, mediating and moderating effects, while fsQCA explores configurational patterns leading to tourists' emotional satisfaction.

2.2. Sample and Data Collection

The study population consisted of tourists who visited a coastal marine destination in Indonesia and accessed digital tourism information related to the destination. Data were

collected using a self-administered questionnaire distributed through purposive sampling, with inclusion criteria limited to respondents who actively used digital platforms such as social media, online reviews, or travel websites. A total of 339 valid responses were obtained. The demographic profile of the respondents indicates a predominance of female participants (63%). In terms of age, the largest group was aged 21–30 years (41%), followed by those aged 31–40 years (28%). Regarding educational background, the majority held a high school diploma (35%) or a bachelor's degree (33%). In terms of occupation, private employees constituted the largest segment (33%), followed by students (28%). Furthermore, the sample consisted largely of repeat visitors, with 41% having visited the destination more than three times and 35% having visited 2–3 times.

2.3. Measurement Instruments

All constructs in this study were measured using multi-item Likert-type scales adapted from established prior studies. To ensure methodological consistency, identical measurement instruments were employed for both the SEM and fsQCA analyses. The measurement items for each construct—namely Coastal Physical Environment, Social Environment, Digital Experience Quality, Electronic Word of Mouth (e-WOM), Digital Destination Image, Tourist Engagement, Tourists’ Emotional Satisfaction, Technology Readiness, and Online Review Reliance—are presented in Table 2.

Table 1. Measurement items

Construct	Code	Statement	Reference
Coastal Physical Environment (CPE)	CPE1	The coastal destination has clean and well-maintained natural surroundings.	Adapted from Stylidis et al.; Kim and Hall; Prayag et al.; Su et al. [15], [16], [17], [18], [19]
	CPE2	The natural scenery of the coastal area is visually attractive.	
	CPE3	The coastal environment reflects environmental sustainability.	
	CPE4	The physical facilities support a pleasant coastal experience.	
Social Environment (SEN)	SEN1	Local residents are friendly and welcoming to tourists.	Adapted from Stylidis et al.; Rasoolimanesh et al.; Prayag et al.; Su et al. [15], [16], [18], [19], [20]
	SEN2	Interactions with local people are enjoyable.	
	SEN3	The social atmosphere of the destination is comfortable.	
	SEN4	Cultural interactions enhance my travel experience.	
Digital Experience Quality (DEQ)	DEQ1	Digital tourism platforms provide useful information about the destination.	Adapted from Buonincontri and Micera; Rather et al.; Kim et al.; Shen et al. [21], [22], [23], [24]
	DEQ2	Online content about the destination is visually appealing.	
	DEQ3	Digital platforms make me feel emotionally connected to the destination.	
	DEQ4	Digital experiences enhance my expectations of the destination.	
Electronic Word of Mouth (EWM)	EWOM1	Online reviews about the destination are trustworthy.	Adapted from Filieri et al.; Verma et al.; Ladhari and Michaud. [25], [26], [27]
	EWOM2	Online reviews help me evaluate the destination.	
	EWOM3	Most online reviews about the destination are positive.	
	EWOM4	I am influenced by other tourists’ online experiences.	
Digital Destination Image (DDI)	DDI1	The destination has a positive image on digital platforms.	Adapted from Stylidis et al.; Marine-Roig and Clavé; Shen et al. [18], [19], [28]
	DDI2	Online information creates a favorable impression of the destination.	
	DDI3	The destination appears attractive through digital media.	
	DDI4	Digital content strengthens my perception of the destination.	

Tourist Engagement (TEN)	TEN1	I actively interact with digital content related to the destination.	Adapted from Vivek et al.; Hollebeek et al.; Rather et al. [28], [29], [30]
	TEN2	I feel emotionally involved with the destination.	
	TEN3	I am willing to share my experiences with others.	
	TEN4	I participate in online discussions about the destination.	
Tourists' Emotional Satisfaction (TES)	TES1	Visiting this destination makes me feel happy.	Adapted from Prayag et al.; Su et al.; Kim et al. [15], [16], [17]
	TES2	I feel emotionally satisfied with my experience.	
	TES3	The destination provides emotional fulfillment.	
	TES4	My visit leaves positive emotional memories.	
Technology Readiness (TER)	TR1	I am comfortable using new digital technologies.	Adapted from Parasuraman and Colby; Lin et al. [31]
	TR2	Technology improves my travel experience.	
	TR3	I enjoy using digital platforms for travel planning.	
Online Review Reliance (ORR)	ORR1	I rely heavily on online reviews when choosing destinations.	Adapted from Filieri et al.; Verma et al.; Ladhari and Michaud. [32], [33]
	ORR2	Online reviews strongly influence my travel decisions.	
	ORR3	I trust online reviews more than promotional content.	

2.4. SEM Analysis Procedure

Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed in this study due to its suitability for analyzing complex models and its orientation toward predictive research, particularly when theory development and exploration are emphasized rather than strict covariance fit criteria (e.g., variance-based nature of PLS-SEM, flexibility with non-normal data and smaller sample sizes). The data analysis followed a two-step approach consisting of (1) assessment of the measurement model to evaluate reliability and validity, and (2) evaluation of the structural model to examine direct, mediating, and moderating effects. Hypothesis testing was conducted using a nonparametric bootstrapping procedure with 5,000 resamples to obtain t-statistics and significance levels for path coefficients and other estimates, a standard practice in PLS-SEM that does not require distributional assumptions of the data [34].

2.5. fsQCA Procedure

Fuzzy-set Qualitative Comparative Analysis (fsQCA) was employed to identify configurations of conditions that are sufficient to produce high levels of tourists' emotional satisfaction. The fsQCA procedure involved several systematic steps, including the calibration of variables into fuzzy sets using three qualitative anchors (full membership, crossover point, and full non-membership), followed by a necessity analysis to determine whether any single condition was required for the outcome to occur [35], [36], [37]. Subsequently, a truth table was constructed based on a predefined minimum frequency threshold to ensure empirical relevance, and logical minimization was performed to derive parsimonious and intermediate solutions representing sufficient causal configurations. The robustness of the solutions was assessed through consistency and coverage measures. In this analysis, high tourists' emotional satisfaction served as the outcome variable, while the antecedent conditions comprised environmental, digital, and engagement-related factors.

3. RESULTS

3.1. Measurement Model Assessment

The evaluation of indicator reliability was conducted by examining the outer loading values of each indicator associated with the latent constructs. Consistent with recommended PLS-SEM criteria, only indicators with outer loadings greater than 0.70 were retained, ensuring sufficient reliability and representativeness. The evaluation of indicator reliability was conducted by examining the outer loading values of each indicator associated with the latent constructs. Consistent with recommended PLS-SEM criteria, indicators with outer loadings greater than 0.70 were retained, ensuring sufficient reliability and representativeness.

As presented in Figure 2, all retained indicators met this requirement, with outer loading values ranging from 0.742 to 0.918, indicating that each item reliably measured its respective construct. Notably, the Digital Destination Image (DDI) construct exhibited particularly strong indicator performance, with outer loading values ranging from 0.832 to 0.901, reflecting a robust measurement of the construct. However, four indicators failed to meet the minimum threshold of 0.70: CPE3 (0.514), EWOM3 (0.628), TEN4 (0.593), and ORR3 (0.611). These indicators were subsequently removed from the measurement model to enhance convergent validity and strengthen the overall reliability of the constructs. The removal of these weak indicators is a standard practice in PLS-SEM analysis to ensure that each construct is adequately represented by its manifest variables. The final measurement model, with all remaining indicators demonstrating satisfactory outer loadings, is illustrated in Figure 2.

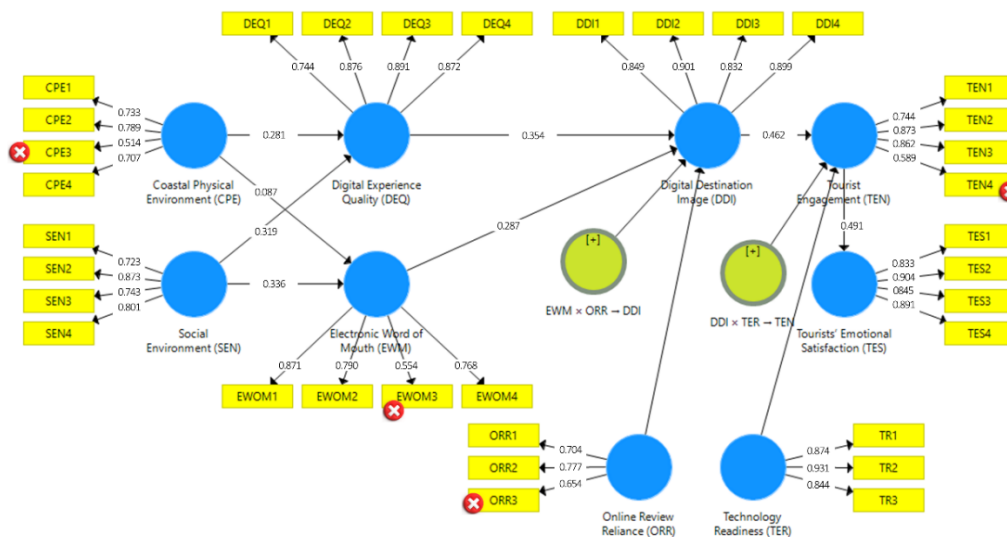


Figure 2. Final measurement model with outer loadings

The internal consistency and convergent validity of the measurement model were assessed using Cronbach’s Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). As reported in Table 2, all constructs exhibited Cronbach’s Alpha and CR values exceeding the recommended threshold of 0.70, indicating a high level of internal consistency. Convergent validity, which refers to the extent to which a construct correlates with its indicators, was assessed using the Average Variance Extracted (AVE). The AVE represents the grand mean value of the squared loadings of all indicators associated with a construct, reflecting the amount of variance captured by the construct relative to the variance due to measurement error. As reported in Table 3, the AVE values for all constructs ranged from 0.673 to 0.752, well above the recommended threshold of 0.50 [34]. This indicates that, on average, each construct explains more than half of the variance in its respective indicators. The Digital Destination Image (DDI) construct exhibited an AVE of 0.716, meaning that 71.6% of the variance in its indicators (e.g., DD11-DD14) is captured by the construct itself, while only 28.4% is attributable to measurement error. Similarly, Tourists’ Emotional Satisfaction (TES) showed an AVE of 0.744, indicating that 74.4% of the variance in its measurement items is explained by the latent construct.

These high AVE values provide strong evidence of convergent validity, confirming that the indicators for each construct are well-correlated and effectively represent the underlying theoretical concepts. In other words, the measurement items consistently converge to measure their intended constructs, with minimal influence from random error.

Table 2. Construct reliability and validity

Construct	Cronbach's Alpha	rho_A	CR	AVE
CPE	0.821	0.828	0.882	0.713
SEN	0.846	0.851	0.897	0.685
DEQ	0.872	0.876	0.913	0.724
EWM	0.834	0.839	0.892	0.673
DDI	0.867	0.871	0.909	0.716
TEN	0.845	0.849	0.901	0.752
TES	0.881	0.884	0.921	0.744
TER	0.818	0.823	0.893	0.736
ORR	0.826	0.831	0.896	0.741

Discriminant validity, which ensures that each construct is empirically distinct and measures a unique concept, was evaluated using the Heterotrait-Monotrait ratio of correlations (HTMT). The HTMT criterion assesses the average correlation between indicators across different constructs (heterotrait-heteromethod) relative to the average correlation among indicators within the same construct (monotrait-heteromethod) [34]. A more conservative threshold of 0.85 was applied in this study to ensure stringent discriminant validity, as recommended by Henseler.

As reported in Table 4, all HTMT values were well below the 0.85 threshold, ranging from 0.412 to 0.761. This indicates that each construct shares more variance with its own indicators than with other constructs in the model, thereby confirming discriminant

validity. The highest HTMT value was observed between Tourist Engagement (TEN) and Tourists' Emotional Satisfaction (TES) at 0.761. Although this value approaches the threshold, it remains within the acceptable range. This relatively higher correlation is theoretically plausible, as tourist engagement is conceptually expected to be closely related to emotional satisfaction—more engaged tourists are likely to experience higher emotional fulfillment. Importantly, even this highest value does not exceed 0.85, confirming that despite their close theoretical relationship, TEN and TES remain empirically distinct constructs.

Table 3. Heterotrait-Monotrait ratio of correlations

Construct	CPE	SEN	DEQ	EWM	DDI	TEN	TES	TER	ORR
CPE	—	0.624	0.658	0.603	0.671	0.587	0.559	0.412	0.438
SEN		—	0.689	0.644	0.702	0.621	0.593	0.435	0.462
DEQ			—	0.718	0.742	0.694	0.668	0.487	0.512
EWM				—	0.731	0.663	0.642	0.456	0.684
DDI					—	0.739	0.704	0.468	0.536
TEN						—	0.761	0.492	0.508
TES							—	0.461	0.489
TER								—	0.554
ORR									—

Potential multicollinearity among the indicators was assessed using Variance Inflation Factor (VIF) values, with the results reported in Figure 3. All indicators exhibited VIF values below the commonly accepted threshold of 5, indicating that multicollinearity does not pose a serious threat to the estimation of the structural model. The highest VIF value observed was 4.14 for indicator DEQ4, which remains within acceptable limits and suggests that the parameter estimates are unlikely to be biased by collinearity issues.

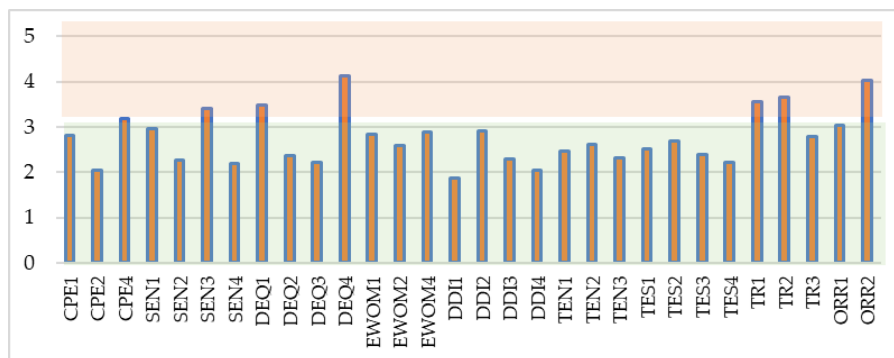


Figure 3. VIF result

3.2. Structural Model and Hypothesis Testing (SEM)

The results of the hypothesis testing for direct, mediating, and moderating relationships are presented in Table 5. Using a bootstrapping procedure with 5,000

resamples, the analysis demonstrates that most of the proposed hypotheses are supported, indicating statistically significant relationships among the constructs in the structural model.

Table 4. Path coefficients

Hyp.	Path	Original Sample (O)	T Stat.	P Values	Sig.	Interpretation
Direct Effects						
H1	CPE → DEQ	0.281	4.126	0	Supported	Coastal physical environment positively influences digital experience quality.
H2	CPE → EWM	0.087	1.214	0.225	Not Supported	Coastal physical environment does not significantly influence e-WOM.
H3	SEN → DEQ	0.319	4.892	0	Supported	Social environment positively affects digital experience quality.
H4	SEN → EWM	0.336	5.214	0	Supported	Social environment positively influences e-WOM.
H5	EWM → DDI	0.287	4.173	0	Supported	e-WOM enhances digital destination image.
H6	DEQ → DDI	0.354	5.486	0	Supported	Digital experience quality positively affects digital destination image.
H7	DDI → TEN	0.462	7.238	0	Supported	Digital destination image enhances tourist engagement.
H8	TEN → TES	0.491	7.814	0	Supported	Tourist engagement increases emotional satisfaction.
Mediating						
H9	CPE → DEQ → DDI	0.099	3.214	0.001	Supported	DEQ mediates the relationship between CPE and DDI.
H10	SEN → DEQ → DDI	0.113	3.647	0	Supported	DEQ mediates the effect of SEN on DDI.
H11	SEN → EWM → DDI	0.096	2.984	0.003	Supported	e-WOM mediates the SEN-DDI relationship.
H12	DEQ → DDI → TEN	0.164	4.552	0	Supported	DDI mediates the DEQ-TEN relationship.
H13	DDI → TEN → TES	0.227	5.831	0	Supported	TEN mediates the DDI-TES relationship.
Moderating Effects						
H14	DDI × TER → TEN	0.052	1.481	0.139	Not Supported	Technology readiness does not significantly moderate the DDI-TEN relationship.
H15	EWM × ORR → DDI	0.108	2.219	0.027	Supported	Online review reliance moderates the e-WOM-DDI relationship.

Direct Effects: The coastal physical environment significantly influenced digital experience quality (H1: $\beta=0.281$, $p<0.001$) but did not have a significant direct effect on e-WOM (H2: $\beta=0.087$, $p=0.225$). Conversely, the social environment positively affected both digital experience quality (H3: $\beta=0.319$, $p<0.001$) and e-WOM (H4: $\beta=0.336$, $p<0.001$). Both e-WOM (H5: $\beta=0.287$, $p<0.001$) and digital experience quality (H6: $\beta=0.354$, $p<0.001$) were strong antecedents of digital destination image. Digital destination image, in turn, significantly enhanced tourist engagement (H7: $\beta=0.462$, $p<0.001$), which was the strongest direct predictor of tourists' emotional satisfaction (H8: $\beta=0.491$, $p<0.001$).

Mediating Effects: All proposed mediation paths were supported (H9-H13). For example, digital experience quality mediated the relationship between the coastal physical environment and digital destination image (H9: $\beta=0.099$, $p=0.001$), and tourist engagement mediated the link between digital destination image and emotional satisfaction (H13: $\beta=0.227$, $p<0.001$). Moderating Effects: The moderating role of technology readiness on the DDI-TEN relationship was not supported (H14: $\beta=0.052$, $p=0.139$). However, online review reliance significantly strengthened the positive effect of e-WOM on digital destination image (H15: $\beta=0.108$, $p=0.027$).

The explanatory power of the structural model was evaluated using the coefficient of determination (R^2), with the results reported in Table 6. The model accounted for a substantial proportion of variance in Digital Destination Image (DDI), explaining 46.2% of its variance. In addition, moderate levels of explained variance were observed for Digital Experience Quality (31.8%), electronic word of mouth (e-WOM) (29.1%), and Tourist Engagement (38.3%). The model explained 24.1% of the variance in the ultimate outcome variable, namely Tourists' Emotional Satisfaction (TES), indicating weak to moderate explanatory power for this construct.

Table 5. Coefficient of determination (R^2)

Dependent Variable	R^2	Adjusted R^2	Interpretation
Digital Experience Quality (DEQ)	0.318	0.314	Moderate explanatory power
Electronic Word of Mouth (EWM)	0.291	0.287	Moderate explanatory power
Digital Destination Image (DDI)	0.462	0.457	Substantial explanatory power
Tourist Engagement (TEN)	0.383	0.378	Moderate explanatory power
Tourists' Emotional Satisfaction (TES)	0.241	0.239	Weak to moderate explanatory power

The magnitude of the relationships in the structural model was examined using effect size (f^2) estimates, as presented in Table 7. The effects of Digital Destination Image on Tourist Engagement ($f^2 = 0.267$) and Tourist Engagement on Tourists' Emotional Satisfaction ($f^2 = 0.241$) were classified as medium to large, indicating strong substantive impacts. Several other statistically significant relationships, including Social Environment to electronic word of mouth (SEN→EWM; $f^2 = 0.146$) and Digital Experience Quality to Digital Destination Image (DEQ→DDI; $f^2 = 0.181$), exhibited small to medium effect sizes. In contrast, non-significant paths such as the relationship between Coastal Physical Environment and e-WOM (CPE→EWM) demonstrated negligible effects, suggesting limited practical relevance.

Table 6. Effect size (f^2)

Relationship	f^2	Interpretation
CPE → DEQ	0.094	Small effect
CPE → EWM	0.012	Negligible effect
SEN → DEQ	0.128	Small to medium effect
SEN → EWM	0.146	Small to medium effect
EWM → DDI	0.102	Small effect
DEQ → DDI	0.181	Medium effect
DDI → TEN	0.267	Medium to large effect

TEN → TES	0.241	Medium effect
DDI × TER → TEN	0.015	Negligible effect
EWM × ORR → DDI	0.061	Small effect

3.3. Fuzzy-Set Qualitative Comparative Analysis (fsQCA) Results

The results of the truth table analysis reveal a set of logically reduced configurations associated with high tourists’ emotional satisfaction, as summarized in Table 8. The analysis applied a consistency threshold of 0.80 and a minimum frequency threshold of 15 cases to ensure analytical robustness. A total of eight distinct configurations emerged, each reflecting a specific combination of high (1) and low (0) levels of the antecedent conditions leading to the outcome.

Table 7. Truth table

Config.	CPE	SEN	DEQ	EWM	DDI	TEN	TER	ORR	Number of Cases	Consistency
1	1	1	1	1	1	1	1	1	42	0.92
2	0	1	1	1	1	1	0	1	37	0.9
3	1	0	1	0	1	1	1	0	26	0.88
4	0	1	0	1	1	1	0	1	29	0.89
5	1	1	0	1	1	0	1	0	21	0.86
6	0	0	1	1	1	1	0	0	18	0.87
7	1	0	0	0	1	1	1	1	16	0.85
8	0	1	1	0	1	0	0	0	20	0.84

Calibration was conducted using a binary coding scheme, where 1 indicates high presence of a condition and 0 indicates low presence. The frequency threshold was set at ≥ 15 cases to ensure empirical relevance of configurations, while the consistency threshold was established at ≥ 0.80, following recommended standards in fsQCA analysis.

The necessity analysis was conducted to determine whether any single condition is indispensable for achieving high levels of tourists’ emotional satisfaction, with the results reported in Table 9. The findings indicate that Digital Destination Image (DDI) is the only condition that meets the criterion for necessity, exhibiting a consistency value of 0.91, which exceeds the recommended threshold of 0.90. This result suggests that a strong digital destination image is almost always present when high emotional satisfaction occurs, although it is not sufficient on its own to guarantee the outcome.

Table 8. Results of necessity analysis

Condition	Consistency	Coverage	Necessary
Coastal Physical Environment (CPE)	0.78	0.64	No
Social Environment (SEN)	0.81	0.69	No
Digital Experience Quality (DEQ)	0.86	0.71	No
Electronic Word of Mouth (EWM)	0.79	0.66	No
Digital Destination Image (DDI)	0.91	0.83	Yes
Tourist Engagement (TEN)	0.88	0.76	No

Technology Readiness (TER)	0.74	0.61	No
Online Review Reliance (ORR)	0.77	0.63	No

Necessity analysis was conducted to identify conditions that must be present for achieving high tourists’ emotional satisfaction (TES). A condition is considered necessary when its consistency value exceeds 0.90, following fsQCA methodological guidelines. Consistency indicates the degree to which the outcome is a subset of the condition, while coverage reflects the empirical relevance of the condition in explaining the outcome. The configurational analysis yielded four parsimonious solutions that are sufficient to produce high levels of tourists’ emotional satisfaction, as presented in Table 10. These solutions, labeled S1 through S4, represent distinct causal recipes composed of different combinations of antecedent conditions. The presence of multiple sufficient configurations illustrates the principle of equifinality, indicating that high emotional satisfaction can be achieved through alternative pathways rather than a single dominant causal route.

Table 9. Sufficient configurations

Configuration	CPE	SEN	DEQ	EWM	DDI	TEN	TER	ORR	Raw Coverage	Unique Coverage	Consistency
S1 (Digital-driven path)	–	•	•	•	•	•	–	•	0.36	0.08	0.91
S2 (Experience-engagement path)	•	–	•	–	•	•	•	–	0.31	0.06	0.89
S3 (Image-centered path)	–	•	–	•	•	•	–	–	0.28	0.05	0.88
S4 (Contextual support path)	•	•	–	•	•	–	•	–	0.24	0.04	0.86

The symbol • indicates the presence of a condition, while – denotes the absence of a condition. Core and peripheral conditions are interpreted based on their presence or absence within each sufficient configuration.

S1 (Digital-driven path): High emotional satisfaction can be achieved through a combination of a positive social environment, high-quality digital experience, active e-WOM, strong destination image, high tourist engagement, and reliance on online reviews, even if the physical environment is not prominent. S2 (Experience-engagement path): This path highlights the role of a good physical environment, high digital experience quality, strong destination image, high engagement, and high technology readiness, even in the absence of a strong social environment or active e-WOM. S3 (Image-centered path): Centers on a strong social environment, active e-WOM, a solid destination image, and high engagement. S4 (Contextual support path): Involves the joint presence of good physical and social environments, active e-WOM, a strong destination image, and high technology readiness, even without high digital experience quality or tourist engagement.

3.4. Discussion

3.4.1. Interpretation of SEM Findings

The SEM results reveal that coastal physical environment significantly enhances digital experience quality (H1), but does not directly influence e-WOM (H2). This suggests that while tourists value the tangible, natural attributes of a destination when engaging with digital content, these physical attributes alone are insufficient to generate or shape electronic word of mouth. Instead, social environment emerged as a stronger antecedent, positively affecting both digital experience quality (H3) and e-WOM (H4). This underscores the importance of social interactions and local hospitality in not only enriching on-site experiences but also amplifying digital engagement and online sharing [38], [39].

Both digital experience quality and e-WOM were found to be significant drivers of digital destination image (H5, H6), supporting the notion that digital touchpoints critically shape tourists' mental representations of a destination. Notably, digital destination image strongly predicted tourist engagement (H7), which in turn was the most influential direct predictor of emotional satisfaction (H8). These findings align with engagement theory, suggesting that emotional connections fostered through digital and experiential interactions are pivotal for achieving deep-seated satisfaction [40], [41].

The mediation analyses further clarify the underlying mechanisms. Digital experience quality and e-WOM serve as key mediators linking environmental factors to digital destination image, while tourist engagement mediates the relationship between digital destination image and emotional satisfaction. This indicates that destinations can enhance emotional outcomes by strategically improving digital touchpoints and fostering active engagement, rather than relying solely on physical or social attributes [42], [43]. Regarding moderation, online review reliance strengthened the effect of e-WOM on digital destination image (H15), highlighting the growing trust in peer-generated content. In contrast, technology readiness did not moderate the link between digital destination image and engagement (H14), implying that once a positive digital image is formed, engagement may occur regardless of individual technological comfort.

3.4.2. Interpretation of fsQCA Findings

The fsQCA results complement the SEM findings by revealing multiple equifinal pathways leading to high levels of tourists' emotional satisfaction. Four distinct configurations (S1–S4) were identified, demonstrating that no single condition is universally sufficient; rather, different combinations of environmental, digital, and behavioral factors can produce the same outcome. Configuration S1 (digital-driven path) highlights the central role of digital and social factors, indicating that even in the absence of a highly favorable physical environment, strong digital experience quality, active e-WOM, and reliance on online reviews can generate high tourist engagement and emotional satisfaction [44], [45].

Configuration S2 (experience–engagement path) emphasizes the importance of the physical environment, digital experience quality, and technology readiness, suggesting that some tourists derive emotional satisfaction primarily from immersive environmental and digital interactions, even without strong social cues [46], [47]. Configuration S3 (image-centered path) centers on the social environment, e-WOM, digital destination image, and tourist engagement, reflecting a socially mediated route to emotional satisfaction [48], [49], [50]. Meanwhile, Configuration S4 (contextual support path) indicates that supportive physical and social environments, combined with technology readiness and active e-WOM, can compensate for lower digital experience quality or weaker engagement, underscoring the compensatory role of contextual factors [51], [52]. Furthermore, the necessity analysis confirms that digital destination image is a necessary condition for achieving high emotional satisfaction across all configurations, reinforcing the pivotal role of digitally constructed destination perceptions in the contemporary tourist journey.

3.4.3. Theoretical Implications

This study contributes to tourism literature in several ways. First, it integrates environmental psychology with digital tourism research, demonstrating how physical and social environments jointly shape digital experiences and online behaviors. Second, it elucidates the mediating role of tourist engagement, providing a more nuanced understanding of how digital and emotional processes interconnect. Third, by applying a mixed-method approach (SEM and fsQCA), the study moves beyond net-effect analyses to uncover causal complexity and equifinality, offering a more holistic framework for understanding tourist satisfaction.

3.4.4. Practical Implications

For destination managers and marketers, the findings point to several actionable strategic implications. First, strengthening the digital destination image is essential, which can be achieved by investing in high-quality digital content, developing interactive online platforms, and cultivating positive narratives across digital channels to create a compelling and consistent image of the destination. Second, leveraging the social environment is crucial; this involves fostering community engagement, providing hospitality training for local residents, and encouraging authentic cultural interactions that can be effectively shared through digital media. Third, enhancing digital experience quality should be a priority by ensuring that digital platforms are informative, visually appealing, and emotionally engaging, thereby supporting tourist engagement both before and after travel. In addition, destination managers should actively encourage and manage electronic word of mouth (e-WOM) by monitoring online reviews, engaging responsively with user-generated content, incentivizing positive sharing, and maintaining transparency to build trust and credibility. Finally, adopting segment-specific strategies is recommended, as

different tourist segments may follow distinct pathways to satisfaction—such as digital-driven or experience-driven routes—requiring tailored marketing approaches and experience design to effectively address these diverse patterns of tourist behavior.

4. CONCLUSION

This study provides a comprehensive understanding of tourists' emotional satisfaction in coastal destinations by integrating environmental factors, digital experience mechanisms, and tourist engagement through a mixed-methods approach combining PLS-SEM and fsQCA. The findings demonstrate that tourists' emotional satisfaction is not driven by single linear relationships, but rather emerges from complex interactions among coastal physical and social environments, digital experience quality, e-WOM, digital destination image, and tourist engagement. The SEM results highlight the pivotal mediating role of digital destination image and tourist engagement, with engagement acting as the strongest direct predictor of emotional satisfaction, while online review reliance strengthens the impact of e-WOM on destination image. This study offers several important contributions to the tourism literature. Theoretically, it advances the understanding of digital tourism by proposing and validating an integrated model that bridges environmental psychology and digital experience research. By demonstrating the mediating role of tourist engagement and the necessary condition of digital destination image, the study extends engagement theory into the coastal tourism context and provides a more nuanced explanation of how emotional satisfaction is formed in the digital age. Methodologically, the application of a mixed-method approach (SEM-fsQCA) represents a novel contribution, as it captures both linear relationships and complex causal configurations, offering a more holistic perspective than traditional variance-based methods alone.

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