Digital Fame, Ecological Fragility: Strategic Management of Trend-Driven Volcanic Tourism

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Abstract

Social media-induced tourism triggers rapid visitor surges that often outpace destination management capacity. This study examines Kalitalang Ecotourism on Mount Merapi's slopes, where "viral hiking" and FOMO-driven trends caused a 130% annual increase in arrivals. Using a mixed-method approach, the research identifies strategic factors through IFAS and EFAS matrices. Data reveals a strong position in Quadrant I with an IFAS score of 3.81 and an EFAS score of 4.10. Despite high growth potential, the findings highlight severe risks of exceeding carrying capacity and ecological degradation. Sustainable development requires shifting from traditional promotion to strict digital gatekeeping and waste management. This research offers a trend-sensitive framework to protect volcanic destinations from the volatility of digital popularity.

Keywords: Kalitalang, healing tourism, ecotourism, SWOT analysis, sustainable tourism.

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INTRODUCTION

Social media-induced tourism creates a volatile environment where digital viralities dictate physical footfall. In Kalitalang Ecotourism on the slopes of Mount Merapi, visitor arrivals surged by 130% within a single year (Muhammad & Widarjono, 2024). This rapid influx, driven primarily by "viral hiking" content and the psychological trigger of fear of missing out (FOMO), transforms quiet conservation zones into high-density "instagrammable" spots almost overnight (Kim & Wongsa, 2025). Digital landscapes now shape user engagement in ways that often outpace local management capacity (Ivasciuc et al., 2024). Such a phenomenon exposes a growing rift between digital popularity and the physical limits of ecological landscapes.

Academic consensus defines ecotourism through nature-based travel that emphasizes conservation, education, and community empowerment (Dincă et al., 2023; Suyasa et al., 2023). Scholars argue that sustainable development requires a strict balance between economic gain, environmental integrity, and social acceptance (Dargahov et al., 2023). Effective destination management depends on adaptive governance and the identification of geotourism potential to ensure long-term viability (Aji & Faniza, 2024; Kumar & Chandran, 2024). These frameworks aim to foster local well-being while protecting the natural assets that attract visitors.

Traditional Tourism Carrying Capacity (TCC) models become problematic when digital viralities compress the destination life cycle into a few months. Static assumptions of manageable growth often ignore the mechanics of overtourism, where social media promotion triggers

sudden mass arrivals. In high-risk volcanic zones like Merapi, these surges collide with complex disaster ethics and the need for rigorous contingency planning (Bueno Gómez et al., 2024; Kristianto et al., 2024). Local preparedness often remains insufficient to handle both peak crowds and sudden volcanic activity (Wijaya, 2024). Relying on slow-moving bureaucratic responses leaves fragile ecosystems vulnerable to rapid trail erosion and unmanaged waste accumulation.

This study aims to identify the internal and external strategic factors of Kalitalang Ecotourism to formulate a management framework responsive to digital trends. By applying a mixed-methods approach, the research utilizes IFAS and EFAS matrices—standard tools in ecotourism planning—to determine the destination's strategic position. The study specifically asks how an aggressive growth strategy can be reconfigured to prioritize ecological stability and disaster risk reduction. This study integrates technical patrolling concepts and safety monitoring into the strategic formulation to address the unique hazards of the volcanic context.

This research offers two primary contributions. It introduces a "trend-sensitive" SWOT model that incorporates digital FOMO as an external threat. Second, it provides tactical steps for transitioning from mass promotion to "digital gatekeeping," emphasizing community participation in forest conservation. Following this introduction, the paper details the theoretical foundations of social media-induced tourism, the methodological rigor of the matrix analysis, a comprehensive discussion of the strategic results, and final recommendations for sustainable volcanic tourism management.

LITERATURE REVIEW
The Foundations of Ecotourism and Community Empowerment

Ecotourism represents a specialized form of nature-based travel that prioritizes interpretation, conservation, and community well-being while minimizing negative environmental and social externalities (Sana et al., 2023). This framework positions local empowerment and stewardship at the operational center of sustainable development, particularly within volatile or sensitive landscapes (Batista et al., 2023; Dargahov et al., 2023). Within volcanic and geomorphic settings, community involvement correlates with livelihood diversification and conservation gains, establishing a direct link between local hosting capacity and destination resilience (Cahyono et al., 2023; Djuwendah et al., 2023; Suryani & Suyatno, 2023).

The digital era presents significant challenges to the traditional sustainability triad—economic vitality, ecological integrity, and social acceptance—as fast-moving online viralities destabilize established management systems (Dincă et al., 2023). Conventional carrying-capacity models assume linear, policy-aligned growth; however, these frameworks fail to absorb "trend-induced overtourism" where fear of missing out (FOMO) and viral content trigger sudden, outsized arrival surges (Guerrero-Moreno & Oliveira-Junior, 2024). Consequently, scholars posit that adaptive governance must integrate real-time monitoring and digitally informed demand management to protect fragile landscapes from the tensions of unregulated online promotion (Kristianto et al., 2024; PURWOKO et al., 2023; Sadikin, 2023).

Local stewardship serves as a primary determinant of strategic success in community-based ecotourism (CBET). When local populations co-manage natural assets, they create buffers against unsustainable land-use practices while simultaneously driving micro-entrepreneurial growth and infrastructure improvements (Aji & Faniza, 2024; Djuwendah et al., 2023). This empowerment anchors the destination's hosting capacity, which remains a vulnerable yet vital input for strategic planning in dynamic environments (Riza et al., 2023). In the Merapi corridor specifically, ecotourism and disaster-risk reduction efforts reinforce each other, provided that governance structures remain participatory and responsive to geological threats (PURWOKO et al., 2023; Suryani & Suyatno, 2023).

Integrating geotourism with ecotourism principles offers a sophisticated lens for landscape conservation and risk awareness. Geotourism utilizes geological and geomorphological features as interpretive assets, which diversifies visitor experiences while strengthening conservation incentives (Lewis, 2023). By focusing on geoheritage and tectonic history, managers can shift the focus from simple headcounts toward education-driven engagement (Dincă et al., 2023). This convergence allows destinations to leverage unique geomorphic characteristics to anchor more resilient, sustainable tourism models.

Social Media-Induced Tourism and the FOMO Effect

Digital platforms transform the temporal and spatial distribution of tourism demand by accelerating destination awareness through algorithm-driven exposure, which compresses the timeline over which a site experiences growth. Scholars argue that this compression of the destination life cycle creates extreme volatility, as viral content frequently bypasses traditional marketing funnels to generate "trend-induced overtourism" where online visibility outstrips local policy and infrastructure capacity (Utama et al., 2023). When a site gains sudden global visibility, physical footfall surges at an unsustainable pace, often occurring within weeks rather than seasons. This rapid expansion frequently exceeds the localized capacity to implement protective infrastructure, leading to immediate environmental stress and the degradation of the visitor experience as ecological capacity and governance mechanisms lag behind demand (Setiawan & Ramdani, 2024).

The psychological driver known as the Fear of Missing Out (FOMO) serves as a central catalyst for modern visitor behavior in nature-based settings, particularly in fragile volcanic landscapes where high hazard risks intersect with peak visitation (Luong & Nguyen, 2025). Researchers conceptualize FOMO as a pervasive apprehension that others might be having rewarding experiences from which one is absent. In the tourism context, this anxiety fuels a desire for status-driven travel, where the primary objective centers on the acquisition of social media capital through the replication of viral imagery (Luong & Nguyen, 2025; Utama et al., 2023). While environmental attitudes and knowledge influence sustainable outcomes, their efficacy is often challenged by the immediacy of trend-induced motivations. This pressure often correlates with a deficit in ecological literacy among visitors, as the heightened motivation to capture and share content outweighs adherence to established conservation ethics or site-specific regulations (Luong & Nguyen, 2025).

A fundamental tension exists between the instantaneous speed of digital promotion and the inherent inertia of destination management systems (Guerrero-Moreno & Oliveira-Junior, 2024). While marketing efforts can achieve global reach within seconds, the implementation of physical barriers, waste management protocols, and official visitor regulations requires substantial lead time and bureaucratic coordination (Djuwendah et al., 2023; Suryani & Suyatno, 2023). Digital-content dynamics—including platform-driven engagement and narrative framing—have clear implications for demand management and visitor behavior, demonstrating that online narratives can influence perceptions of safety and conservation (Ivasciuc et al., 2024; Luong & Nguyen, 2025). Scholars posit that addressing this digital infusion requires a transition from reactive management to proactive "digital gatekeeping" strategies that utilize content to signal thresholds and align online narratives with the physical realities of the landscape (Ivasciuc et al., 2024; Kristianto et al., 2024; Luong & Nguyen, 2025).

Tourism Carrying Capacity (TCC) in Fragile Ecosystems

Standard Tourism Carrying Capacity (TCC) frameworks define a maximum usage level beyond which environmental integrity and visitor satisfaction diminish (Aji & Faniza, 2024). In fragile volcanic montane zones, scholars demonstrate that exceeding these thresholds results in trail erosion, vegetation loss, and unmanaged waste accumulation (Kumar & Chandran, 2024; Rozaki

et al., 2023). However, the rapid diffusion of destination awareness via digital platforms precipitates "trend-induced overtourism," where visitation expands within weeks rather than seasonal cycles (Du et al., 2024; Kristianto et al., 2024). This compression of the destination life cycle outpaces the deployment of protective infrastructure and policy adaptation, necessitating a transition from static caps to dynamic, trend-aware instruments (Soto et al., 2023; Sunarhadi et al., 2024).

Quantitative methodologies increasingly utilize remotely sensed indicators, specifically the Normalized Difference Vegetation Index (NDVI), to calibrate carrying capacity as a dynamic constraint (Depari, 2023). NDVI-informed calculations enable managers to gauge habitat integrity and ecological suitability by correlating vegetation health with land-cover dynamics. This spatially explicit approach demonstrates that TCC must be temporally adaptive, adjusting visitation quotas in response to real-time environmental stress and recovery trajectories (Huang et al., 2025; Orellana et al., 2023). Integrating spatial analysis ensures that TCC serves as a responsive management tool capable of triggering temporary restrictions before habitat degradation becomes irreversible (Depari, 2023; Fu & Huang, 2025).

In geologically active landscapes, TCC must incorporate volcanic hazard mapping and eruption advisories to safeguard both visitors and ecosystems (Kristianto et al., 2024; Saparita et al., 2024). Static ecological caps remain insufficient if they fail to account for the fluctuating risk of volcanic activity, which can reconfigure safe-use envelopes on short notice (Rustinsyah & Prasetya, 2023; Sartono et al., 2023). Scholars argue that recalibrating visitor quotas according to volcanological status reduces environmental pressure while enhancing human safety during periods of elevated hazard (Orellana et al., 2023; Sartono et al., 2023). Furthermore, disaster risk reduction (DRR) investments and community-based resilience governance ensure that any dynamic TCC remains legitimate and socially accepted by local stakeholders (Hermawan et al., 2024; Suryani & Suyatno, 2023).

Reconciling viral demand with these landscape realities requires a transition toward digital gatekeeping, where online narratives serve as a governance lever (Ivasciuc et al., 2024; Luong & Nguyen, 2025). Content strategies that communicate capacity constraints, seasonal limits, and hazard advisories influence visitor expectations and promote responsible behavior (Ivasciuc et al., 2024; Utama et al., 2023). This approach complements traditional carrying capacity tools by proactively shaping demand patterns to align with on-ground protective capacity (Djuwendah et al., 2023; Guerrero-Moreno & Oliveira-Junior, 2024). Consequently, an adaptive governance regime rooted in community stewardship ensures that socio-economic benefits are maintained without compromising the ecological integrity of fragile destinations (Djuwendah et al., 2023; Yu et al., 2025).

METHODS

This study employs a mixed-method descriptive approach to analyze the strategic development of Kalitalang Ecotourism. By integrating qualitative and quantitative data, the researchers establish a comprehensive understanding of the destination's internal and external environments. The study boundary encompasses the Kalitalang Ecotourism area, located in Balerante Village, Klaten, situated on the slopes of Mount Merapi. This location is managed through a collaborative framework involving the local community, the regional government, and the Mount Merapi National Park (TNGM).

The researchers utilized two distinct sampling techniques to gather data from multiple stakeholder perspectives. First, the study applied purposive sampling to select key informants, including the village official (Carik), the chairman of the ecotourism management group, and local micro-entrepreneurs. These interviews focused on identifying specific Strengths, Weaknesses, Opportunities, and Threats (SWOT) related to conservation practices, infrastructure,

and visitor surges. Second, the researchers used accidental sampling to distribute questionnaires to 21 tourists visiting the site. The questionnaire utilized a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree) to measure perceptions of landscape quality, safety, waste management, and the impact of social media trends.

To address the requirement for methodological transparency, this study follows a structured quantification process to convert qualitative findings and tourist perceptions into strategic metrics. The analytical framework consists of the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices. The researchers established the analytical chain through three sequential steps: 1) Rating Assignment: The researchers derived the rating for each factor (ranging from 1 to 4) directly from the mean scores of the tourist perception data; 2) Weight Calculation: The study determined the weight for each factor by normalizing the mean values, ensuring that the total weight for each matrix equals 1.00. This normalization process reflects the relative importance of each factor to the destination's strategic stability; and 3) Weighted Score Determination: The researchers calculated the final weighted score by multiplying the weight by the rating for every individual factor.

The study aggregates the weighted scores to determine the total IFAS and EFAS values, which serve as coordinates for the SWOT four-quadrant matrix. This coordinate system identifies the destination's strategic posture—Agresif (Growth-Oriented), Turnaround, Defensif, or Survival. The researchers then formulated derivative strategies (SO, WO, ST, WT) by cross-tabulating high-performing strengths and opportunities against significant weaknesses and environmental threats. This rigorous quantification ensures that the final strategic recommendations remain firmly rooted in empirical data.

RESULTS AND DISCUSSION
Identification of Internal and External Strategic Factors

The initial phase of the research identified specific internal and external variables through semi-structured interviews with key informants and field observations. These qualitative findings categorize the operational strengths and weaknesses of Kalitalang Ecotourism, alongside the opportunities and threats presented by the broader tourism environment. Table 1 summarizes the core factors that constitute the strategic foundation of the destination.

Table 1. Qualitative Identification of SWOT Factors

Category	Strategic Factors Identified
Strengths (S)	Visual proximity to Mount Merapi (±4 km); Beginner-friendly trekking and trail-running paths; Community-based management via Pokdarwis; Digital infrastructure support (public Wi-Fi) from the regional government.
Weaknesses (W)	Absence of formal visitor carrying capacity limits; Sub-optimal waste processing (localized plastic burning); Low socialization of site-specific visitor regulations.
Opportunities (O)	130% annual increase in arrivals driven by social media virality; Rising market demand for nature-based "healing" experiences; Corporate partnerships for infrastructure development (e.g., PT Astra).
Threats (T)	High-frequency volcanic activity (Status: *Siaga*); Environmental degradation from trend-driven/FOMO visitor behavior; Risk of exceeding ecological carrying capacity during peak periods.

Source: Research data, 2025

The internal analysis reveals that the primary strength of Kalitalang lies in its unique geomorphological position, allowing clear visual access to the Merapi crater from one of the highest accessible points. The researchers found that community-based management facilitates immediate disaster monitoring, as residents coordinate evacuations based on traditional knowledge of volcanic signs. However, the data also identifies a significant internal deficit in

waste management; currently, plastic waste is disposed of via open burning after operational hours, which presents a risk to the surrounding forest vegetation.

External factors demonstrate a highly dynamic environment. The destination experienced a surge from 59,000 to 198,000 visitors within one year, attributed to the volume of user-generated content on digital platforms. While this digital fame presents economic opportunities for local micro-entrepreneurs, it introduces threats related to "viral hiking" behaviors, where visitors often lack the ecological literacy required for sustainable nature tourism. Furthermore, the proximity to an active volcano remains a persistent environmental constraint that dictates the continuity of tourism operations.

Analysis of Tourist Perceptions and Behavioral Trends

The quantitative phase involved evaluating responses from 21 tourists to validate the operational factors identified in the qualitative identification stage. Respondents scored 20 indicators using a 4-point Likert scale to measure internal attributes and external environmental pressures. Table 2 presents the mean scores, which serve as the primary data for the subsequent matrix weighting process.

Table 2. Mean Scores of Tourist Perceptions (N=21)

Indicator Category	Variable Description	Mean Score
Internal Strengths	Aesthetic appeal of Mount Merapi	3.90
	Suitability for healing and relaxation	3.90
	Perceived trekking safety and comfort	3.57
	Adequacy of basic facilities (toilets, gazebos)	3.48
	Affordability of entry fees	3.52
	Level of local community involvement	3.80
Internal Weaknesses	Optimization of waste management	2.95
	Effectiveness of visitor supervision	2.95
	Tourist compliance with nature ethics	3.19
	Risk of trail damage from high traffic	3.19
	Socialization of visitation regulations	2.52
External Opportunities	Rising interest in healing-based nature tourism	3.90
	Influence of social media on promotion	3.95
	Geographic proximity to Yogyakarta–Solo	3.76
	Government support for sustainable growth	3.76
External Threats	Visitation driven by social trends/FOMO	3.57
	Potential for environmental degradation	3.38
	Impact of mass hiking on site quality	3.24
	Waste accumulation as an ecosystem threat	3.67
	Risk of exceeding the carrying capacity	3.52

Source: Research data, 2025

As indicated in Table 2, the highest mean scores relate to the influence of social media (3.95) and the core attraction appeal (3.90). Conversely, indicators associated with management control exhibit lower mean scores, specifically the socialization of visitation rules (2.52) and the perceived optimization of waste management (2.95). These figures demonstrate a significant disparity between the speed of promotion and the maturity of on-site regulatory systems. The data reflects a strong behavioral trend toward social media-induced visitation, with the FOMO-driven indicator reaching a mean of 3.57. This trend correlates with the perceived threat of waste accumulation (3.67) and the risk of exceeding the destination's carrying capacity (3.52). These scores confirm that while the destination possesses high internal attraction value, the external environment introduces substantial volatility related to unmanaged visitor surges.

Evaluation of IFAS and EFAS Matrices

The research utilizes Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices to quantify the destination's strategic standing. This process involves

normalizing mean perception scores to determine weights and calculating weighted scores to identify the dominance of specific internal and external factors.

Internal Factor Analysis Summary (IFAS)

The IFAS matrix evaluates the internal operational environment of Kalitalang Ecotourism by weighing identified strengths against weaknesses. Table 3 presents the quantitative breakdown of these internal factors.

Table 3. Internal Factor Analysis Summary (IFAS)

Factor Type	No	Internal Strategic Factors	Rating	Weight	Score
Strengths	S1	Aesthetic appeal of Mount Merapi	3.90	0.13	0.51
	S2	Suitability for healing and relaxation	3.90	0.13	0.51
	S3	Trekking safety and comfort	3.57	0.12	0.43
	S4	Adequacy of basic facilities	3.48	0.11	0.38
	S5	Affordability of entry fees	3.52	0.11	0.39
	S6	Local community involvement	3.80	0.12	0.46
Weaknesses	W1	Optimization of waste management	2.95	0.10	0.30
	W2	Effectiveness of visitor supervision	2.95	0.10	0.30
	W3	Tourist compliance with nature ethics	3.19	0.11	0.35
	W4	Socialization of visitation regulations	2.52	0.07	0.18
Total Score				1.00	3.81

Source: Research data, 2025

As demonstrated in Table 3, the total IFAS score of 3.81 exceeds the median value of 2.50, indicating a robust internal position where strengths significantly outweigh operational weaknesses. The primary internal drivers are the destination's aesthetic appeal (S1) and its suitability for relaxation (S2), both contributing 0.51 to the total score. Conversely, the lowest score contribution stems from the socialization of regulations (W4) at 0.18, identifying a specific area of internal management deficit.

External Factor Analysis Summary (EFAS)

The EFAS matrix measures how effectively the destination responds to external opportunities and threats. Table 4 details the weighted results for the external environment.

Table 4. External Factor Analysis Summary (EFAS)

Factor Type	No	External Strategic Factors	Rating	Weight	Score
Opportunities	O1	Rising interest in healing tourism	3.90	0.14	0.55
	O2	Social media-driven promotion	3.95	0.14	0.55
	O3	Geographic proximity to urban hubs	3.76	0.13	0.49
	O4	Government and stakeholder support	3.76	0.13	0.49
Threats	T1	Visitation driven by social trends/FOMO	3.57	0.12	0.43
	T2	Potential for environmental degradation	3.38	0.11	0.37
	T3	Impact of mass hiking on site quality	3.24	0.11	0.36
	T4	Waste accumulation threats	3.67	0.12	0.44
	T5	Risk of exceeding the carrying capacity	3.52	0.12	0.42
Total Score				1.00	4.10

Source: Research data, 2025

The total EFAS score of 4.10 reflects a highly dynamic external environment with a total opportunity score of 2.08 and a threat score of 2.02. Digital promotion (O2) and market interest (O1) represent the most significant external opportunities, each scoring 0.55. However, these are nearly balanced by external threats, particularly waste accumulation (T4) at 0.44 and FOMO-driven visitation (T1) at 0.43. This narrow margin between external opportunities and threats indicates that while growth potential is high, the destination remains susceptible to external volatility.

Strategic Positioning and Quadrant Mapping

The final stage of the quantitative analysis involves mapping the total weighted scores from the IFAS and EFAS matrices onto a four-quadrant strategic matrix. The intersection of the total internal score (3.81) and the total external score (4.10) determines the destination's strategic posture. Figure 1 visualizes this coordinate-based positioning.

Figure 1. Strategic Position of Kalitalang Ecotourism

As demonstrated in Figure 1, the coordinates situate Kalitalang Ecotourism firmly within Quadrant I (Aggressive Strategy / Growth-Oriented). An IFAS score of 3.81 indicates that the internal condition is strong, with strengths significantly outweighing weaknesses. Simultaneously, the EFAS score of 4.10 reflects a highly dynamic external environment where substantial opportunities exist alongside significant environmental threats. This positioning dictates that the primary strategic priority is a Strength-Opportunity (SO) approach. This strategy focuses on utilizing the destination's high internal appeal—specifically its visual proximity to Mount Merapi and community-based management—to capture the rising market demand for "healing" and nature-based tourism. However, the data indicate that this aggressive growth must be moderated by Strength-Threat (ST) and Weakness-Threat (WT) strategies. The high external score (4.10) highlights that while the destination is poised for expansion, the volatility of digital trends and volcanic hazards requires an adaptive management regime. Therefore, the aggressive stance identified in Quadrant I does not imply unrestricted mass tourism; rather, it indicates an aggressive pursuit of market opportunities through controlled, pro-conservation frameworks. This strategic alignment ensures that economic growth does not exceed the ecological carrying capacity identified as a significant threat in the matrix evaluation.

Discussion

The empirical findings establish that Kalitalang Ecotourism exists in a state of high-velocity strategic growth, where robust internal operational strengths coincide with an explosive, digitally-driven external demand. This positioning indicates that the destination has transitioned beyond the preliminary stages of community-led discovery and entered a phase of intense market exposure. However, the equilibrium of this growth remains precarious, as the digital mechanisms fueling its popularity also generate significant environmental and social pressures that threaten to overwhelm the site's foundational conservation objectives. The core reality at

Kalitalang is a "digital gold rush" where the speed of online promotion creates a functional lag in physical management and ecological buffering.

The dominance of social media virality and the "Fear of Missing Out" (FOMO) as primary external drivers corroborates the findings of (Ivasciuc et al., 2024) regarding the power of digital narratives to reshape visitor engagement patterns. However, this study extends the work by demonstrating that FOMO serves as a strategic disruptor that compresses the destination life cycle far more rapidly than conventional management models anticipate. The mechanism behind this acceleration is the "social media-induced" effect, where the desire for "instagrammable" status overrides traditional ecological literacy. Consequently, while (Ivasciuc et al., 2024) identify digital communication as a tool for engagement, this research contextualizes it as a catalyst for overtourism that demands a trend-sensitive management response.

The identification of waste management and visitor supervision as significant internal weaknesses challenges the efficacy of standard community-based models when faced with mass tourism surges. While (Muhammad & Widarjono, 2024) highlight the positive socio-economic implications of Kalitalang's development, our findings suggest that a deficit in protective infrastructure currently offsets these gains. This misalignment occurs because the local hosting capacity, while strong in community involvement, lacks the technical systems to manage the volume of non-biodegradable waste generated by trend-driven visitors. This result corroborates the warnings of (Dargahov et al., 2023; Dincă et al., 2023) that the geomorphological appeal of a landscape can lead to its own degradation if rigorous carrying-capacity controls do not balance the "Aggressive" strategic stance.

Furthermore, the integration of volcanic hazard status as a critical external threat contextualizes the destination's growth within the disaster governance framework established by (Kristianto et al., 2024). The finding that community involvement is a primary strength corroborates (Suryani & Suyatno, 2023), who posit that local stewardship is a determinant of resilience in disaster-prone villages. The underlying mechanism for this alignment is the dual role of the local community as both tourism hosts and disaster monitors. This study extends previous disaster governance literature by demonstrating that in volcanic ecotourism, strategic "aggression" must be redefined as an aggressive pursuit of safety and risk-informed visitor management rather than simple headcount expansion.

The specific spatial context of Mount Merapi fundamentally shapes these findings, as the geological volatility of the region imposes a hard physical boundary on tourism growth. Unlike standard nature destinations, Kalitalang operates within a dual-risk framework where ecological degradation from overtourism intersects with acute volcanic hazards. This unique context explains why the "Aggressive Strategy" identified in the results requires a paradoxical implementation: growth can only be sustained through high-intensity restriction. The proximity to an active crater necessitates that community-based hosting capacity functions as both an economic engine and a primary safety mechanism, making the destination's survival dependent on the successful integration of real-time disaster literacy into the visitor experience.

Theoretical Implications

This study modifies the application of the SWOT-IFAS/EFAS framework by internalizing digital volatility as a primary external threat variable. Traditional strategic models often categorize social media virality purely as an "Opportunity" for market expansion. However, this research demonstrates that in fragile volcanic ecosystems, "Fear of Missing Out" (FOMO) and social media-induced surges act as strategic disruptors that compress the destination life cycle at an unsustainable pace. By identifying FOMO as a threat with a high weighted score (0.43), this study establishes a new dimension in destination strategic analysis: the "Trend-Sensitive" SWOT.

Furthermore, these findings challenge the conventional definition of "Aggressive Strategy" within Quadrant I for ecotourism. In ecologically sensitive and disaster-prone contexts like Mount

Merapi, an aggressive posture must not be equated with volume-based growth. Instead, this study introduces a boundary condition where "aggression" refers to the high-intensity implementation of protective measures and behavioral controls. This conceptual refinement extends the Tourism Carrying Capacity (TCC) theory by proving that physical caps are insufficient unless coupled with a mechanism to manage the psychological drivers of the digital traveler.

Managerial and Practical Implications

The transition from a 130% surge in arrivals to sustainable operations requires a structural shift for Pokdarwis Balerante, Mount Merapi National Park (TNGM), and Local Tourism Offices. Managers must abandon generic promotional marketing and implement the following tactical maneuvers: First, Implement Digital Gatekeeping and Reservation Quotas. Replace "open gate" policies with a mandatory digital reservation system to enforce daily quotas. This tool should be used to modulate demand during "viral" periods, ensuring that footfall never exceeds the identified ecological buffers of the trekking trails. Second, Operationalize "Trash-In, Trash-Out" Deposits: Managers must move beyond localized waste burning, which threatens forest vegetation. Implementing a mandatory waste deposit system at the entry point—where visitors' non-biodegradable items are logged and verified upon exit—is necessary to eliminate the current dependency on open-site disposal.

Third, Integrate Volcanic Hazard Signaling into Digital Campaigns: Given the Siaga (Level III) status of Merapi, the "Aggressive" digital presence must be reconfigured to communicate real-time risk. Social media content should prioritize "safety-first" narratives and hazard literacy over purely aesthetic "instagrammable" spots to filter for visitors with higher environmental and safety awareness. Fourth, Restructure Guided Services for Special Interest Segments: To mitigate the impact of mass "FOMO" crowds, Pokdarwis should pivot toward high-value, low-impact "Camp-Edu" or "Sunrise Healing" packages. By increasing the price point and requiring local guides for these specific segments, the destination can generate higher revenue per visitor while ensuring on-trail behavioral compliance and ecological education.

CONCLUSION

Kalitalang Ecotourism represents a high-risk, high-reward destination model where digital virality serves as both an economic engine and a primary ecological threat. This study establishes that the destination's "Aggressive Strategy" status in Quadrant I requires a fundamental operational pivot from volume-based promotion to high-intensity visitor management and "digital gatekeeping." Sustainable survival in volcanic landscapes depends on the ability of community-led governance to synchronize the speed of online engagement with the physical constraints of the ecosystem and real-time geological hazard realities. Effectively, the destination must redefine strategic aggression as the proactive pursuit of safety-first, low-impact tourism models that prioritize the integrity of the Merapi landscape over short-term visitor peaks.

Limitations

Despite the clear strategic mapping provided by the IFAS and EFAS matrices, this study possesses several boundaries that warrant acknowledgment. First, the research design is cross-sectional, providing a snapshot of a specific viral surge and the subsequent management response. This temporal limitation prevents the identification of long-term trend decay or the evaluation of destination resilience across different phases of the life cycle. Second, the study context is limited to the specific geomorphological and social environment of Balerante Village on Mount Merapi. The high-frequency volcanic risks and community-based management structures unique to this region may not directly translate to nature-based destinations with more stable geological profiles or centralized governance. Finally, the data relies heavily on visitor

perceptions and qualitative interview results. While the researchers quantified these perspectives through rigorous normalization, the study did not incorporate objective physical measurements, such as soil compaction rates or specific biodiversity loss indices, to validate the perceived ecological degradation.

Future Research

The limitations identified above provide a roadmap for subsequent academic inquiry into trend-driven ecotourism. Scholars should initiate longitudinal studies over a three-to-five-year period to track the evolution of social media-induced demand and evaluate whether "digital gatekeeping" successfully prevents the long-term decline of viral destinations. Furthermore, comparative research is necessary to test the "Trend-Sensitive SWOT" framework in diverse environmental contexts, such as coastal ecotourism zones facing rapid erosion or high-altitude alpine regions with distinct carrying capacity envelopes. To move beyond perception-based analysis, future studies should integrate objective environmental monitoring data—utilizing IoT-enabled sensors or NDVI-based vegetation analysis—with visitor survey results. This integration would provide a more precise correlation between digital engagement metrics and actual landscape health, offering a more robust evidence base for recalibrating daily visitor quotas in fragile ecosystems.

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