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From Diagnosis to Development: Applying a Weighted 13A Framework to Assess Pigago Island's Tourism Competitiveness

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Abstract

Island micro-destinations in emerging economies often have abundant natural resources but face governance challenges and lack effective diagnostic tools. This research introduces the initial empirical application of the weighted destination performance index (WDPI) based on the 13A framework, which includes Awareness, Attractiveness, Availability, Access, Appearance, Activities, Assurance, Appreciation, Action, Accountability, Accommodation, Amenities and Ancillary Services, and Altruism. The case study on Pigago Island, West Sumatra, Indonesia, uses a mixed-methods approach, structured observation, interviews with 25 participants, and systematic Instagram content analysis of 100 posts, rating each attribute on a 1-5 scale and weighting them via expert elicitation. The WDPI advances understanding of destination competitiveness by addressing the natural asset trap, in which high natural capital hinders investment in governance and scenic assets fail to translate into lasting visitor benefits. Pigago's WDPI score of 2.66 classifies it as an Emerging Destination. Key contributions include a replicable diagnostic tool, a phased investment plan with institutional roles, and an attribute-weighting protocol suitable for resource-limited settings. While designed for island micro-destinations, this framework is adaptable to various destination types, and initial validation encourages further comparisons.

Keywords: 13A framework; destination competitiveness; pigago island;

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INTRODUCTION

Tourist destinations in emerging economies face a persistent paradox: abundant natural resources coexist with systemic governance deficits, infrastructure limitations, and weak institutional capacity (Fernandez-Abila et al., 2024; Scheyvens & Momsen, 2008; P. Wang et al., 2025). This issue is especially acute for island micro-destinations in Southeast Asia, where remoteness intensifies limited public investment and weak stakeholder coordination (Azimi et al., 2026; Fernandez-Abila et al., 2024; J. Wang et al., 2026). Addressing this paradox necessitates systematic, multi-dimensional evaluation tools tailored to local contexts and the analytical capabilities of district-level practitioners (Morrison et al., 2025; P. Wang et al., 2025; Wu et al., 2025).

Existing destination competitiveness frameworks, such as the Ritchie and Crouch (2012) conceptual model and the Dwyer and Kim (2003) integrated model, offer robust theoretical foundations but reflect competing theoretical assumptions that merit critical examination. The Ritchie-Crouch model adopts a universalist position: its 36-indicator architecture assumes that the relative importance of competitiveness determinants is sufficiently stable across national contexts to permit generalizable weights derived through meta-analysis (G. I. Crouch & Ritchie, 2012). The Dwyer-Kim model modifies this stance by

incorporating demand-side visitor cognition as a co-constructor of perceived competitiveness, yet it retains the assumption of a data-rich survey infrastructure, which is incompatible with sub-national micro-destination (González-Rodríguez et al., 2023). Scholars of Small Island Developing States and island micro-destinations advance a contextual-specificity perspective, arguing that governance deficits, ecological fragility, and institutional isolation constitute structural conditions that require purpose-built diagnostic instruments rather than scaled-down applications of macro-level frameworks (Mirkova & Padrón-Fumero, 2025; Scheyvens & Momsen, 2008). The tension between universalism and contextual specificity constitutes the theoretical motivation for the present study.

For single island destinations managed by district-level authorities with limited analytical resources, the Ritchie-Crouch and Dwyer-Kim frameworks are theoretically valuable but practically unmanageable (González-Rodríguez et al., 2023). Composite index methodologies themselves are subject to critique for their sensitivity to weighting decisions and aggregation rules, a challenge this study addresses through a structured expert elicitation procedure with a documented sensitivity analysis. Consequently, a gap persists between the academic literature's conceptual sophistication and the practical diagnostic needs of practitioners overseeing nascent island destinations.

The 13A framework, which builds upon Buhalis's (2000) 6A model and Morrison's (2024) 10A model, addresses this gap by distilling destination performance into 13 actionable attributes (Pagliara et al., 2025). The WDPI advances destination competitiveness theory in three respects. First, by assigning non-compensatory differential weights to threshold attributes (Attractiveness, Access, Accommodation, Assurance), it operationalises a threshold-competitiveness perspective that challenges the standard additive assumption of composite indices: excellence in secondary attributes cannot offset foundational deficits. Second, by incorporating Altruism and Accountability as weighted diagnostic attributes rather than peripheral concerns, the WDPI empirically operationalises the sustainability-competitiveness nexus theorised by Goffi et al. (2019), treating sustainability governance as a core competitive determinant. Third, through the 'natural asset trap' construct, it theorises a structural mechanism linking natural capital endowment to governance stasis, extending destination lifecycle theory in a novel direction. These are theoretical contributions distinct from the WDPI's practical utility as a diagnostic tool.

The WDPI uses structured expert elicitation to assign context-sensitive weights, recognising that the relative importance of attributes varies across destination development stages and regional governance contexts. Unlike equal-weighting approaches, differential weighting reflects the empirically grounded distinction between non-compensatory threshold conditions and enhancing factors. The full scoring and elicitation protocol are documented to ensure replicability across destination types without requiring survey infrastructure.

This article operationalises the 13A framework through the WDPI and applies it to Pigago Island, a coastal island in West Pasaman Regency, West Sumatra Province, Indonesia. Pigago exemplifies the previously described paradox, combining exceptional natural assets, limited visitor flows, and minimal governance infrastructure. The study is guided by three research questions: How can evidence-based percentage weights be assigned to the 13 attributes through a structured expert elicitation process to reflect their relative importance

for an emerging island destination? What typological classification scheme can translate composite WDPI scores into actionable destination development categories? What does the WDPI diagnosis of Pigago Island indicate regarding its priority development pathways?

This study enhances tourism destination management in emerging economies through the 13A framework, integrating the WDPI as a resource-efficient diagnostic tool that converts attributes into a district-level performance index. It employs expert elicitation to assign attribute weights when data are limited, thereby filling gaps in the competitiveness literature (G. I. Crouch & Ritchie, 2012; Dwyer & Kim, 2003). The scheme links performance to development categories, supporting adaptive management as Morrison et al. (2025) suggest. Applied to Pigago Island, it provides the first systematic performance diagnosis, establishing baselines for governance and visitors. The WDPI emphasises simplicity, contextual sensitivity, and accessibility, bridging theory and practice and offering a scalable model for island micro-destinations in Southeast Asia and other regions with governance and infrastructure challenges.

Literature Review

Destination Competitiveness: Foundational Models and Critical Comparison

The academic construction of destination competitiveness emerged from the recognition that destinations compete across a complex array of attributes spanning natural resources, infrastructure, governance, and market positioning (Butler, 2024; G. Crouch, 2010; González-Rodríguez et al., 2023; Morrison et al., 2025). The Ritchie and Crouch (1999) conceptual model remains the most-cited in the field, comprising five attribute clusters: core resources and attractors, supporting factors, destination management, qualifying determinants, and destination policy, totalling 36 competitiveness indicators. Crouch (2012) subsequently subjected these to meta-analysis across 36 published studies, deriving their relative weights through importance-performance analysis. The model situates competitiveness within overlapping competitive and global macro-environments, explicitly recognising sustainability as a qualifying determinant for long-term success.

Dwyer and Kim (2003) proposed an integrated model synthesising the Ritchie-Crouch framework with Porter's (1999) diamond model, incorporating inherited and created resources, supporting factors, destination management, situational conditions, and demand conditions. Their model advances the field by recognising that perceived competitiveness is co-constructed between supply-side resources and demand-side visitor cognition. Both models have been critiqued for their complexity and limited operability at sub-national or local scales (González-Rodríguez et al., 2023), a limitation the 13A framework directly addresses. The development of applied indices for competitiveness evaluation remains one of the most active research themes in destination competitiveness scholarship.

A critical comparison of these frameworks with the proposed 13A/WDPI approach reveals important distinctions across five dimensions. In terms of theoretical scope, the Ritchie-Crouch model operates at the macro-environmental level; the Dwyer-Kim model integrates supply-demand interactions; and the 13A/WDPI framework focuses on attribute-level diagnostic assessment. Regarding indicator complexity, the Ritchie-Crouch model requires 36 indicators, the Dwyer-Kim model demands multi-dimensional composite measurement, while

the 13A framework operates with 13 operationalised attributes. Data requirements differ substantially: the first two models require large-scale survey infrastructure and advanced statistical analysis, whereas the WDPI is designed for mixed-method observation within district-level resource constraints. In terms of applicability by unit of analysis, both established models are designed primarily for national or regional scale and have limited operability at sub-national or local scales (González-Rodríguez et al., 2023), a limitation that the 13A framework directly addresses. Finally, regarding practitioner accessibility, the Ritchie-Crouch and Dwyer-Kim models require specialist analytical capacity that is unavailable at the district level, whereas the WDPI is designed to be administered without specialist survey infrastructure. The 13A/WDPI framework is therefore positioned not as a replacement for existing models but as a contextually appropriate operationalisation for settings where their data and institutional prerequisites cannot be met.

From 6As to 13As: Theoretical Rationale for Each Attribute

Practitioner-oriented destination evaluation has been shaped by alliterative attribute frameworks that trade theoretical exhaustiveness for operational clarity. Buhalis (2000) introduced the 6A model, Attractions, Amenities, Accessibility, Available packages, Activities, and Ancillary services, as a supply-side audit tool. Morrison (2024) expanded this to 10As, incorporating awareness, image, and branding dimensions. These frameworks have been applied across diverse contexts, affirming their cross-contextual portability, and more recent scholarship on destination performance measurement has reinforced the value of multi-criteria composite instruments as diagnostic and management tools (Morrison et al., 2025).

The 13A framework proposed by Pagliara et al. (2025) integrates these antecedents and adds seven attributes beyond the original 6As, each with explicit theoretical justification. Awareness was added because destination image formation and online visibility have become primary pull factors in digital-era tourism decision-making (Zhan et al., 2024), entirely absent from Buhalis's supply-side framework. Appearance was incorporated because destination aesthetics and environmental quality influence revisit intention independently of core resource endowment (Morrison et al., 2025). Assurance addresses safety perceptions and visitor protection, which function as non-compensatory threshold conditions in emerging destination contexts: safety deficits cannot be offset by scenic excellence. Appreciation operationalises host-community receptiveness, which moderates the quality of the visitor experience at the point of encounter, a relational and behavioural construct distinct from communicative awareness or procedural planning. Action incorporates strategic planning capacity, acknowledging that governance activation is a prerequisite for infrastructure investment.

Accountability introduces performance monitoring and data governance, without which adaptive management cycles cannot be initiated. Altruism captures sustainability, stewardship, and environmental management protocols, grounded in evidence that long-run competitiveness requires responsible resource governance: Goffi et al. (2019) demonstrate that sustainability positively influences destination competitiveness in developing countries, with effect magnitudes exceeding those of conventional infrastructure indicators. Each addition improves explanatory power by expanding the diagnostic scope from supply-side resources to

the governance and sustainability dimensions that determine whether natural assets can be converted into sustained economic benefit.

Construct Boundaries and Discriminant Validity

Five of the 13 attributes share a governance orientation, necessitating explicit delineation of conceptual boundaries to establish discriminant validity. Awareness operates at the communicative level: it measures the volume and valence of destination image formation among prospective visitors through organic and managed channels, primarily assessed via social media presence and marketing reach. Appreciation operates at the relational-behavioural level: it measures the quality of host-community receptiveness and visitor experience at the point of encounter. Action operates at the institutional-procedural level: it assesses the existence and activation of formal destination-planning instruments. Accountability operates at the evaluative-data-governance level: it measures performance monitoring and visitor data collection systems. Altruism operates at the normative-ecological level: it measures sustainability stewardship, environmental management protocols, and community benefit-sharing arrangements. While these constructs share a governance orientation, they operate at distinct levels and are empirically distinguishable through the scoring. This multi-level architecture improves diagnostic granularity by following composite index practice, maintaining adjacent dimensions when each contributes non-redundant information.

Island Micro-Destinations: Challenges Informing Framework Design

Island micro-destinations constitute a distinct sub-category within tourism literature, characterised by physical isolation, ecological fragility, limited carrying capacity, and pronounced dependence on external visitor flows (Mirkova & Padrón-Fumero, 2025; Nguyen, 2025; Padrón-Ávila, 2025; Scheyvens & Momsen, 2008; J. Wang et al., 2026; P. Wang et al., 2025). For Small Island Developing States and sub-national island destinations in developing economies, tourism represents both a primary economic development pathway and a governance challenge: the same remoteness that generates scenic authenticity also constrains infrastructure investment, institutional capacity, and service delivery (Figueroa & Rotarou, 2021; Mirkova & Padrón-Fumero, 2025; Padrón-Ávila, 2025). Research on island tourism sustainability emphasises the critical role of governance mechanisms in converting natural asset endowments into sustainable competitive advantage and preventing resource degradation through unmanaged visitation growth (Mirkova & Padrón-Fumero, 2025).

Recent scholarship on island destination development in Southeast Asia documents recurring structural deficits: the absence of accommodation, inadequate waste management, and institutional governance gaps are consistently identified as primary constraints on competitiveness (P. Wang et al., 2025; Wu et al., 2025). These challenges directly informed the WDPI's attribute weighting. Physical isolation, as the primary structural constraint on island competitiveness, informed the elevated weight assigned to Access (10%), since sea transport functionality is non-compensatory in an island context. The documented prevalence of governance deficits in Indonesian micro-destinations informed the explicit weighting of Accountability, Altruism, and Action (6–7% each), ensuring governance attributes are not

overshadowed by natural asset scores. The dominance of natural resource endowment as the primary pull factor informed the highest weight for Attractiveness (12%). The identification of the absence of accommodation and amenities as 'absolute barriers' to overnight tourism (Wu et al., 2025) informed the elevated weighting of Accommodation (8%). The WDPI framework is therefore a diagnostic instrument specifically calibrated to identify and prioritise the multi-dimensional deficits documented in the island micro-destination literature.

RESEARCH METHOD

This study adopts a mixed-method, single-case study design. Case study methodology is well-suited to destination competitiveness research, as it enables in-depth, contextually grounded analysis of multiple interrelated factors in real-world settings (Yin, 2018). Pigago Island was purposively selected as a theoretically instructive case satisfying three criteria from Yin's (2018) case typology. First, it constitutes an extreme case in the natural asset trap configuration: it scores at the maximum on Attractiveness while scoring at the minimum on Accommodation, Amenities, Accountability, and Altruism. This extreme attribute polarisation provides the most demanding test of the WDPI's diagnostic sensitivity if the framework cannot identify and communicate the significance of this contrast, it fails its core function. Second, it is a representative case: the Indonesian archipelago contains hundreds of coastal micro-islands sharing the same natural-asset and governance-deficit configuration (P. Wang et al., 2025; Wu et al., 2025), making Pigago analytically transferable within this regional typology. Third, it is a critical case: the absence of any prior systematic performance assessment represents the most data-scarce conditions under which the WDPI could be applied, providing the strongest test of its practical utility.

Data Collection

Data collection occurred over a 14-day field period using four complementary methods. On-site structured observation assessed physical infrastructure, cleanliness, signage, transport options, visitor flows, and governance artefacts through a checklist aligned with the 13 attributes. Semi-structured interviews were conducted with island transport operators, district government officials, community members, and visiting tourists (n = 25 informants), with responses recorded, transcribed, and thematically coded. Instagram content analysis employed a systematic sampling procedure: posts were retrieved using a combined hashtag search (#PigagoIsland, #PulauPigago, #WestPasaman) on Instagram's public search interface, covering the 12-month period January–December 2025. All posts returned (n = 134) were initially logged; duplicate posts (same image reposted across accounts) were identified by visual inspection and excluded (n = 17), resulting in 117 unique posts. A random sub-sample of 100 posts was drawn using a random number generator applied to the chronological list, ensuring temporal representativeness across the 12-month window. Each post was independently coded by two researchers for attribute-specific content and sentiment (positive, neutral, negative) using manifest content analysis procedures consistent with those of Garay and Cànoves (2011). Disagreements between the two coders were resolved through consensual discussion following the negotiated agreement procedure recommended by O'Connor and Joffe (2020), in which coders jointly revisited the coding and the post in question until a shared

interpretation was reached. Social media content analysis is validated as a methodologically sound approach for gauging destination image and awareness in contexts lacking formal visitor survey infrastructure (Zhan et al., 2024). To ensure consistency across all methods, attribute ratings were initially assigned independently by two researchers, then reconciled in consensus. Triangulation across the four sources provided convergent validity for each attribute score.

Expert Elicitation Procedure for Weight Determination

The percentage weights assigned to each of the 13 attributes constitute the most consequential methodological decision in WDPI construction, as they determine each attribute's relative contribution to the composite score and shape priority recommendations. Differential weighting was selected over equal weighting on theoretical grounds: the destination competitiveness literature consistently demonstrates that attributes exercise non-equal influence on destination viability, with certain supply-side pull factors (Attractiveness, Access, Assurance) functioning as threshold or non-compensatory conditions whose deficiency cannot be offset by excellence in other attributes (González-Rodríguez et al., 2023).

Weights were determined through structured expert elicitation with a tourism professional who met three criteria: at least 5 years of experience in tourism research, policy, or operations; familiarity with island micro-destinations in West Sumatra; and active involvement in district tourism planning. Selecting a single expert needs clear justification. In the context of this study, a new island destination in West Pasaman Regency, few individuals meet all three criteria.

The weight hierarchy was informed by both the expert's professional judgement and the island micro-destination literature reviewed above. Attractiveness (12%) receives the highest weight as the primary pull factor. Access (10%) and Awareness (9%) follow, emphasising physical reachability and demand activation as conditions for any visitor flow. Accommodation, Appearance, and Assurance each receive 8%, reflecting their status as critical baseline qualities whose deficiency deters sustained visitation. Activities, Amenities, and Action each account for 7%, while Appreciation, Availability, Altruism, and Accountability each account for 6% as enhancing and governance factors. Table 2 presents all weights and rationales.

To assess the robustness of the typological outcome to the single-expert weighting decision, a sensitivity analysis was conducted. Weights were varied by ±2 percentage points for each attribute in turn, with the displaced weight redistributed proportionally across remaining attributes. Across all perturbation scenarios, Pigago's typological classification remained Emerging Destination (WDPI range: 2.51–2.79), confirming that the diagnostic conclusion is independent of the specific weight values assigned by a single expert.

WDPI Calculation, Classification, and Scoring

Each attribute was scored on an ordinal scale from 1 (Very Poor / Absent), 2 (Poor / Minimal), 3 (Moderate / Basic), 4 (Good / Developed), 5 (Excellent / Best Practice) based on triangulated empirical evidence and the attribute scoring. The Weighted Destination Performance Index is computed as:

$$WDPI = \Sigma (W_i \times S_i) \; [i = 1, 2, ..., 13]$$

where W_i is the proportional weight of attribute i (expressed as a decimal), and S_i is the raw ordinal score. The theoretical minimum is 1.00 (all attributes scored at 1) and the maximum is 5.00 (all attributes scored at 5).

The score range of 4.00 is divided into three equal intervals of 1.33 each, following the equal-interval classification method used in established composite indices such as the World Economic Forum Travel and Tourism Development Index. The equal-interval approach was selected over alternatives for three reasons. First, it preserves the interval properties of the WDPI composite scale: each 1.33-unit interval represents an equal magnitude of performance difference, ensuring that typological boundaries carry consistent substantive meaning. Second, percentile-based classification is sample-dependent and requires an established reference distribution of island micro-destination WDPI scores that does not yet exist. Third, cluster-based classification requires a sufficiently large comparative sample to produce stable cluster solutions, which is unavailable in a single-case design. The equal-interval approach, being theoretically transparent and replicable, is therefore the most defensible option at this stage of framework development, with the explicit acknowledgement that future multi-case studies should explore cluster-based or benchmark-based refinements.

RESULT AND DISCUSSION

Destination Profile: Pigago Island

Pigago Island is a small coastal island in the Indian Ocean, west of Sumatra, within Sungai Beremas District, West Pasaman Regency, West Sumatra Province, Indonesia (coordinates: 00°10′32″S, 99°16′52″E). Topographically, the island is predominantly flat, with white-sand beaches, dense coconut-palm vegetation, and low-lying shrubland. Its natural landscape constitutes the primary and overwhelming competitive asset; no permanent accommodation, formal waste management system, or emergency services infrastructure currently exists. Visitor access is exclusively by sea, with irregular ferry and motorised boat services from the mainland operating without fixed schedules or booking systems.

Table 1. Number of Visitors to Pigago Island

Years	2021	2022	2023	2024	2025
Total	1.589	1.834	1.982	2.219	2.035

Source: Pigago Island Transportation Operator, 2025

Visitor flow data obtained from the West Pasaman Regency Tourism Office and transport operators during the field period indicate that approximately 800–1,200 visitors annually arrive, predominantly domestic adventure travellers from Padang and nearby provinces such as Medan, Jambi, and Riau. Approximately 70% of visits are concentrated during public holidays, July-August, and Eid al-Fitr celebration. No formal economic contribution data exist for Pigago specifically, as the island lacks commercial operators generating tax or fee revenue.

Performance Scores and WDPI Calculation

Table 2 presents the performance scores and weighted contributions for each of the 13 attributes. The composite WDPI for Pigago Island is 2.66, indicating substantial heterogeneity across the attribute profile.

Table 2. Performance Evaluation for Pigago Island

No.	Factor	Code	Weight (%)	Raw Score (1–5)	Weighted Score ($W_i \times S_i$)
1	Attractiveness	ATT	12	5	0,60
2	Access	ACC	10	3	0.30
3	Awareness	AWA	9	4	0.36
4	Accommodation	ACM	8	1	0.08
5	Appearance	APP	8	4	0.32
6	Assurance	ASU	8	2	0.16
7	Activities	ACV	7	3	0.21
8	Amenities & Ancillary Services	AAS	7	1	0.07
9	Appreciation	APR	6	2	0.12
10	Availability	AVA	6	3	0.18
11	Altruism	ALT	6	1	0.06
12	Action	ACT	7	2	0.14
13	Accountability	ACO	6	1	0.06
TOTAL WDPI			**100%**		**2,66**

Source: Processed Research Data, 2026

A notable finding is the bimodal score distribution: three attributes, Attractiveness (5), Awareness (4), and Appearance (4), achieve good-to-excellent ratings, while four attributes Accommodation, Amenities and Ancillary Services, Altruism, and Accountability register the minimum score of 1. This polarisation exemplifies the 'natural asset trap,' in which the destination attracts visitor attention through its landscape quality but fails to convert that attention into sustained visitation or economic activity due to deficiencies in foundational infrastructure and governance. This pattern is not unique to Pigago but reflects a structural dynamic documented across Indonesian micro-destinations.

Attractiveness yields the single largest weighted contribution (0.60), reflecting both its highest raw score (5) and its highest assigned weight (12%). Instagram analysis revealed that 87 of 100 sampled posts featured natural scenery as the primary subject, with predominantly positive sentiment (positive: 79%, neutral: 14%, negative: 7%). User-generated visual content on Instagram demonstrably shapes destination image formation among prospective visitors (Zhan et al., 2024), and Pigago's organic social media presence is its most developed marketing asset, entirely self-generated, in the absence of any formal destination promotion. Appearance similarly scored well (4), with field observation confirming the absence of visible litter or pollution, attributable to the low and intermittent nature of current visitor flows.

Awareness scored 4, reflecting growing social media visibility among domestic adventure travellers, particularly through Instagram hashtag communities. However, this awareness remains informal and algorithmically mediated, entirely absent from any formal destination marketing infrastructure. Access scored 3, reflecting an existing sea transport route that, while functional, is weather-dependent, irregularly scheduled, and lacks navigational aids and passenger safety certifications. Activities and Availability both scored 3, acknowledging the intrinsic experiential value of beach recreation and the partial availability of informal booking via social media and word of mouth, respectively.

Assurance (2), Appreciation (2), and Action (2) scored below average. The Assurance deficit reflects the absence of any emergency response capacity, lifeguard provision, or safety signage. Appreciation scored 2 due to inconsistent receptiveness from local community members and the absence of any tourism sensitisation or community engagement programme. Action scored 2, reflecting the existence of a district-level tourism office but the absence of any destination-specific strategic plan for Pigago.

The four attributes with a score of 1 represent absolute deficits. Accommodation is entirely absent; no formal lodging, homestays, or camping facilities exist on the island. Amenities and Ancillary Services are non-existent: there are no restaurants, retail facilities, health points, or telecommunications infrastructure on the island. Accountability received a score of 1 because no DMO- or island-specific performance-monitoring mechanism has been established, and no visitor data are collected. Altruism scored 1, reflecting the absence of any environmental management plan, waste disposal system, or community benefit-sharing arrangement.

Typological Classification

Table 3 presents the equal-interval typological classification scheme derived from the WDPI scale.

Table 3. Destination Typology Classification

Range	Typology label	Academic designation
1.00 – 2.33	Poor	Nascent / Underperforming Destination
2.34 – 3.67	Potential	Emerging / Developing Destination
3.68 – 5.00	Most Potential	Competitive / High-Performing Destination

Source: Authors' elaboration following equal-interval classification methodology.

With a WDPI of 2.66, Pigago Island is classified as an Emerging or Developing Destination. This typology denotes a destination that possesses identifiable and marketable core assets and has begun to attract visitor attention, but remains constrained by weak governance infrastructure, underdeveloped physical plant, and the absence of formal destination management. It is important to note that this classification scheme is theoretically grounded and transparent but awaits empirical validation across multiple cases; future multi-case studies should test whether destinations within each category exhibit statistically distinct

attribute profiles and visitor outcome indicators, and should explore cluster-based or benchmark-based alternatives to the a priori equal-interval boundaries.

Priority Recommendations

Table 4 presents a tiered investment and intervention roadmap structured by the urgency and interdependence of the deficits identified in the WDPI scoring.

Table 4. Tiered Priority Intervention Roadmap for Pigago Island

Priority tier	Factors	Rationale
Immediate (0–12 months)	Accommodation (ACM), Amenities & Ancillary (AAS), Accountability (ACO), Altruism (ALT)	Scored 1/5; critical service deficiencies that deter overnight stays and undermine governance
Short-term (1–2 years)	Assurance (ASU), Appreciation (APR), Action (ACT)	Scored 2/5; safety perception, hospitality quality, and strategic planning require targeted investment
Medium-term (2–5 years)	Access (ACC), Activities (ACV), Availability (AVA)	Scored 3/5; connectivity, product diversification, and booking channel expansion
Sustain & Leverage	Awareness (AWA), Appearance (APP), Attractiveness (ATT)	Scored 4–5/5; maintain quality and leverage as marketing assets for destination branding

Source: Authors' synthesis based on WDPI scoring.

The immediate priority tier (0–12 months) addresses the four attributes scored at 1, which constitute absolute barriers to any sustainable visitor experience. Without a minimum of accommodation infrastructure, at least basic eco-camping facilities, the island cannot generate overnight expenditure. The provision of amenities, at a minimum comprising a toilet facility, a potable water point, and basic refuse collection, constitutes a non-negotiable precondition for responsible destination opening. Accountability requires establishing a simple visitor-monitoring and feedback system managed by a community tourism cooperative. Critically, the Altruism capacity assessment, the development of an island carrying capacity assessment, and a basic environmental management protocol must precede Accommodation investment to establish ecological limits before overnight infrastructure is constructed, ensuring that governance sequencing protects the natural assets that constitute Pigago's primary competitive advantage.

The short-term tier (1–2 years) addresses Assurance, Appreciation, and Action. Assurance improvement requires basic safety equipment, trained personnel, and enhanced vessel safety standards negotiated with district maritime authorities, funded under the regional budget. Appreciation can be enhanced through community hospitality training and host-community benefit-sharing mechanisms aligned with the Community Cooperative governance structure. Action requires the formulation of a three-year destination development plan for Pigago, framed within the West Pasaman Regency regional tourism development plan.

The medium-term tier (2–5 years) targets Access, Activities, and Availability through provincial-level Public-Private Partnership arrangements and the integration of Online Travel Agencies. Access enhancement involves scheduled ferry services, construction of a small jetty,

and coordination of inter-island transport. Activity diversification should expand beyond passive beach recreation to encompass guided snorkelling, traditional fishing experiences, and cultural interpretation. Availability improvement centres on integration with online travel agencies and a basic destination website with booking functionality.

The sustain-and-leverage tier maintains and monetises the destination's strongest assets: Attractiveness, Appearance, and Awareness. The organic social media awareness channel constitutes Pigago's most cost-effective marketing asset and should be formalised through an official Instagram account coordinated by the destination management cooperative, converting visitor-generated content into a managed branding instrument.

DISCUSSION

This study makes three principal theoretical contributions, each of which challenges or extends existing destination competitiveness theory rather than merely confirming the utility of the proposed framework.

First, the Pigago WDPI findings challenge the compensability assumption embedded in standard composite index frameworks. The WEF TTDI and related indices assume that high scores in one domain can offset low scores in another through additive aggregation. The Pigago profile maximum Attractiveness score coexisting with minimum governance scores demonstrates that natural capital does not compensate for governance deficits in conversion efficiency: visitors are attracted but cannot be retained or monetised. This finding supports a threshold model of destination competitiveness in which gateway attributes (Accommodation, Assurance, Access) function as non-compensatory preconditions rather than interchangeable contributors. This is a theoretically important proposition that the WDPI explicitly operationalises through its differential weighting scheme, and it challenges the additive assumption underlying mainstream composite indices.

Second, the study extends Butler's (2024) destination lifecycle theory. The lifecycle model implies progression from exploration toward development, given sufficient time. The Pigago case theorises a condition of structural stasis in which natural attractiveness generates sufficient organic awareness to delay institutional investment, thereby preventing the progression predicted by lifecycle theory. Without deliberate governance intervention, the lifecycle exploration stage can persist indefinitely. This mechanism formalised as the 'natural asset trap' construct is not theorised in Butler's original formulation and constitutes a novel theoretical contribution.

Third, the study provides a preliminary empirical application of the 13A framework (Morrison et al., 2025; Pagliara et al., 2025) through the WDPI composite index, demonstrating the framework's operability in a real-world island micro-destination context. The empirical results confirm the framework's discriminative validity: it successfully identifies meaningful variation across the 13 attributes, a necessary condition for diagnostic utility.

The Natural Asset Trap: A Theoretical Development

The 'natural asset trap' is defined as a structural condition in which a destination's natural capital generates sufficient spontaneous visitor awareness and organic visitation to delay institutional investment in governance and infrastructure, thereby preventing the

systematic conversion of natural competitive advantage into sustainable economic and social benefit. This definition distinguishes the natural asset trap from three related concepts. Tourism dependency refers to over-reliance on tourism revenues without diversification of the economic base, a concern for mature destinations generating substantial tourism income, not nascent destinations like Pigago that have not yet monetised their assets. Governance deficits are necessary but not sufficient: they are pervasive across many destination types, but the natural asset trap is specifically constituted by the interaction between high natural capital and low governance capacity in a self-reinforcing pattern, in which scenic quality attracts visitors organically and reduces the urgency of investment perceived by district authorities. Butler's (2024) lifecycle exploration stage describes a temporal phase implying eventual progression; the natural asset trap theorises a structural mechanism of stasis requiring deliberate intervention. The WDPI's contribution is precisely that it makes this structural pattern diagnosable and communicable to district-level planners through a single composite index and attribute profile visualisation.

Practical Implications

For destination managers and local government authorities, the WDPI offers several practical advantages. Its 13-attribute structure is sufficiently granular to support targeted intervention design, distinguishing, for example, between accommodation deficits requiring capital investment and accountability deficits requiring institutional design, while remaining compact enough for administration without specialist survey infrastructure. The tiered-priority roadmap, now specified with institutional responsibilities and funding mechanisms, translates diagnostic findings into a phased investment and capacity-building agenda aligned with district-level planning cycles.

Identifying social media awareness as Pigago's most cost-effective asset has marketing implications. Visitor-generated Instagram content already reaches many in the domestic adventure travel segment; formalising this as an official channel coordinated by the destination management cooperative is a low-cost, high-return strategy (Zhan et al., 2024). For West Sumatra's provincial tourism agencies, the WDPI offers a standardised tool for diagnosing and prioritising public investments across underdeveloped island destinations.

Limitations and Future Research

This study is subject to several limitations that require explicit acknowledgement. First, weight assignment was conducted through structured elicitation with a single expert, which introduces subjectivity and limits inter-rater reliability within the weighting procedure. Future applications should employ multi-expert Delphi procedures to generate consensus weights with documented uncertainty ranges; the sensitivity analysis reported above demonstrates that the typological conclusion is robust to ±2% weight perturbations, but the distribution of expert opinions across a panel would provide stronger methodological grounding. Second, attribute scores are assigned by researchers based on triangulated evidence; the ordinal scoring procedure involves interpretive judgement, and while it improves replicability, it cannot entirely eliminate scorer discretion. Third, the 100-post Instagram sample, while appropriate for manifest content analysis in a low-visibility destination context, limits the

statistical generalisability of findings on awareness and sentiment; future studies should employ automated data collection to increase sample sizes and extend temporal coverage.

The single-case design, while appropriate for exploratory application of the framework, precludes statistical generalisation; the findings are analytically transferable rather than statistically representative. The typological classification scheme is theoretically grounded but empirically unvalidated: future comparative studies should apply the WDPI to multiple island destinations simultaneously, enabling cluster analysis and cross-case typological validation, and testing whether destinations within each category exhibit statistically distinct performance characteristics. Future research might also examine the extent to which WDPI scores correlate with visitor satisfaction measures and repeat-visitation intentions, thereby providing a validity check against demand-side outcome indicators and testing the framework's predictive validity.

CONCLUSION

This study introduced and applied the Weighted Destination Performance Index (WDPI) to Pigago Island, a coastal micro-destination in West Sumatra, Indonesia. The WDPI of 2.66 classifies Pigago as an Emerging Destination within an equal-interval typology, capturing the paradox of natural wealth coexisting with deficits in accommodation, governance, safety, and sustainability. This is the first empirical application of the WDPI, and further multi-case studies are needed to validate its broader applicability.

The 'natural asset trap' construct theorises this structural co-occurrence and distinguishes it from idiosyncratic mismanagement, tourism dependency, and Butler's lifecycle exploration stage, repositioning it as a diagnosable and addressable structural mechanism common to island micro-destinations in emerging economies. The WDPI operationalises a threshold-competitiveness perspective, challenges the compensability assumption underlying standard composite indices, and provides the first empirical instantiation of the sustainability, competitiveness nexus within an attribute-weighting framework.

The 13A framework, operationalised through the WDPI with expert-derived differential weights, fulfils its intended diagnostic function by disaggregating composite destination performance into actionable attribute-level findings and translating these into a phased development roadmap with specified institutional responsibilities and funding mechanisms. The immediate imperative for Pigago is not increased marketing but rather the establishment of a minimum viable infrastructure: accommodation, amenities, safety provisions, and governance mechanisms, with the critical sequencing requirement that ecological carrying capacity assessment precede physical infrastructure investment. Without these foundational elements, the island's natural competitive advantage cannot be sustainably converted into economic and social benefit.

More broadly, this study demonstrates that the 13A framework is operationally viable as a practitioner-ready diagnostic tool for island micro-destinations in emerging economy contexts. The structured expert elicitation procedure, sensitivity analysis, and scoring together constitute a replicable, transferable methodological protocol that scholars and practitioners can adapt to different destination typologies and regional contexts. Further applications, cross-case comparisons, and methodological refinements are encouraged to build the comparative

evidence base necessary to establish the framework's external validity across the Indonesian archipelago and beyond.

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