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Integrating Digital Transformation, Community Based Tourism, and Creative Economy for Sustainable Marine Tourism in Bone Bolango Regency

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Abstract

This study examined the roles of digital transformation, community-based tourism, and the creative economy in supporting the sustainability of an emerging marine tourism ecosystem at Oluhuta Paradise, Bone Bolango Regency, Indonesia. A sequential explanatory mixed-methods design combined a structured survey of 100 respondents from four stakeholder groups with in-depth interviews with 11 key informants representing village government, community organizations, creative economy actors, and district officials. Digital transformation was moderate (M=3.03), constrained mainly by low digital infrastructure readiness (M=2.88), although social media use for promotion was fairly active (M=3.27). Community-based tourism recorded the highest mean (M=3.50), underpinned by strong local ownership and control (M=3.65), yet decision making remained concentrated among core managers and benefit distribution was not yet fully equitable. The creative economy was moderate (M=3.38), strongest in local cultural identity (M=3.72) but weaker in formal collaboration with the tourism sector. All constructs showed adequate reliability (Cronbach's alpha 0.818 to 0.895). Each variable correlated positively with ecosystem sustainability, with digital transformation the strongest (r=0.361), followed by community-based tourism (r=0.340) and the creative economy (r=0.261). Integrating both data strands produced the Digital Creative Community Tourism Model, an initial intervention framework connecting the three pillars and open to structural validation and participatory testing.

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Introduction

Coastal and marine destinations increasingly depend on digital tools, community institutions, and local creative industries to convert visitor growth into lasting local benefit, yet research more often treats these three enabling conditions separately than as parts of one interacting system. Systematic reviews of digital transformation in tourism confirm that positive performance effects only materialize when technology adoption is matched by workforce competence and organizational readiness (Gutierriz et al., 2025; Zhang et al., 2025), while comparative evidence from Indonesian tourism villages shows that a destination's digital commitment depends less on the mere presence of infrastructure than on the attitudes, behavior, and technological context of the people who manage it (Mutmainah et al., 2025). Community participation and the informal creative economy that typically surrounds a new destination follow a similar logic: both tend to grow unevenly unless deliberately connected to a wider governance structure, and mixed methods research in tourism has increasingly sought to link such measurable patterns with the contextual explanations needed to interpret them (Huang et al., 2025). This unevenness matters most for destinations that are still forming, where early governance choices largely determine whether growth in visitor numbers is matched by growth in local capacity or instead outpaces the infrastructure and community arrangements available to absorb it.

Bone Bolango Regency in Gorontalo Province illustrates this challenge concretely. The regency covers 1,984.54 square kilometers across 18 subdistricts, and approximately 70.74 percent of its territory, or around 140,098 hectares, is designated as conservation area bordering Bogani Nani Wartabone National Park. Within this conservation-adjacent landscape, the regency records at least 25 nature-based destinations, 11 marine destinations, and 6 heritage and historical sites, and tourism-sector local revenue reached its highest level in a decade in 2024 at Rp. 560,825,494, or 93.47 percent of its Rp. 600,000,000 target. Tourism is therefore not a peripheral sector for Bone Bolango but a genuine development instrument operating alongside persistent poverty concentrated in villages bordering the conservation area and riverbanks.

Among the regency's destinations, Wisata Bahari Oluhuta Paradise in Oluhuta Village is a distinctly emerging, community-based site. It entered the official visitor statistics only in 2025, when it recorded 14,291 visits, about 3.11 percent of all visits to the regency's officially monitored leading destinations and the eighth highest among eleven such sites (Figure 1). Read through Butler's (1980) tourist area life cycle, this pattern situates Oluhuta Paradise in a transition from the involvement stage toward development, a stage in which governance choices carry particular weight because visitor growth that outpaces institutional capacity can quickly erode the very environmental and social qualities that attracted visitors in the first place. Comparable evidence from Southeast Asia reinforces this reading: a coastal fishing community in central Vietnam at a similar involvement stage saw tourism activity expand largely through spontaneous household initiative, with formal coordination and community participation in planning lagging noticeably behind (Quang et al., 2023), while research on tourism-oriented community-based natural resource management in conservation-adjacent rural municipalities elsewhere similarly stresses the importance of local leadership in reconciling growth with environmental and social resilience (Ramaano, 2025). The Indonesian and Gorontalo Provincial governments have already signaled recognition of Oluhuta Paradise's potential: in December 2024 the Ministry of Tourism and Creative Economy channeled special government assistance, four kayak units, an action camera, life vests, and snorkeling equipment, to the site through the regency tourism office, alongside

similar support extended to two other leading destinations, Perintis Lake and Botubarani Whale Shark, in line with the province's 2023-2026 tourism policy direction and its 2024 regulation on developing a digital-based creative economy ecosystem (Pemerintah Provinsi Gorontalo, 2024).

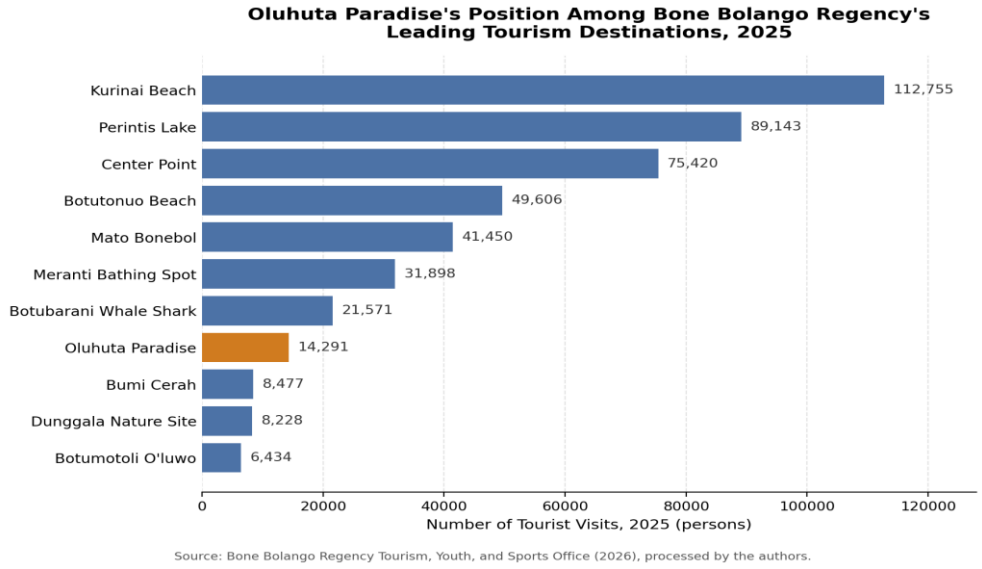


Figure 1. Oluhuta Paradise's Position Among Bone Bolango Regency's Leading Tourism Destinations, 2025

The research team's own prior work at Bone Bolango illustrates how digital transformation, community-based tourism, and creative economy have typically been examined as separate concerns even within the same regency. Earlier studies addressed community-based tourism revitalization specifically at Oluhuta Paradise (Nento et al., 2026), a collaborative strategy for creative economy based MSME empowerment elsewhere in the regency (Binolombangan & Hasan, 2026), the design of creative economy based MSME potential linked to marine tourism and regional economic resilience (Niode & Rahman, 2022), and smart tourism based development at Perintis Lake (Hasan et al., 2024). The wider literature shows a similar pattern of separation: digital transformation in tourism is reviewed largely on its own terms (Rodrigues et al., 2023; Santarsiero et al., 2024), community-based tourism is synthesized as its own research stream with an emphasis on participation, benefit distribution, and conceptual framing (Abreu et al., 2024; Jin et al., 2024; Krittayaruangroj et al., 2023), and creative economy in tourism is discussed chiefly through value creation, cultural identity, and inclusive growth (Arcos-Pumarola et al., 2023; G. Chen & Bao, 2014; Judijanto, 2025). Attempts to test these dimensions jointly within a single small, community-run coastal destination remain uncommon, even as adjacent literatures move in that direction, for instance through empowerment models linking leadership, governance, and technology for MSMEs in land-based Indonesian tourism villages (Purnomo & Purwandari, 2025) or structural models linking life-cycle position, resident well-being, and governance participation across emerging Indonesian island destinations (Kesuma et al., 2025).

This separation obscures a more specific problem that is directly relevant to Oluhuta Paradise. The destination already shows fairly active use of digital promotion platforms despite weak underlying infrastructure, a pattern consistent with the distinction between access-level and usage-level digital divides (Colom, 2020) and with evidence from other developing-country community and rural destinations where residents adopt social media readily even as connectivity and integrated information

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systems lag behind (Djabbari et al., 2025; Maquera et al., 2022; Ndlovu et al., 2025). Likewise, the sense of local ownership at Oluhuta Paradise appears strong in principle, consistent with commons-based governance theory (Ostrom, 2015) and community-approach tourism thinking (Murphy, 2012), yet community involvement in comparable coastal settings often remains closer to consultation than to genuine partnership on Arnstein's (1969) ladder of participation, as seen again at the Vietnamese coastal site where participation stayed largely at the level of service provision rather than shared planning (Quang et al., 2023). The question this study addresses, then, is not whether digital tools, community institutions, or creative economy activity exist at Oluhuta Paradise, since each clearly does, but whether the three function as a mutually reinforcing system capable of sustaining the destination through its current transitional stage, and what an evidence-based integrative model appropriate to this type of destination should contain.

This study therefore pursues three objectives: first, to assess the level of digital transformation readiness at Oluhuta Paradise; second, to examine the role and capacity of the community in community-based tourism as it intersects with creative economy activity; and third, to formulate an integrative model, the Digital Creative Community Tourism Model (DCCTM), that can strengthen the sustainability of the marine tourism ecosystem. The intended contribution is an empirically grounded model connecting digital transformation, community institutions, and creative economy for an emerging, community-run marine destination, extending the growing but still limited set of studies that test these dimensions jointly (Kesuma et al., 2025; Mutmainah et al., 2025; Purnomo & Purwandari, 2025; Quang et al., 2023) into a small-scale marine tourism setting in eastern Indonesia.

Methods

This study employed a sequential explanatory mixed-methods design, integrating quantitative and qualitative approaches to examine the relationships among digital transformation, community-based tourism, the creative economy, and marine tourism ecosystem sustainability. The research was conducted from 10 to 20 June 2026 at Oluhuta Paradise Marine Tourism Destination and the Tourism, Youth, and Sports Office of Bone Bolango Regency, Gorontalo, Indonesia. The study population comprised stakeholders involved in tourism management, creative economic activities, and community development within the destination area. The quantitative phase involved 100 respondents selected through purposive proportional sampling, consisting of 15 tourism awareness group (Pokdarwis) members, 15 youth organisation members, 30 creative economy actors, and 40 local community members. Subsequently, 11 informants were purposively selected for the qualitative phase, representing village authorities, tourism managers, youth organisations, creative economy actors, community representatives, and relevant government officials. The research procedure consisted of three sequential stages: quantitative data collection and analysis to identify statistical patterns, qualitative exploration to explain the identified relationships and contextual conditions, and integration of both datasets to develop an empirically grounded tourism development model. Quantitative data were collected using a structured questionnaire comprising 48 statements measured on a five-point Likert scale. The instrument assessed four constructs: Digital Transformation (X1), Community-Based Tourism (X2), Creative Economy (X3), and Marine Tourism Ecosystem Sustainability (Y), each consisting of four dimensions and 12 measurement items. Qualitative data were obtained through semi-structured in-depth interviews lasting approximately 40–58 minutes, supported by an interview guide organised into five thematic modules. Field observations and documentation reviews, including tourism

visitation records and institutional documents, were also conducted to strengthen the comprehensiveness of the collected data.

Data analysis was conducted sequentially by integrating quantitative statistical procedures with qualitative thematic interpretation. Quantitative data were analysed using descriptive statistics to determine the distribution and characteristics of responses across the four research constructs and their respective dimensions. Instrument reliability was assessed using Cronbach's alpha, with a coefficient of 0.70 adopted as the conventional minimum threshold for acceptable internal consistency. Pearson correlation analysis was subsequently employed to examine statistical associations between digital transformation, community-based tourism, and the creative economy as predictor variables and marine tourism ecosystem sustainability as the outcome variable. Given the cross-sectional nature of the survey, the resulting correlations were interpreted as associations rather than evidence of causal relationships. Qualitative data were analysed thematically through systematic data reduction, open coding, categorisation, and identification of dominant themes based on the 16 conceptual dimensions underpinning the research framework. The integration of quantitative and qualitative findings followed a connecting and merging strategy, whereby statistical patterns were compared with interview findings, field observations, and secondary documentation to identify convergence, contextual explanations, and potential discrepancies. Cross-source triangulation was employed to strengthen the credibility and consistency of the findings. The integrated results subsequently served as the empirical foundation for developing the Digital Creative Community Tourism Model, which synthesises the contributions of digital transformation, community participation, and creative economic activities to the sustainability of the marine tourism ecosystem.

Results and Discussions

1. Respondent Profile and Instrument Reliability

All four constructs showed adequate internal consistency for further analysis. Cronbach's alpha ranged from 0.818 for Community-Based Tourism to 0.895 for Creative Economy, with Digital Transformation at 0.879 and Sustainability of the Marine Tourism Ecosystem at 0.875, all comfortably above the 0.70 threshold conventionally used to judge reliability sufficient for subsequent structural analysis (Hair et al., 2019, Table 4). This level of internal consistency, combined with the convergence between quantitative and qualitative evidence reported throughout this section, supports treating the dimension and construct scores below as a reasonably accurate description of conditions at Oluhuta Paradise rather than an artifact of a single measurement instrument.

Table 4. Reliability of the Research Instrument

Variable	Items	Cronbach's Alpha	Category
X1 Digital Transformation	12	0.879	Reliable
X2 Community-Based Tourism	12	0.818	Reliable
X3 Creative Economy	12	0.895	Reliable
Y Sustainability of the Marine Tourism Ecosystem	12	0.875	Reliable

Source: authors' analysis, 2026.

2. Digital Transformation Readiness

Digital Transformation (X1) recorded a moderate overall mean of 3.03 (Table 5), with digital infrastructure readiness as its weakest dimension (M = 2.88) and destination data and information

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system integration close behind as the second weakest (M = 2.93). Digital literacy and competence scored 3.03, while utilization of digital platforms for promotion and service was the construct's strongest dimension at 3.27.

Table 5. Descriptive Statistics of the 16 Research Dimensions (n = 100)

Variable	Dimension	Mean	Category
X1 Digital Transformation	Digital Infrastructure Readiness	2.88	Moderate
	Digital Literacy and Competence	3.03	Moderate
	Utilization of Digital Platforms for Promotion and Service	3.27	Moderate
	Destination Data and Information System Integration	2.93	Moderate
	Construct Average	3.03	Moderate
X2 Community-Based Tourism	Participation in Decision Making	3.44	High
	Local Ownership and Control	3.65	High
	Equitable Distribution of Economic and Social Benefits	3.35	Moderate
	Community Institutional Capacity	3.55	High
	Construct Average	3.50	High
X3 Creative Economy	Product and Service Innovation	3.49	High
	Value Added and Income Diversification	3.27	Moderate
	Strengthening of Local Identity and Culture	3.72	High
	Collaboration with the Tourism Sector	3.04	Moderate
	Construct Average	3.38	Moderate
Y Sustainability	Economic Sustainability	3.35	Moderate
	Sociocultural Sustainability	3.64	High
	Environmental Sustainability	3.41	Moderate
	Long-term Competitiveness and Resilience	3.37	Moderate
	Construct Average	3.44	High

Source: authors' analysis, 2026.

Interview accounts converge closely with this pattern. The village head described internet signal as unstable away from the settlement and acknowledged that administrative devices at the Tourism Awareness Group (Pokdarwis) secretariat remain very limited, while a boat rental operator reported depending entirely on younger Pokdarwis members for anything digital because of his own age and limited familiarity with the tools. Digital skills among managers and village youth were almost uniformly self-taught through online tutorials rather than through structured, ongoing training, a pattern confirmed independently by the Pokdarwis secretary, a Youth Organization representative, and a local digital content creator. This grassroots, self-directed pattern of skill acquisition without accompanying institutional support helps explain why the platform-utilization dimension already scores comparatively well even as the infrastructure and integration dimensions lag behind: Pokdarwis leadership actively uses Instagram, Facebook, and WhatsApp Business for promotion and group bookings, but records this activity manually in ledgers rather than through any digitized system. This finding parallels evidence

from tourism villages in Bogor, Indonesia, where commitment to digital transformation depended more on managers' attitudes toward change, shifts in consumer behavior, and the surrounding technological context than on the simple presence of infrastructure (Mutmainah et al., 2025), and it is consistent with the broader distinction in digital divide theory between an access-level gap and a usage-level gap (Colom, 2020): at Oluhuta Paradise, the more binding constraint sits at the level of access and system integration rather than at the level of willingness or basic skill.

The absence of a digitized visitor recording system carries a concrete practical consequence. Village-level informal counts placed local visitor numbers at roughly 2,000 to 2,500 per month over the nine months for which village records exist, equivalent to approximately 18,000 to 22,500 visits, a considerably higher figure than the 14,291 visits recorded in the regency's official 2025 statistics (Figure 1). This gap most plausibly reflects differences in recording method and scope, informal village-level counting of all arrivals compared with a district-level recapitulation more likely anchored to retribution data or specific counting points, rather than indicating that either figure is simply wrong. It nonetheless reinforces the case, also raised directly by the Pokdarwis chair as the destination's most urgent need, for one integrated visitor-recording system spanning village and district levels before promotion and training programs are planned further. This priority is consistent with broader systematic evidence that digital transformation improves tourism performance only when adopted alongside adequate infrastructure and integration capacity rather than promotional activity alone (Gutierriz et al., 2025; Rodrigues et al., 2023; Santarsiero et al., 2024; Zhang et al., 2025), and with comparable findings from rural and community-based destinations elsewhere in Indonesia and other developing countries where similar infrastructure and integration gaps persist despite active grassroots platform use (Djabbari et al., 2025; Kurniawati et al., 2022; Ndlovu et al., 2025).

3. Community-Based Tourism Role and Capacity

Community-Based Tourism (X2) recorded the highest overall mean among the four constructs at 3.50 (Table 5), driven by strong local ownership and control (M = 3.65) and community institutional capacity (M = 3.55). Participation in decision making scored 3.44, while equitable distribution of economic and social benefits, though still in the moderate-to-high range, was the construct's lowest dimension at 3.35. The decision-making pattern helps explain this gap. The village head openly described major decisions as first deliberated among core managers, himself, the Pokdarwis chair, and a Youth Organization representative, before being socialized to the wider community through hamlet meetings. This account was corroborated from two other vantage points: a Youth Organization representative reported being asked more often to help execute activities than to help plan them, and a community figure similarly described residents as typically informed after decisions had already been made. Triangulating these three independent perspectives strengthens confidence in the finding and situates Oluhuta Paradise's practice closer to consultation and information giving than to partnership or citizen control on Arnstein's (1969) ladder of participation, a pattern also documented at a comparable coastal destination in central Vietnam where, in the absence of a formal management board directly involving residents, community participation remained largely confined to service provision rather than shared planning despite active tourism growth (Quang et al., 2023).

Local ownership and control nonetheless proved to be the strongest dimension across all 16 dimensions measured in this study. The village head and Pokdarwis chair both stressed that management runs entirely through local residents rather than outside investors, a pattern the community figure reinforced by describing the destination simply as the village's own beach. This finding aligns closely with commons-based governance theory, which holds that collective ownership

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and locally authored rules are preconditions for sustainable resource management (Ostrom, 2015), and with community-approach tourism theory, which positions residents as planners and managers rather than passive beneficiaries (Murphy, 2012). Comparable Indonesian evidence includes the Kamoro indigenous community in West Papua, where collective control helped sustain both landscape and culture (Anindhita et al., 2024), villages bordering Gunung Ciremai National Park, where resident support tracked the depth of genuine involvement rather than mere consultation (Nugroho & Numata, 2022), and Nglanggeran Tourism Village, where a similarly commons-oriented governing arrangement has been documented in some detail (Manaf et al., 2018; Suyatna et al., 2024).

A supplementary interview with the village head, conducted after the main data collection to fill a gap in the original interview guide, identified two additional stakeholders not captured in the initial survey framework: the site's private managing operator and the village-owned enterprise (BUMDes), which formalizes tourism as part of the village's economic activity. At the time of the interview, however, the village had not yet issued a written regulation specifically governing tourism development at Oluhuta Paradise, creating a risk that authority and benefit sharing among the private operator, BUMDes, and Pokdarwis could overlap as the destination grows. Community involvement in day-to-day operations, meanwhile, is broad in practice: residents rotate through parking, cleaning, and security duties, and informal guiding has emerged organically because the site still lacks adequate directional signage, with visitors frequently relying on local residents simply to find their way. This combination, broad but informal participation in daily operations alongside limited participation in strategic decisions, together with the absence of a written village regulation, plausibly explains why the equitable-benefit-distribution dimension, while still moderate to high, remains the construct's comparatively weakest element, and it echoes the same institutional lag between grassroots tourism activity and formal governance instruments documented in Vietnam's Nhon Ly community (Quang et al., 2023).

4. Creative Economy Contribution

Creative Economy (X3) recorded a moderate overall mean of 3.38 (Table 5), the highest reliability of the four constructs ($\alpha = 0.895$). Strengthening of local identity and culture was clearly the strongest dimension (M = 3.72), followed by product and service innovation (M = 3.49) and value added and income diversification (M = 3.27), while collaboration with the tourism sector was distinctly the weakest dimension at 3.04. This pattern recurred consistently across all four creative economy sub-sectors interviewed for this study. Culinary, camping equipment rental, boat rental, and digital content actors each independently described their cooperation with Pokdarwis and the village government as informal, typically limited to permission to trade and occasional joint promotion, without structured training in packaging or dedicated capital support. The culinary actor specifically noted that support received so far has not extended beyond a place to sell and occasional shared promotion. This convergence across four otherwise different sub-sectors strengthens the finding's validity and echoes the research team's earlier work on Bone Bolango's creative-economy MSMEs more broadly, both in the design of creative-economy-based potential linked to marine tourism and regional economic resilience (Niode & Rahman, 2022) and in a collaborative strategy proposed specifically to empower creative-economy-based MSMEs elsewhere in the regency (Binolombangan & Hasan, 2026), suggesting that the informality gap identified here is a regency-wide pattern rather than a feature unique to Oluhuta Paradise.

The strength of the local-identity dimension is consistent with creative tourism theory's emphasis on value creation rooted in authentic local culture (Z. Chen et al., 2021) and with recent reviews framing culture-based creative economy as a strategy for inclusive and sustainable tourism growth (Judijanto,

2025), as well as with evidence that intangible heritage functions effectively as a tourism asset once given even a modest organizing platform (Arcos-Pumarola et al., 2023). At the same time, a recent empowerment model developed for a land-based Indonesian tourism village identifies leadership, innovation, governance, collaboration, capacity building, and technology as jointly necessary drivers of sustainable MSME outcomes (Purnomo & Purwandari, 2025), a framework that maps closely onto Oluhuta Paradise's own profile of strong innovation and identity paired with weak governance-linked collaboration. This convergence suggests that the same structured empowerment logic developed for land-based tourism villages applies just as directly to a small, community-run marine destination, and that Oluhuta Paradise's creative economy actors are more likely to be constrained by the absence of a deliberate linkage mechanism than by any shortage of underlying creativity or product quality.

5. Association Among Digital Transformation, Community-Based Tourism, Creative Economy, and Ecosystem Sustainability

Pearson correlation between the three predictor constructs and Sustainability of the Marine Tourism Ecosystem showed positive associations of weak to moderate strength for all three predictors, consistent with conventional strength-of-association benchmarks in the social sciences (Cohen, 2013, Table 6). Digital Transformation showed the strongest association with sustainability (r = 0.361), followed by Community-Based Tourism (r = 0.340) and Creative Economy (r = 0.261). Correlations among the three predictor constructs themselves were more modest, ranging from 0.200 to 0.319, supporting adequate discriminant validity, that is, evidence that the three constructs are meaningfully related yet remain conceptually distinct, an important precondition for the more complete structural modeling planned as a next step in this research program.

Table 6. Pearson Correlation Matrix Among Constructs

Variable	X1	X2	X3	Y
X1 Digital Transformation	1.000	0.319	0.214	0.361
X2 Community-Based Tourism	0.319	1.000	0.200	0.340
X3 Creative Economy	0.214	0.200	1.000	0.261
Y Sustainability of the Marine Tourism Ecosystem	0.361	0.340	0.261	1.000

Source: authors' analysis, 2026.

Taken together, the three predictor constructs were estimated to jointly account for approximately 21 percent of the variation in ecosystem sustainability, leaving roughly 79 percent attributable to factors outside the present model, such as regional tourism policy, environmental and weather conditions, and broader regional tourism-market dynamics, which remain open for further investigation. Because Digital Transformation, Community-Based Tourism, Creative Economy, and Sustainability were measured from the same 100 respondents using the same instrument at a single point in time, these coefficients should be read as statistical association rather than as evidence of a causal effect, and the analysis reported here is best understood as a preliminary, correlation-based foundation for the more complete structural model, including outer model, inner model, and bootstrapping procedures, planned for the next stage of this research program rather than as a finished causal test. A structural equation model recently developed for three emerging island destinations in Aceh, linking tourist area life cycle position, resident well-being, and governance participation (Kesuma et al., 2025), offers a useful template for the kind of fuller model that an expanded version of the present dataset could

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eventually support. The leading position of digital transformation in the present correlation results also echoes broader evidence that digital readiness functions as an increasingly central rather than peripheral determinant of tourism performance (Gutierriz et al., 2025; Zhang et al., 2025).

6. Mixed Methods Integration and the Digital Creative Community Tourism Model

Integrating the quantitative and qualitative evidence produced a consistent pattern of convergence across all three predictor constructs and the sustainability outcome, summarized by focus area in Table 7. Digital Transformation's moderate score and its infrastructure and integration weaknesses were explained qualitatively by unstable connectivity and manual record keeping; Community-Based Tourism's high score and its participation and equity gaps were explained by strong local ownership operating alongside centralized decision making and an unresolved institutional overlap risk; and Creative Economy's moderate score and its weak formal collaboration were explained by informal, ad hoc cooperation arrangements across all four creative economy sub-sectors interviewed.

Table 7. Integration of Quantitative Findings and Dominant Qualitative Themes

Focus	Quantitative Evidence	Qualitative Explanation	Meta-inference
Digital Transformation	M = 3.03; infrastructure lowest (2.88); platform use highest (3.27)	Unstable signal, limited devices, manual record keeping despite active social media use	An access-level gap, not a usage-level gap, is the binding constraint
Community-Based Tourism	M = 3.50; ownership highest (3.65); benefit distribution lowest (3.35)	Decisions centralized among core managers before wider socialization; strong sense of local ownership; no written village regulation yet	Genuine ownership coexists with limited participation depth and unresolved institutional roles
Creative Economy	M = 3.38; identity highest (3.72); tourism-sector collaboration lowest (3.04)	Cooperation with Pokdarwis and village government informal across all four sub-sectors; no structured packaging or capital support	Strong local creativity is constrained by the absence of a formal linkage mechanism
X1-X2-X3 and Y association	r = 0.361 / 0.340 / 0.261; ~21% combined explained variation	Informants across all groups supported an integrated approach connecting digital, institutional, and creative-economy programs	The three pillars reinforce sustainability jointly, supporting an integrative rather than sectoral model

Source: authors' analysis of quantitative and qualitative data, 2026.

This convergence provided the empirical basis for the Digital Creative Community Tourism Model (DCCTM), illustrated in Figure 2. The model treats digital transformation, community-based tourism, and creative economy as three parallel pillars that jointly, rather than sequentially, support the sustainability of the marine tourism ecosystem, and it deliberately does not propose a new institution.

Instead, consistent with the finding that Oluhuta Paradise's central constraint is weak connective infrastructure and weak formal linkage rather than an absence of relevant actors, the model strengthens the connections among institutions that already exist: Pokdarwis, the Youth Organization, BUMDes, creative economy actors, and the village government.

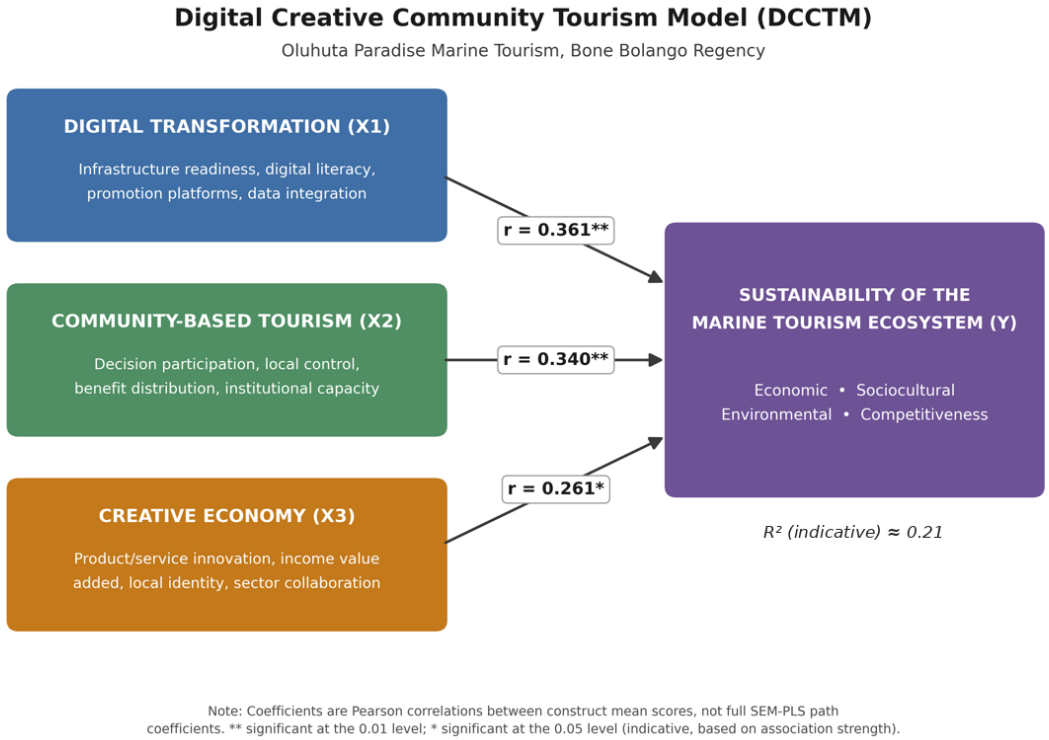


Figure 2. The Digital Creative Community Tourism Model (DCCTM), Oluhuta Paradise Marine Tourism

The model translates into four practical components addressing each of the three pillars in turn. First, an integrated destination data and information system linking village-level and district-level visitor recording would directly address the digital-integration gap identified under Digital Transformation. Second, a written village tourism regulation clarifying the respective roles of the private managing operator, BUMDes, and Pokdarwis, paired with a deliberate move from consultation toward shared planning, would address the participation and equity gaps identified under Community-Based Tourism. Third, a structured creative-economy linkage mechanism, covering packaging training, access to seed capital, and scheduled joint promotion with Pokdarwis, would address the collaboration gap identified under Creative Economy. Fourth, basic wayfinding infrastructure in the form of directional signage, together with targeted connectivity upgrades, would translate the model into low-cost, near-term actions consistent with the destination's present resource level.

This progression corresponds to an increase in the underlying research grant's technology readiness level from level 2 to level 3, reflecting that the model has now been analytically validated through reliability testing, correlation analysis, and triangulation across 16 conceptual dimensions, with its accompanying intellectual property description submitted for copyright registration. The model nonetheless remains a draft. It has not yet undergone expert focus group validation, participatory modeling, or limited field testing, and its claims should be read accordingly. This cautious framing is consistent with regenerative tourism perspectives that treat sustainability as the active recovery of social,

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economic, and ecological capital rather than merely the minimization of harm (Price et al., 2025), with community-based tourism's broader documented role in advancing the Sustainable Development Goals on poverty reduction and decent work (Jackson, 2025), with evidence that destinations moving beyond an initial smart tourism push benefit from building on locally rooted value rather than technology alone (Kusumastuti et al., 2024), and with marine ecotourism governance grounded in local wisdom and customary rules, as documented at Wakatobi National Park (Marlina et al., 2020), a reminder that Oluhuta Paradise's strong sense of local ownership is an asset the DCCTM is designed to build upon rather than override.

7. Policy and Theoretical Implications

For policy, the findings suggest that near-term investment at Oluhuta Paradise should prioritize connectivity and an integrated information system over further promotional-skills training, since platform usage is already comparatively advanced while access and integration remain the binding constraints. They further suggest that participation structures need to move beyond consultation toward genuine shared planning, most concretely through a written village tourism regulation, and that creative economy support should shift from informal, ad hoc cooperation toward the structured empowerment components, leadership, capacity building, governance, and technology, identified in comparable Indonesian tourism-village research (Purnomo & Purwandari, 2025).

Theoretically, this study extends Butler's (1980) tourist area life cycle by linking a destination's transitional life-cycle position to a measurable three-pillar sustainability model rather than treating life-cycle stage as a purely descriptive label, complementing recent structural work that connects life-cycle position with governance participation in other emerging Indonesian island destinations (Kesuma et al., 2025). It also contributes to the still limited set of studies testing digital, institutional, and creative-economy dimensions jointly within a single small destination rather than as separate literatures (Purnomo & Purwandari, 2025; Quang et al., 2023), and it extends digital divide theory (Colom, 2020) into a community-based tourism setting by showing that a destination can score comparatively well on platform-usage indicators while still facing a binding access-level constraint, a distinction with direct practical consequences for where intervention resources should be targeted.

8. Study Limitations

Several limitations qualify these findings. Fieldwork was affected by the same unstable internet connectivity identified as a substantive finding, occasionally complicating digital documentation and remote coordination among the research team. Interviews with district-level informants from the tourism office and the creative economy and MSME agency could only be scheduled near the end of the data-collection window because of their official duties. No official registry of creative-economy business actors exists at the village or regency level, limiting the precision with which the survey sample could be cross-checked against the true population of creative-economy actors, an issue directly acknowledged by the creative economy and MSME agency official interviewed for this study. The survey covered destination managers and the surrounding community only; tourists were not yet included as respondents, a scope constraint tied to the time and budget available under the underlying one-year research grant rather than a conceptual omission. The original interview guide did not initially include questions on facilities, attractions, current visitor patterns, or village regulation, a gap identified only after the main data had been processed and addressed through the supplementary interview with the village head reported above. Finally, because all four constructs were measured cross-sectionally from the same respondents using the same instrument, the correlation results reported here support

association rather than causal inference, and the fuller structural model needed to test the DCCTM's proposed relationships more rigorously remains a task for the next stage of this research program.

9. Synthesis of Main Findings

Three findings anchor this study. First, digital transformation is moderate and unevenly distributed across its dimensions, strong in platform usage but weak in infrastructure and system integration. Second, community-based tourism is the strongest of the four constructs, anchored by genuine local ownership, yet decision making remains concentrated among core managers and benefit distribution only moderate. Third, creative economy activity is moderate, strong in local identity but weak in formal collaboration with the tourism sector, and each of the three constructs is positively associated with ecosystem sustainability, with digital transformation showing the strongest association. Together, these findings provide the empirical rationale for the four-component DCCTM draft, summarized alongside its main policy implications in Table 8.

Table 8. Synthesis of Main Findings and Policy Implications

Research Focus	Main Empirical Finding	Policy Implication
Digital transformation	M = 3.03; infrastructure and integration weakest; platform use strongest	Prioritize connectivity and an integrated visitor data system over further promotional training
Community-based tourism	M = 3.50 (highest); strong ownership; centralized decisions; moderate benefit distribution	Formalize a written village tourism regulation and widen participation toward shared planning
Creative economy	M = 3.38; strong local identity; weak formal collaboration	Establish a structured creative-economy linkage mechanism (training, capital access, joint promotion)
Model formulation	Four-component DCCTM draft; TKT increased from level 2 to level 3	Use as an intervention framework subject to structural and participatory validation

Source: authors' analysis, 2026.

Conclusion

This study examined digital transformation, community-based tourism, and creative economy as interacting foundations for the sustainability of an emerging marine tourism ecosystem at Oluhuta Paradise, Bone Bolango Regency. Digital transformation remains at a moderate level (M = 3.03), constrained chiefly by weak infrastructure and data integration despite comparatively active promotional use of digital platforms. Community-based tourism is the strongest of the four constructs (M = 3.50), grounded in genuine local ownership and institutional capacity, but decision making remains concentrated among core managers and the equitable distribution of benefits only moderate, a pattern still closer to consultation than to shared partnership. Creative economy activity is moderate (M = 3.38), anchored by strong local identity but limited by informal, ad hoc collaboration with the tourism sector. All three constructs are positively associated with ecosystem sustainability, with digital transformation showing the strongest correlation, followed by community-based tourism and creative economy, and together the three constructs are estimated to explain approximately 21 percent of the variation in sustainability outcomes. Integrating this quantitative and qualitative evidence produced the Digital

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Creative Community Tourism Model, a four-component draft framework linking integrated destination data systems, a written village tourism regulation, structured creative-economy empowerment, and basic wayfinding infrastructure to ecosystem sustainability. The model reflects an increase in the underlying research grant's technology readiness level from level 2 to level 3 and remains open for further structural validation and participatory testing, a task the research team intends to pursue alongside similar destinations elsewhere along Gorontalo's Tomini Bay coastline as part of its longer-term research program.

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