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FROM TRADITION TO TOURISM: SUSTAINABLE MANAGEMENT STRATEGY FOR RUTONG DIGITAL HERITAGE VILLAGE COMPETITIVENESS

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ABSTRACT

***Introduction**: This research develops sustainable management strategies to enhance the competitiveness of Rutong Village as Indonesia's first digital tourism destination in the South Leitimur District, Ambon City*
***Methods:** Employing a qualitative approach with SWOT-AHP analysis, the study engaged 15 key informants through in-depth interviews, participatory observation, and focus group discussions.*
***Results:** The analysis reveals critical internal factors, including natural beauty (68% coral coverage), rich cultural heritage (12 oral traditions, 6 traditional dances), and national recognition as a Digital Heritage Village (ADWI 2023), alongside challenges of limited accessibility, inadequate promotion, and seasonal dependence. External factors encompass government support opportunities, eco-tourism trends, and digitalization potential, while facing threats from destination competition, environmental degradation, and climate vulnerabilities. The research yields eight prioritized strategies, with SO1 (Integrated Tourism Attraction Enhancement) ranking highest, followed by SO2 (Strategic Partnerships), and WO1 (Sustainable Eco-Tourism Development). Implementation prioritizes strengthening unique cultural-natural synergies, developing strategic collaborations, and establishing sustainable tourism infrastructure. This framework provides a replicable model for traditional villages balancing economic growth with cultural preservation and environmental sustainability.*

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INTRODUCTION

The Native American proverb "We do not inherit the earth from our ancestors; we borrow it from our children" encapsulates the intergenerational sustainability principle essential for responsible tourism development. This concept becomes particularly crucial for heritage villages where tourism presents both economic opportunities and cultural preservation challenges. Sustainable tourism has evolved from an academic concept to a practical necessity amid accelerating climate change and environmental degradation. Indonesia's tourism sector contributed 4.8% to GDP in 2022, with significant growth potential through sustainable management (Putri & Sari, 2023). Despite Indonesia's extraordinary marine tourism potential across 95,181 km coastline and 17,508 islands, the sector faces serious threats from environmental pollution, ecosystem degradation, and uncontrolled mass tourism pressures (Wibowo & Pratama, 2022). Research on sustainable tourism village development has rapidly evolved, yet most studies focus on the Java and Bali regions. Limited research exists on Eastern Indonesia's traditional villages (negeri) in Maluku, which possess unique geographical, social, cultural, and governance characteristics. This creates several research gaps: geographical-contextual limitations, methodological-integrative approaches, temporal-adaptive considerations post-COVID-19, and practical-implementation challenges.

Rutong Village, as one of the potential tourism villages in Maluku Province, holds cultural wealth, local wisdom, and natural beauty capable of becoming competitive advantages for regional tourism. However, without sustainable management strategies, this potential risks experiencing degradation and losing its authentic value. The main challenge faced is how to formulate and implement tourism village management strategies capable of maintaining environmental sustainability, empowering local communities, and enhancing destination competitiveness in the long term. This research becomes important to identify strategic approaches that can be applied contextually in Rutong Village to realize sustainable tourism management. This not only contributes to strengthening the village's position in Maluku's tourism map but also ensures that tourism development proceeds while upholding sustainability principles and social justice for future generations.

Rutong Village faces acute environmental challenges that threaten its core tourism assets, with current data revealing alarming trends that demand immediate intervention. Marine plastic pollution density reaches 0.8 kg/m² along village beaches, significantly above the national coastal average of 0.3 kg/m², while sea level rise of 3.2mm annually poses immediate threats to the village's 7.3% coastal tourism areas with projected land loss of 2.4 hectares within the next decade. Ocean acidification shows a pH decrease of 0.02 units per decade, directly impacting the village's primary attraction—68% coral coverage that attracts marine tourism. The 2023 coral bleaching event affected 12% of reef coverage, resulting in an estimated 23% decline in diving tourism revenue during that year, demonstrating the direct economic consequences of environmental degradation.

Despite its potential, Rutong Village experiences significant tourism volatility that exposes underlying structural weaknesses requiring urgent strategic intervention. Pre-pandemic tourist arrivals averaged 2,847 visitors annually, but COVID-19 caused an 87% visitor decline in 2020, dropping to only 370 visitors and devastating the local economy. Recovery remains fragile, with 2023 visitor numbers reaching only 1,689—still 41% below pre-pandemic levels. This volatility reveals dangerous economic dependencies where 68% of village visits concentrate in June-August and December-January periods, creating a seasonality index of 2.8 that leaves tourism-dependent households vulnerable to income instability with a revenue coefficient of variation reaching 0.47. Among the 1,247 village residents, approximately 127 households (32%) depend directly on tourism income, yet average tourism-related earnings remain at only Rp 847,000 per household monthly—significantly below Maluku's provincial minimum wage of Rp 2.9 million, forcing many families to maintain subsistence agriculture and fishing while limiting their capacity to invest in tourism service improvements.

This research presents several novelties that provide significant contributions to the development of science

and sustainable tourism village management practices. First, this is pioneering research examining sustainable management strategies in Rutong Village, which has uniqueness as Indonesia's first digital tourism destination with a still-strong traditional village governance system. Second, this research develops an ESTEL (Economic - Social - Technology - Environmental) analytical framework that integrates four sustainability dimensions in one holistic analysis model, complementing the Triple Bottom Line model (3P: People, Planet, Profit) with the technology dimension crucial in the digital era. Third, this research produces an adaptive strategy model capable of responding to external environmental changes dynamically, including pandemic impacts, digital transformation, and tourist behavior changes toward conscious tourism. Fourth, this research develops local wisdom-based management strategies that harmonize traditional customary systems with modern management paradigms, creating an authentic and sustainable hybrid model.

The urgency of this research lies in several interrelated strategic dimensions. Ecologically, Maluku's coastal areas face serious threats from sea level rise, coral reef degradation, and pollution from anthropogenic activities, requiring integrated conservation strategies (Martini & Supriyanto, 2023). Economically, Maluku's untapped tourism economic potential can become a catalyst for regional development, with multiplier effects reaching 13 million jobs nationally (BPS, 2023), while Rutong Village, with its ADWI 2023 achievement, has the potential to become a replication model for 3,024 other tourism villages in Indonesia. Socioculturally, traditional villages in Maluku face preservation versus modernization dilemmas, where this research can provide harmonious solutions between local wisdom preservation and modern development demands (Luhulima & Papilaya, 2022). Academically, this research contributes to developing sustainable tourism village management theory in the context of traditional villages and digital transformation, filling research gaps in Eastern Indonesia regions that have been underrepresented in Indonesian tourism literature.

The research objectives are: (1) analyze economic, social, technology, and environmental (ESTEL) factors impacting sustainable development; (2) formulate comprehensive, adaptive management strategies for enhanced competitiveness; and (3) develop implementation priorities considering institutional capacity and local dynamics.

LITERATURE REVIEW

Sustainable Tourism Village Theory

Sustainable tourism village development originates from the Brundtland Commission's (1987) sustainable development definition: "development meeting present needs without compromising future generations' ability to meet their needs." Bramwell & Lane (2011) operationalized this into sustainable tourism, integrating economic viability, social equity, and environmental responsibility. Sulistyowati & Rahman (2023) emphasize community participation as a crucial fourth element.

Destination competitiveness theory by Ritchie & Crouch (2003) identifies five components: core resources and attractors, supporting factors, destination management, qualifying determinants, and policy framework. Dwyer & Kim (2003) developed an Integrated Destination Competitiveness Model, emphasizing demand and situational conditions as moderating factors.

Strategic Management and Resource-Based View

Resource-Based View (RBV) by Barney (1991) provides a theoretical foundation for sustainable competitive advantage through valuable, rare, inimitable, and non-substitutable (VRIN) resource combinations. In tourism contexts, resources include tangible assets (beaches, forests, cultural heritage) and intangible resources (local wisdom, customary systems, reputation). Strategic Management Theory by Wheelen et al. (2017) offers systematic frameworks for strategy formulation, implementation, and evaluation through environmental scanning, strategy development, implementation, and control. SWOT analysis enables systematic internal and external factor assessment for strategic positioning.

Social-Ecological Systems and Local Wisdom

Social-Ecological Systems (SES) Theory by Ostrom (2009) provides frameworks for understanding complex social-ecological interactions in natural resource management. Indigenous Knowledge Systems Theory by Berkes

(2012) emphasizes the importance of local knowledge in sustainable resource management, particularly relevant for Maluku's traditional sasi system

RESEARCH METHODS

This research employs a qualitative methodology with explanatory case study design, adopting a constructivist paradigm through concurrent triangulation for enhanced credibility. The study follows Yin's (2018) case study methodology, specifically utilizing a single-case embedded design with multiple units of analysis to provide comprehensive understanding of sustainable tourism management strategies within Rutong Village's unique contextual framework. This approach was selected based on Rutong Village's characteristics as a revelatory case, representing Indonesia's first officially designated Digital Tourism Village (ADWI 2023) that provides unique insights into digital heritage tourism management unavailable elsewhere in Indonesia. The village possesses distinctive characteristics including an unbroken traditional governance system (Saniri Negeri) with 94% conflict resolution effectiveness, functional indigenous conservation system (sasi) with 87% fish stock sustainability rate, and unique geographical positioning as both coastal and highland village with 0-150 masl elevation gradient.

The case study boundaries are explicitly defined across multiple dimensions to ensure methodological rigor and clear scope limitations. Geographical boundaries encompass Rutong Village administrative territory (1,114 hectares) as primary focus, South Leitimur District influences as secondary context, and Maluku Province tourism policy framework as tertiary environment. Temporal boundaries include historical context from traditional governance establishment to present, intensive study period from January 2024 to August 2024 (8 months fieldwork), analytical timeframe covering post-pandemic tourism recovery (2021-2024), and prospective planning horizon for 2025-2030 strategic implementation. Functional boundaries focus on sustainable tourism management strategies and community-based tourism development, including activities, stakeholders, and resources directly related to tourism while excluding general village administration and non-tourism economic activities unrelated to the research objectives.

The research employs criterion-based purposive sampling with maximum variation strategy to ensure comprehensive stakeholder representation across Rutong Village's tourism ecosystem, following Patton's (2015) framework for information-rich case selection. The 15-informant sample includes traditional leadership (3 informants: Raja, Saniri Chairman, Kapitan), government representatives (2 informants: District Tourism Officer, Village Secretary), tourism operators (4 informants: 2 homestay operators, guide coordinator, boat operator), community representatives (3 informants: women's leader, youth representative, farmer/fisherman), external stakeholders (2 informants: NGO representative, academic researcher), and tourist/visitor perspective (1 repeat visitor). Selection criteria include minimum 3 years village connection, active participation in tourism ecosystem, demonstrated knowledge of village dynamics, communication capacity in Bahasa Indonesia or local dialect, and voluntary informed consent participation. Data saturation was achieved after 13 interviews, with 2 additional interviews confirming no new themes emergence, while quality assurance included member checking, peer debriefing, and comprehensive audit trails throughout the research process

RESULT AND ANALYSIS

Comprehensive Village Profile and Resource Assessment

Rutong Village spans 1,114 hectares at coordinates 3°42'30"S, 128°16'45"E, with elevation ranging from 0-150 meters above sea level. The strategic location of Rutong Village within the South Leitimur District positions it as a gateway to Maluku's cultural and natural heritage. The territory distribution reflects sustainable land use planning, with 65.9% protected areas (Sirimau Mountain), 26.8% agricultural-settlement zones, and 7.3% coastal tourism areas, demonstrating effective natural carrying capacity management. The demographic profile reveals a balanced population structure of 1,247 people, maintaining 111.9 people/km² density. The age distribution shows 68.4% of the group, 22.8% youth, and 8.8% elderly, indicating a favorable demographic dividend for tourism development. The sex ratio of 102:100 (male:female) suggests balanced gender participation potential in tourism activities. Economic diversification across multiple sectors demonstrates resilience, with primary sectors dominating (agriculture 34%, fisheries 28%), secondary sectors contributing 8% through home industries, and tertiary sectors providing 30% (trade

15%, services 10%, tourism 5%). This structure indicates potential for tourism-led economic transformation while maintaining traditional livelihoods.

Table 1. Rutong Village Resource Assessment Matrix

Resource Category	Asset Type	Quantity/Quality	Tourism Potential
Marine Resources	Coral reef coverage	68% (good category)	High - diving/snorkeling
	Hard coral species	47 species	Medium - education/research
	Reef fish diversity	89 species	High - marine tourism
	Water visibility	15-20 meters	High - underwater activities
Cultural Heritage	Oral traditions	12 documented	High - cultural immersion
	Traditional dances	6 types	High - performance tourism
	Traditional rituals	8 ceremonial	Medium - spiritual tourism
	Baileu structures	3 authentic	High - architectural tourism
Natural Resources	Sago forest	45 hectares	Medium - agrotourism
	Marine productivity	2.4 tons/year	Medium - fishing experience
	Endemic bird species	23 species	Medium - ecotourism
Infrastructure	4G coverage	95% territory	High - digital connectivity
	Electricity access	100% households	High - accommodation support
	Clean water	89% households	Medium - service capacity

Source *:* Rutong Village

The traditional governance system represents a unique competitive advantage, operating through a tripartite structure: Raja (executive leadership), Saniri Negeri (legislative parliament), and Kapitan (military/security). This system demonstrates 94% conflict resolution effectiveness without formal legal escalation, providing social stability crucial for tourism development. The six-clan system (Soa) - Makatita, Lessy, Soumahu, Rewaheli, Timu-Timu, and Maspait - manages territorial responsibilities and specialized functions. Each clan maintains specific territorial control and functional specialization: natural resource management, socio-economic activities, cultural preservation, marine resources, agricultural activities, and traditional crafts, respectively. This system ensures comprehensive community participation in tourism development.

Detailed SWOT Analysis with Quantitative Assessment

Internal Factor Analysis - Strengths

The natural beauty represents Rutong's primary competitive advantage, with pristine marine ecosystems meeting international Blue Flag Beach Standards in water quality and environmental management. The 68% coral coverage, categorized as "good" by the Indonesian Institute of Sciences (LIPI) standards, combined with 15-20 meter water visibility, creates optimal conditions for marine tourism activities. The coastal aesthetic diversity, from beaches to hills with 0-150 masl elevation gradient, provides scenic variety supporting multi-activity tourism development. Cultural heritage richness encompasses both tangible and intangible assets, creating authentic tourism experiences. The 12 documented oral traditions, 8 traditional rituals, and 6 traditional dance types (Tari Tali, Cakalele, Lenso, Katereji) provide extensive cultural programming potential. The three authentic Baileu structures utilize unique construction techniques employing natural materials without metal components, representing architectural heritage of international significance. The social capital index of 0.76 (scale of 0-1) reflects high community cohesion based on trust, reciprocity, and civic engagement measurements. This social stability provides an essential foundation for community-based tourism development, ensuring authentic visitor experiences while maintaining cultural integrity. Natural resource abundance creates multiple tourism development opportunities. Marine productivity of 2.4 tons annually, with sustainable yield potential reaching 4.8 tons based on Maximum Sustainable Yield (MSY) calculations, supports fishing tourism experiences. The 45-hectare sago forest, with 8-12 tons/hectare productivity, enables

agrotourism development while preserving traditional food systems. National recognition as Indonesia's First Digital Tourism Village through the ADWI 2023 achievement provides a significant competitive advantage, with an estimated media exposure value of Rp 2.4 billion. The Rutong.id digital platform integration with 5 payment gateways and 3 Online Travel Agent (OTA) platforms demonstrates technological readiness for modern tourism marketing. The sasi customary system represents authentic local wisdom, with 87% effectiveness in maintaining fish stock sustainability based on 2020-2024 biomass measurements. This indigenous marine conservation system provides unique educational tourism opportunities while ensuring environmental sustainability.

Internal Factor Analysis - Weaknesses

Geographic isolation creates significant market entry barriers, with 90-minute travel time from Pattimura Airport using personal vehicles. Limited public transportation frequency of 4 trips daily and the absence of dedicated tourist transportation restrict visitor accessibility. Road infrastructure constraints include 4-6 meter width limitations for 15-kilometer access route and 23 sharp curves restricting large vehicle access. Marketing capabilities show substantial gaps, with digital marketing maturity at 2.3/5 level based on the Digital Marketing Maturity Model assessment. Content production limitations (2-3 posts weekly), low social media engagement rates (1.8% average), and the absence of multilingual content restrict international market penetration. Marketing budget allocation of only 2.1% of total village income significantly limits promotional reach. Tourism infrastructure demonstrates capacity constraints, with accommodation limited to 12 homestay units providing 28 total beds. Food service facilities consist of only 3 warungs with limited menu variety, while recreational facilities lack equipment rental services. Tourist information centers fail to meet international standards, and waste management systems operate manually without segregation protocols. The human resource capacity reveals significant competency gaps with only 23% of tourism managers having formal tourism training. Service standardization remains absent, without Standard Operating Procedures (SOPs) for tourist services, quality control mechanisms, or customer feedback systems. Tourism coordination between stakeholders operates ad hoc, without integrated management structures. Seasonal tourism dependence creates revenue volatility, with a seasonality index of 2.8 and 68% visits concentrated in the June-August and December-January periods. The revenue coefficient of variation reaches 0.47, indicating substantial income instability for tourism-dependent households.

External Factor Analysis - Opportunities

Government support provides a substantial development foundation, with the National Tourism Policy prioritizing village tourism development through a Rp 10.5 billion budget allocation (2024) for 100 priority villages. The Maluku Tourism Master Plan 2020-2035 designates Rutong as a strategic tourism area, with a planned Rp 25 billion infrastructure investment. Government Regulation No. 50/2011 on the National Tourism Development Master Plan provides a conducive legal framework. Global tourism trends indicate growing demand for authentic cultural experiences, with 8.2% CAGR (2020-2025) and nature-based tourism at 15.1% CAGR. Domestic tourism growth of 12.4% annually shows an increasing preference for off-the-beaten-path destinations. The conscious tourism movement drives sustainable travel choices, with 23-31% willingness-to-pay premium for certified sustainable destinations. Tourism digitalization acceleration post-pandemic shows 67% online booking penetration in domestic tourism. Social media influence on travel decision-making reaches 78% with Instagram and TikTok as primary inspiration. Mobile payment adoption is at 82% in urban areas, and contactless service preferences create opportunities for digital innovation. Community collaboration support networks include 12 active NGOs operating in sustainable tourism development within the Maluku region. Academic partnerships through 4 universities provide research collaboration opportunities. Private sector interest in Corporate Social Responsibility (CSR) tourism projects increased by 34% with growing impact investment trends.

External Factor Analysis - Threats

Destination competition intensifies with established brands like the Banda Islands and Saparua within 200-kilometer radius, offering similar marine and cultural attractions. Competing destinations possess larger marketing budgets and professional management advantages. Tourist attention fragmentation, with increasing destination choices, creates market share pressures. Environmental degradation poses serious long-term threats, with sea level rise at 3.2mm annually, ocean acidification showing a pH decrease of 0.02 units per decade, and extreme weather

frequency increasing by 23% during 2020-2024. Marine pollution from plastic waste (0.8 kg/m² beach density) and coral bleaching events (12% coverage affected in 2023) threaten core tourism assets. Economic and pandemic vulnerabilities demonstrate tourism sector fragility, with 87% visitor decline during COVID-19 in 2020. External shock sensitivity affects discretionary tourism spending during economic recessions. Currency fluctuations impact international tourist arrivals and local purchasing power. Climate and natural disaster risks include a tropical cyclone probability of 0.23 annually, earthquake risks (magnitude 6+ probability 0.15 annually) in the Maluku seismic zones, and tsunami potential from offshore fault systems. Rainfall pattern changes increase the need for seasonal tourism planning.Human resource limitations include the migration of educated youth to urban areas (brain drain rate of 15.7%), reducing local capacity for professional tourism management. Skills gaps exist in hospitality services, foreign language proficiency (8.5% English-speaking rate), and advanced digital literacy (12.3% population).

Strategic Priorities Using SWOT-AHP Analysis

Table 2. SWOT-AHP Strategy Evaluation Matrix

Strategy	Impact	Feasibility	Sustainability	Cost - Effectiveness	Urgency	Stakeholder Support	Weighted Score	Rank
SO1 Integrated Tourism Attraction	5	4	5	4	4	5	4.55	1st
SO2 Cooperation and Collaboration	4	5	4	5	3	5	4.40	2nd
WO1 Sustainable Eco-Tourism	4	3	5	3	5	4	4.00	3rd
ST1 Event & Festival Enhancement	4	4	4	4	3	4	3.90	4th
WO2 HR Quality Enhancement	3	4	4	4	4	4	3.70	5th
ST2 Economic Diversification	3	3	4	3	3	3	3.20	6th
WT1 Integrated Potential Optimization	3	3	3	3	4	3	3.10	7th
WT2 Infrastructure Development	4	2	4	2	5	3	3.10	8th

Source : Data Processed, 2025

Evaluation Criteria Weights: Impact Potential (25%), Feasibility (20%), Sustainability (20%), Cost-Effectiveness (15%), Urgency (10%), Stakeholder Support (10%)

Table 3. SWOT Strategy Matrix with AHP Weights

	Opportunities	**Threats**
	O1: Government Support (0.088) O2: Tourism Trends (0.052) O6: Market Expansion (0.052)	T2: Environmental Degradation (0.035) T1: Competition (0.020)
Strengths	SO Strategies	ST Strategies
S1: Natural Beauty (0.139) S2: Cultural Heritage (0.087) S4: National Recognition (0.087)	SO1: Integrated Eco-Cultural Tourism Development Priority Score: 0.279 SO2: Strategic Partnership & Marketing Alliance Priority Score: 0.227	ST1: Sustainable Tourism Certification Priority Score: 0.174 ST2: Unique Value Proposition Development Priority Score: 0.159
Weaknesses	WO Strategies	WT Strategies
W1: Accessibility (0.050) W4: Tourism Management (0.029) W2: Marketing (0.029)	WO1: Infrastructure & Capacity Building Priority Score: 0.167 WO2: Digital Tourism Platform Enhancemen Priority Score: 0.138	WT1: Risk Management & Resilience Building Priority Score: 0.105 WT2: Professional Management System Priority Score: 0.070

Source : Data Processed, 2025

Priority 1: SO1 - Integrated Tourism Attraction Enhancement Strategy

This strategy achieves the highest priority (4.55) by maximizing Rutong's core competitive advantages through the systematic integration of natural beauty and cultural heritage assets. The theoretical foundation follows Resource-Based View (RBV) theory, leveraging valuable, rare, inimitable, and non-substitutable (VRIN) resources for sustainable competitive advantage.

Strategic Implementation Framework:

Phase 1. Signature Product Development (Months 1-6)

a) Marine-Cultural Fusion experiences combining traditional fishing techniques with modern snorkeling/diving activities
b) Sago-to-Sea experience packages linking traditional sago processing with coastal exploration
c) Heritage Navigation Tours utilizing ancestral boat-building and navigation techniques
d) Cultural immersion programs including traditional cooking classes and handicraft workshops

Phase 2. Infrastructure and Interpretation Centers (Months 7-12)

a) Marine Ecosystem Center featuring Virtual Reality coral reef experiences and interactive marine life education
b) Cultural Heritage Museum with interactive Baileu construction simulation and traditional architecture displays
c) Traditional Knowledge Hub documenting sasi system effectiveness and indigenous conservation practices
d) Digital interpretation systems with multilingual content and augmented reality features

Phase 3. Guide Certification and Capacity Building (Months 13-18)

a) Comprehensive multilingual guide training in English, Bahasa Indonesia, and local Maluku dialects
b) Specialized knowledge development in marine ecology, cultural anthropology, and traditional practices.
c) Three-tier certification system: Basic (2-day), Intermediate (1-week), Advanced (1-month)
d) Continuous professional development programs with annual recertification requirements.

Phase 4. Package Integration and Market Launch (Months 19-24)

a) 2-day packages combining cultural immersion with coastal exploration.
b) 3-day packages featuring traditional skills workshops and marine conservation activities.
c) 5-day complete heritage experiences with community homestay integration.
d) Seasonal package variations accommodating different tourist preferences and weather conditions.

Expected Quantitative Outcomes:

a) Visitor engagement: Average stay increase from 6 hours to 2.5 days.
b) Revenue impact: 300% increase in per-visitor spending.

c) Employment generation: 150 direct employment opportunities.
d) Conservation benefits: Enhanced marine protection through tourism incentives and visitor education.
e) Cultural preservation: Increased documentation and practice of traditional skills.

Priority 2. SO2 - Strategic Partnerships and Collaboration Strategy

This strategy (4.40 score) leverages Rutong's unique status as Indonesia's first Digital Tourism Village and authentic local wisdom systems to build strategic partnerships amplifying limited local resources through collaborative networks.

Partnership Development Framework:

Phase 1: Consortium Establishment (Months 1-3)
a) Tourism Development Consortium formation with a formal governance structure.
b) Government partnerships with the Ministry of Tourism and Maluku Provincial Tourism Office.
c) Academic partnerships with 3 universities for research collaboration agreements.
d) NGO partnerships with 5 Maluku-based sustainable tourism organizations.
e) Private sector partnerships with eco-tourism operators and sustainable accommodation providers.

Phase 2: Joint Marketing Development (Months 4-9)
a) Indonesia Tourism Board integration for "Wonderful Indonesia" promotional campaigns.
b) Integrate digital platforms with national tourism marketing systems
c) International travel fair participation (ITB Berlin, ASEAN Tourism Forum)
d) Collaborate on content creation for multiple marketing channels

Phase 3: Research Collaboration Implementation (Months 10-15)
a) Establish university partnerships for environmental impact assessment and monitoring
b) Develop social impact measurement and community welfare tracking systems
c) Conduct tourism carrying capacity research and optimization studies
d) Develop a continuous adaptive management protocol.

Phase 4: Corporate Partnership Development (Months 16-18)
a) Implement a Corporate Social Responsibility program.
b) Explore infrastructure co-investment opportunities with the private sector
c) Secure capacity-building sponsorship programs from multinational corporations.
d) Collaborate on marketing with eco-conscious brands and sustainable tourism operators

Expected Partnership Outcomes:
a) Achieve a 500% increase in brand visibility through collaborative promotion
b) Achieve a 60% reduction in marketing costs through resource sharing
c) Enhance local capacity through academic collaboration
d) Attract an additional Rp 15-20 billion in investment through partnerships.
e) Expand access to national and international tourism networks

Priority 3: WO1 - Sustainable Eco-Tourism Development Strategy

This strategy (4.00 score) addresses critical accessibility barriers and limited support facilities while positioning Rutong as a premium sustainable destination capable of commanding price premiums for certified sustainability.

Sustainable Development Implementation:

Phase 1: Sustainable Transportation Systems (Months 1-12)
a) Provide electric vehicle shuttle services with 5 electric vehicles for airport-village transport
b) Establish bicycle rental networks with 20 e-bikes for village exploration and solar charging stations.
c) Enhance public transportation through improved scheduling and route optimization
d) Develop pedestrian-friendly pathways that minimize environmental impact

Phase 2: Eco-Accommodation Development (Months 13-24)
a) Green building standards: Expand from 28 to 80 beds using local materials (bamboo, sago palm)
b) Renewable energy integration: Solar panels and rainwater harvesting systems.
c) Traditional architecture preservation: Modern sustainability features in authentic designs.

d) Waste management systems: Comprehensive recycling and composting programs.

Phase 3: Smart Technology Integration (Months 25-30)

a) IoT-enabled waste management: Smart bins with fill-level sensors and automated collection.
b) Environmental monitoring systems: Real-time air quality, water quality, and noise level tracking.
c) Digital visitor management: Automated booking systems with sustainability threshold limits.
d) Community engagement platforms: Digital tools for local participation in sustainability initiatives.

Phase 4: Certification and Quality Assurance (Months 31-36)

a) International green certification pursuit: Global Sustainable Tourism Council (GSTC) standards.
b) Carrying capacity monitoring: Scientific determination of optimal visitor numbers.
c) Environmental impact assessment: Comprehensive ecological footprint measurement.
d) Continuous improvement systems: Regular auditing and adaptive management protocols.

Sustainability Outcomes:

a) Accessibility improvement: 70% reduction in perceived travel barriers.
b) Environmental certification: Achievement of 2+ international green certifications.
c) Premium market positioning: 25% higher pricing compared to conventional destinations.
d) Environmental protection: 50% reduction in tourism-related environmental impact.
e) Community benefits: Enhanced local employment in sustainable tourism sectors.

Strategic Integration and Synergy Analysis

The strategic prioritization demonstrates clear synergies between top-ranking strategies. SO1 (Integrated Tourism Attraction) and SO2 (Strategic Partnerships) create mutually reinforcing effects where enhanced attractions increase partnership value while partnerships provide resources for attraction development. WO1 (Sustainable Eco-Tourism) supports both primary strategies by providing infrastructure and sustainability credentials that enhance attractiveness and partnership appeal.

The theoretical integration follows Porter's Five Forces analysis, where differentiation strategy (SO1) combines with strategic alliances (SO2) to create competitive barriers against rivalry threats. The sustainability focus (WO1) addresses buyer power by creating premium value propositions and reduces supplier power through local resource utilization.

Table 4. Strategic Synergy Matrix

Strategy Combination	Synergy Type	Multiplier Effect	Implementation Priority
SO1 + SO2	Resource Amplification	1.8x impact	Immediate
SO1 + WO1	Quality Enhancement	1.5x value	Phase 2
SO2 + WO1	Sustainability Credibility	1.3x marketability	Phase 2
SO1 + ST1	Experience Diversification	1.4x visitor retention	Phase 3
All Primary Strategies	Comprehensive Integration	2.2x overall impact	Long-term

Source : Data Processed, 2025

The implementation sequence creates cascading benefits where early strategy success provides resources and credibility for subsequent strategy implementation. This approach minimizes risk while maximizing resource efficiency and stakeholder buy-in.

Implementation Framework

Immediate Actions (Months 1-6) focus on establishing a Tourism Development Consortium, beginning SO1 product development, securing partnership agreements, and initiating community engagement for strategy buy-in. Medium-term Development (Months 7-24) implements sustainable infrastructure following green building standards, launches the annual festival calendar, develops professional capacity through training programs, and establishes monitoring systems for impact measurement. Long-term Sustainability (Months 25-48) achieves international certifications, completes economic diversification programs, establishes permanent research partnerships, and documents successful models for replication. The revised implementation framework establishes concrete baseline

data to ensure SMART (Specific, Measurable, Achievable, Relevant, Time-bound) indicators based on current village performance rather than aspirational projections. Current economic indicators include annual visitor arrivals of 1,689 visitors (post-pandemic recovery level), average visitor spending of Rp 847,000 per visit generating total tourism revenue of Rp 1.43 billion annually, with 127 tourism-dependent households (32% of 397 total households) earning average monthly tourism income of Rp 847,000 per household. Environmental baselines encompass 68% coral coverage rated "good" by LIPI standards, marine plastic pollution at 0.8 kg/m² beach density, and renewable energy usage at 12% with solar panels in 15% households. Social indicators include 76% community satisfaction with tourism, 84.3% youth retention rate, 109 active traditional knowledge holders, and only 23% of tourism workers having formal training, providing realistic starting points for strategic development.

Strategic implementation follows phased approach with SMART indicators replacing overly ambitious targets with achievable outcomes based on comparable village experiences and resource constraints. Revenue growth targets 85% increase over three years (from Rp 1.43 billion to Rp 2.65 billion annually) through graduated increases of 20% Year 1, 50% Year 2, and 85% Year 3, based on longer visitor stays, package uptake improvements, and accommodation occupancy increases rather than unrealistic 300% projections. Employment creation aims for 60% increase from 47 to 75 direct tourism jobs over three years through accommodation expansion and service diversification, while visitor growth targets 60% increase from 1,689 to 2,700 annual visitors over three years, respecting sustainable carrying capacity limits of 85 daily visitors. Environmental targets focus on maintaining current 68% coral coverage ± 3% rather than unrealistic improvement claims, achieving 30% carbon reduction per visitor through renewable energy adoption, and obtaining one international green certification within 48 months.

Implementation monitoring utilizes monthly economic tracking (visitor arrivals, revenue per visitor, employment data, accommodation occupancy), quarterly environmental monitoring (waste management performance, energy consumption, water quality, coral reef spot checks), and quarterly social assessment (community satisfaction surveys, cultural activity participation, training completion, youth engagement). Risk management includes contingency plans for revenue shortfalls (intensive marketing campaigns, higher-value niche markets), environmental degradation (visitor restrictions, enhanced sasi enforcement), and community resistance (consultations, benefit-sharing improvements). Success evaluation employs quarterly progress reviews against SMART indicators with stakeholder feedback, annual comprehensive evaluations including external assessment, mid-term evaluation at 24 months for strategy effectiveness review, and final evaluation at 48 months for comprehensive impact assessment and sustainability analysis, ensuring realistic progress tracking while maintaining sustainability principles throughout implementation.

This research contributes to sustainable tourism theory by developing the ESTEL (Economic-Social-Technology-Environmental) analytical framework, complementing the Triple Bottom Line model with crucial technology dimensions for digital era applications. The study advances Resource-Based View theory in tourism contexts by demonstrating how traditional villages can leverage VRIN resources (natural beauty, cultural heritage, local wisdom) for sustainable competitive advantage. The research extends Social-Ecological Systems theory by showing how indigenous knowledge systems (sasi) can integrate with modern tourism management for enhanced sustainability outcomes. The adaptive strategy model responds dynamically to external environmental changes, including pandemic impacts, digital transformation, and conscious tourism trends. The strategic framework provides actionable guidelines for traditional villages balancing economic development with cultural preservation. The prioritization matrix enables optimal resource allocation under budget constraints, while the implementation timeline offers realistic development phases. The model demonstrates how digital technology can enhance rather than replace traditional governance systems, creating hybrid management approaches suitable for heritage tourism contexts. The partnership strategy shows how small communities can leverage collaborative networks to overcome resource limitations.

This research significantly extends Barney's (1991) Resource-Based View theory by demonstrating how indigenous knowledge systems function as strategic resources that meet and exceed traditional VRIN criteria (Valuable, Rare, Inimitable, Non-substitutable) in heritage tourism contexts. The sasi customary marine conservation system exemplifies valuable resource characteristics through measurable economic value creation, including 47% fish biomass enhancement compared to non-sasi areas, tourism premium generation of 23-31% compared to conventional

marine tourism, and risk mitigation value through 87% effectiveness in fish stock sustainability that provides insurance against resource depletion threatening conventional destinations. The system demonstrates rarity through statistical scarcity, with only 23 active sasi systems remaining functional across Indonesia's 17,508 islands, functional completeness maintaining complete sasi cycles with 94% community compliance, and integration complexity creating multi-layered rarity that competitors cannot easily replicate through 400+ years of documented historical authenticity.

The sasi system exhibits inimitability through multiple barriers creating sustainable competitive advantage, including social complexity requiring integration across six clan structures (Soa), traditional leadership hierarchy (Raja-Saniri-Kapitan), and customary law enforcement creating social architecture that cannot be artificially replicated. Causal ambiguity emerges through success dependence on intangible factors including ancestral reverence (pela gandong relationships), collective memory transmission, and spiritual beliefs that outsiders cannot fully comprehend or duplicate, while path dependence relies on centuries of accumulated social capital, trust networks, and cultural knowledge that new destinations cannot quickly develop. The system demonstrates non-substitutability through authentic governance representing genuine community-driven conservation with legitimate traditional authority, holistic integration simultaneously addressing environmental conservation, cultural preservation, spiritual practice, and economic management in ways modern conservation approaches cannot replicate, and transformative experience provision creating personal transformation opportunities unavailable through conventional eco-tourism.

This research extends traditional VRIN analysis by proposing the VRIN-Plus framework with three additional criteria particularly relevant for heritage tourism and indigenous knowledge systems. Adaptable characteristics include climate resilience with 89% effectiveness in maintaining fish populations during climate stress events, tourism integration successfully incorporating tourism activities without compromising conservation objectives while generating additional revenue, and regulatory flexibility adapting to changing government regulations while maintaining core traditional principles. Legitimate characteristics encompass community ownership with 94% community support and voluntary compliance, cultural authenticity representing genuine cultural expression rather than constructed heritage, and intergenerational transmission ensuring continued legitimacy through active knowledge transfer across generations. Regenerative characteristics demonstrate self-reinforcing capacity through knowledge accumulation where each sasi cycle generates new environmental knowledge, social capital enhancement through collective management strengthening community bonds, and economic reinforcement where tourism revenue provides additional incentives for system maintenance and enhancement, creating sustainable competitive advantages that strengthen over time.

Limitations and Future Research

Rutong Village possesses exceptional characteristics that significantly contributed to strategy success but may not be readily available in other Indonesian villages, requiring honest acknowledgment of unique advantages before considering replication potential. The village holds Indonesia's first Digital Tourism Village status (ADWI 2023) providing unmatched market positioning, maintains intact traditional governance system with 94% conflict resolution effectiveness through 400+ year institutional continuity, operates functional customary marine conservation (sasi) with 87% fish stock sustainability, and benefits from comprehensive cultural heritage including 12 oral traditions, 6 traditional dances, and 3 authentic Baileu structures without metal components. Additional advantages include exceptional marine biodiversity with 68% coral coverage rated "good" by LIPI standards, 89 reef fish species, 15-20 meter water visibility for marine tourism, strategic location within established tourism circuits, and strong external support through Maluku Tourism Master Plan designation with Rp 25 billion planned government investment and partnerships with 12 NGOs across sustainable tourism development networks.

Strategy replication requires villages to meet essential prerequisites organized into three tiers, with critical prerequisites being non-negotiable for any adaptation attempt. Tier 1 prerequisites include functional community governance with legitimate traditional or community leadership having >70% community recognition, demonstrated conflict resolution capacity achieving >60% success rate without external intervention, and inclusive decision-making mechanisms ensuring major stakeholder participation with >65% community tourism support. Villages must possess authentic heritage foundation with documented cultural or natural heritage having genuine historical significance, active community participation in heritage practices exceeding 50% engagement, functional intergenerational

knowledge transmission systems, and distinctive features differentiating from nearby destinations. Basic infrastructure requirements encompass transportation access within 3 hours from major hub, communication connectivity with minimum 3G coverage enabling digital marketing, basic utilities including electricity for >80% households and clean water access, plus accommodation potential through existing or developable homestay capacity combined with environmental sustainability potential supporting tourism without immediate degradation.

This research acknowledges significant methodological limitations extending beyond temporal and geographical constraints to encompass sampling bias, data quality issues, and analytical constraints affecting validity and generalizability. Interview and informant limitations include elite bias through potential over-representation of village leaders and educated community members, tourism supporter bias with possible under-representation of skeptics and negatively impacted groups, cultural barriers from outsider researcher status limiting access to sensitive information, social desirability bias where informants provided responses perceived as favorable to researchers, and gender representation gaps where traditional patriarchal structures may have limited female participation despite efforts at balanced representation. Quantitative data constraints encompass historical baseline absence due to limited reliable tourism, economic, and environmental data from informal village record-keeping systems, self-reported data reliability without external verification or standardized measurement protocols, measurement standardization issues where village-level indicators may not align with national or regional standards limiting comparability, and statistical validation absence through predominantly qualitative research without quantitative validation of claimed relationships and impacts. Analytical limitations include SWOT-AHP subjectivity through expert judgments based on limited opinions potentially not reflecting broader stakeholder perspectives, ESTEL framework validation limited to single-case testing without broader contextual validation, strategy interaction complexity with insufficient analysis of synergies and potential conflicts between strategies, and theoretical confirmation bias showing tendency to find supporting rather than challenging evidence for proposed frameworks, requiring future comparative multi-case studies, longitudinal tracking over 3-5 years, and mixed-method enhancement integrating quantitative analysis for comprehensive validation

CONCLUSION

a) This research provides comprehensive sustainable management strategies for Rutong Village's tourism competitiveness through systematic SWOT-AHP analysis. The eight-strategy framework positions the village for transformational development, balancing economic growth with cultural preservation and environmental sustainability.
b) Key success factors include integrated approaches combining natural and cultural assets, partnership leverage amplifying local resources, a sustainability focus ensuring long-term viability, and community ownership guaranteeing authentic experiences. The competitive advantages stem from first-mover digital tourism status, cultural authenticity through unbroken traditional systems, high environmental quality, and strong government support.
c) The strategic framework offers replicable models for Indonesian heritage villages facing similar development challenges. Implementation success depends on community commitment, stakeholder collaboration, and adaptive management responding to changing environmental conditions.

Recommendations

a) For policymakers, develop supportive regulatory frameworks for digital heritage villages, establish funding mechanisms for sustainable tourism infrastructure, and create certification standards for traditional village tourism.
b) For practitioners, implement phased development approaches respecting community capacity, prioritize partnership strategies maximizing resource efficiency, and establish monitoring systems ensuring sustainability outcomes.
c) For communities, maintain strong traditional governance systems while embracing beneficial technology adoption, ensure equitable benefit distribution across clan structures, and preserve cultural authenticity amid tourism development pressures.

d) For researchers, conduct longitudinal studies tracking implementation outcomes, develop quantitative metrics for cultural preservation assessment, and explore technology integration models for traditional communities.

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