International Research Journal of Multidisciplinary Scope (IRJMS), 2026;7(4):1895-1911

Review Article | ISSN (O): 2582-631X DOI: 10.47857/irjms.2026.v07i04.012307

A Sustainable Community-based Tourism Digital Innovation Framework: Conceptualising Holistic Tourism Development

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Abstract

This paper introduces the Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF), a conceptual model that integrates sustainability principles with digital innovation to advance community-based tourism (CBT). The framework addresses notable gaps in the literature by offering a holistic, dynamic strategy for tourism development that considers economic, social and environmental dimensions simultaneously. Motivated by the growing demand for comprehensive approaches to sustainable tourism, the study explores the complexities of CBT and underscores the transformative role of digital technologies in enhancing visitor experiences and community benefits. Employing a conceptual methodology, it synthesizes theoretical insights with global best practices, drawing on examples from multiple continents to illustrate the framework's versatility and potential impact. The proposed SCBT-DIF highlights promising pathways for reshaping CBT into a more sustainable, inclusive and digitally empowered sector. By bridging sustainability imperatives and technological innovation, the framework serves as a strategic blueprint for revitalizing CBT practices and ensuring long-term benefits for local communities and stakeholders. The implications of this study are far-reaching: policymakers can leverage SCBT-DIF to design informed tourism policies, practitioners can adopt its principles to improve operational effectiveness and communities can utilize it to enhance local participation and economic resilience. Ultimately, this framework advances tourism research and practice while pointing to fruitful directions for future studies on innovation and sustainability in the tourism sector.

Keywords: Community-based Tourism, Cultural Preservation, Digital Innovation, Economic Empowerment, Sustainable Tourism.

Introduction

Community-based tourism (CBT) is a vital tourism development approach that turns local communities into the centre of planning, management and profit sharing. The main goal is to make tourism benefit local economic development, cultural conservation, social integration and environmental sustainability (1, 2). However, the increasing interest in CBT has still faced challenges with integration, scalability, governance, infrastructure and digital technology use (3, 4). Conventional CBT strategies mainly depend on local assets and community participation; however, infusing digital technology and sustainability- oriented management practices into these foundational aspects is increasingly needed to bolster effectiveness, resilience and stretch (5, 6). Sustainable tourism aims to minimize the adverse environmental and social implications while enhancing economic advantages and long-term viability of destinations (7). It is based on environmental stewardship, social equity and economic viability; thus, sustainability encompasses interacting with the current needs and those of future generations (8).

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(Received 12th May 2026; Accepted 02nd September 2026; Published 29th October 2026)

However, the application of these principles in practice is still hard, specifically in community-based settings where institutional capabilities, infrastructures, market access and resources lack (9). Digital technologies provide promising avenues for addressing some of these constraints by improving access to information, destination marketing, visitor engagement, resource management and decision-making (10, 11). Data analytics, online platforms, mobile apps and other digital technologies can also inform more timely and evidence-based tourism management (12, 13). While sustainable tourism, CBT and digital innovation have attracted meaningful attention in research, these streams have evolved primarily in silos or only with partial integration. Existing studies often analysed cultural, economic, environmental, or technological aspects in isolation and offered minimal explanation of how the aspects might interact within a single community-based tourism system (14–16). Moreover, a clear conceptual framework is still lacking on how digital technologies could simultaneously aid community empowerment, sustainability goals, local economic development, cultural conservation and adaptive tourism management. Existing literature also offers limited explanation of how such integration could be executed in a series of steps, such as assessment, capacity building, execution, monitoring, evaluation, adaptation, or if constant feedback could help keep the digitally enabled CBT initiatives aligned with evolving community priorities and tourism conditions.

The necessity of this integration is underlined by the practical realities of CBT. Community participation is still crucial to deriving local advantages, improving conservation incentive and keeping local ownership of tourism development (17). Evidence from community-based tourism initiatives implies that tourism can create job opportunities, support small enterprises and stimulate local infrastructure and community development (18–21). On the other hand, the effectiveness of CBT initiatives could substantially suffer from inadequate financial resources, limited information, weak coordination, low educational achievements, unequal benefits, human–wildlife conflicts and lack of trained personnel (22). Hence, employing effective governance arrangements and transparent decision-making, stakeholder coordination and robust local institutions that facilitate community ownership and collective action are crucial (23).

Digital innovation aligns with the marketing and management issues of community- based destinations. CBT organizations lack professional marketing abilities and generic skills, restricting them from reaching broader marketplace. Digital platforms, social media and cooperative marketing strategies can enhance visibility, visitor engagement and entrepreneurial chances of destinations (24–26). While benefits from digitalization hinge on local infrastructures, skills, affordability and community consensus, poor transportation, accommodation, sanitation, connectivity, water, electricity and safety infrastructures could disserve destination accessibility, visitor satisfaction and communities' ability to derive benefits from tourism development (27–29). Therefore, digital solutions need to be embedded within broader strategies addressing both technological and non-technological-oriented shortcomings.

CBT also calls for managing environmental and cultural trade-offs. Economic gains from tourism development could lead to over-exploitation of natural areas, habitat degradation, pollution, cultural commodification and local traditions without adequate protection (30). Sustainable community-based tourism needs to incorporate economic development into cultural conservation, environmental protection, community participation and responsible visitation behaviours. This framework posits that digital innovation should not merely be treated as a marketing or service delivery tool but as part of a broader governance and sustainability agenda that helps inform decisions, promotes equitable participation, monitoring and continuous adjustment.

To address these gaps, this study creates a Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF) that integrates sustainability, community engagement, digital innovation, governance, cultural conservation, economic development, environmental steward-ship, data-driven decision making and responsible technology use into a coherent conceptual structure. The framework further organizes these interconnected aspects in a phased implementation process that is informed by

continuous evaluation and feedback. The practical implication of the SCBT-DIF is its structured basis for tourism planners, policymakers, destination managers and local communities to assess local conditions and readiness for digital platforms, implement context-sensitive interventions and adapt community-based tourism initiatives per sustainability goals and community needs.

The study has three objectives: (i) identify and synthesize the conceptual dimensions that relate community-based tourism, sustainability and digital innovation; (ii) integrate the identified conceptual dimensions within the SCBT-DIF and clarify the functional links among these aspects; and (iii) develop a structured implementation and evaluation process that ensures the SCBT-DIF framework remains responsive to local community needs and evolving tourism conditions.

Methodology

The study used a conceptual research design guided by an integrative review and thematic synthesis to develop the Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF). This approach is in line with previous review studies that have synthesised the literature on sustainable tourism and community-based tourism to identify patterns, trends and future research (8, 14, 16). The integrative review approach was ideal because the study aimed to combine conceptual, theoretical and empirical insights from many different but related literature areas instead of assessing a narrow intervention or outcome. The review focused on community-based tourism, sustainable tourism, digital innovation, community empowerment, governance, cultural preservation, environmental sustainability and tourism development.

The literature search was performed using Scopus, Web of Science and Google Scholar. The search strategy used combinations of keywords, such as "community-based tourism," "sustainable tourism" "digital innovation," "digital tourism," "community empowerment," "tourism governance," "cultural preservation," "environ-mental sustainability," and "tourism development." Boolean operators (AND and OR) were employed, where applicable, to combine related concepts and narrow down the search. The search was mainly conducted on publications from 2010-2025, while relevant past studies were retained when key theoretical, conceptual, or contextual contributions to developing the framework were evident.

Sources were eligible if they examined one or more of the dimensions relevant to developing the SCBT-DIF conceptually: community participation, sustainable tourism practices, digital technology, governance, community economic development, cultural preservation, environmental stewardship, service delivery, or data-informed tourism management. Academic journal articles, scholarly books and book chapters, conference-based research and other applicable research-based publications were eligible sources if there was a substantive conceptual or empirical contribution. Duplicates, publications not relevant to community-based or sustainable tourism and studies that made no substantial contribution to the framework dimensions were excluded.

The screening of sources was conducted in stages. The titles and abstracts were examined first to assess relevance to specific research objectives and conceptual domains. Afterward, the potentially relevant literature was screened through full assessment to determine contributions to developing the framework. About 180 records were identified in the initial search and nearly 90 were retained after preliminary screenings. Approximately 50 publications were identified after full-text screenings and exclusion of sources meeting no eligibility criteria.

The retained literature was thematically synthesised to identify recurring concepts, key constraints, enabling factors and relationships between sustainability, digital technology and community-based tourism. The synthesis was informed by the thematic and integrative orientation provided in earlier review-based studies on sustainable and community-based tourism (8, 14, 16). The synthesis was interpretative and concept-driven. Related findings were organized into higher-order conceptual dimensions, which subsequently informed the structure of the proposed SCBT-DIF.

The final conceptual framework was produced by exploring the relationships between governance and strategy, community engagement and capacity building, cultural preservation and promotion, economic development and marketing, environmental stewards, experience enhancement

and service delivery, data-informed decision-making and ethical, responsible and equitable use of digital technology.

Results

Sustainable Community-based Tourism Digital Innovation Framework

The Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF) is an integrative and process-oriented conceptual framework designed to strengthen community-based tourism through the systematic integration of sustainability principles, community participation and digital innovation. Rather than treating these elements as independent components, the SCBT-DIF conceptualises them as interconnected and mutually reinforcing mechanisms that collectively support sustainable tourism development. The framework comprises eight substantive dimensions: governance and strategy; community engagement and capacity building; cultural preservation and promotion; economic development and marketing; environmental stewardship; experience enhancement and service delivery; data-driven decision-making; and responsible and equitable technology use.

Conceptually, these dimensions perform complementary functions within the framework. Governance and strategy provide the institutional and strategic foundation for tourism development, while community engagement and capacity building strengthen local participation, ownership and the capacity to engage with tourism and digital initiatives. Cultural preservation, economic development and environmental stewardship represent the principal sustainability domains through which community-based tourism generates and protects local value. Experience enhancement, data-driven decision-making and responsible and equitable technology use function as enabling mechanisms through which digital innovation can improve tourism services, inform management decisions and support inclusive participation without undermining community interests.

The framework further distinguishes between its substantive dimensions and its implementation process. The eight dimensions define what should be integrated within sustainable community-based tourism development, whereas the implementation phases specify how these dimensions can be progressively translated into practice. The evaluation and feedback loop provides an adaptive mechanism through which implementation outcomes, stakeholder feedback, changing community priorities and evolving tourism conditions can inform subsequent planning and adjustment. Accordingly, the SCBT-DIF is conceptualised as a dynamic rather than linear framework, in which its dimensions, implementation phases and feedback mechanisms interact continuously to support community empowerment, environmental sustainability, local economic development, cultural preservation and responsive tourism management. Figure 1 illustrates the overall conceptual structure and relationships among these components.

Figure 1 shows the entire conceptual design of SCBT-DIF and the connection between eight dimensions and Community-Based Tourism Core. This figure forms the foundation of our framework, summing up the principles and practices essential for fostering tourism that is genuinely rooted in local community engagement and benefit. We explore the fundamental aspects of CBT, including local governance, community participation, cultural authenticity, economic benefits and environmental sustainability. Through this exploration, we establish a comprehensive understanding of how CBT can be structured to maximise its positive impacts on both local communities and the broader tourism ecosystem, serving as a foundation for integrating digital innovations and sustainability initiatives, as shown in Figure 1.

Governance and Strategy

Governance and Strategy within SCBT-DIF serve as the nucleus, guiding the development, implementation and sustenance of community-based tourism initiatives. This pivotal component establishes the vision, objectives and ethical standards, aligning tourism activities with community values and sustainable development goals. It encompasses creating effective leadership structures, strategic partnerships and regulatory frameworks that advocate for responsible tourism growth. By setting a coherent direction, Governance and Strategy ensure the strategic alignment of tourism initiatives with broader community and environmental objectives,

illustrated in practices like Malaysia's National Eco-tourism Plan, which emphasises sustainable tourism integrated with environmental and community development. The interplay between Governance and Strategy and other components of the SCBT- DIF is critical for a holistic tourism approach. It underpins Community Engagement and Capacity Building, guiding the formation of skills and engagement necessary for tourism's success.

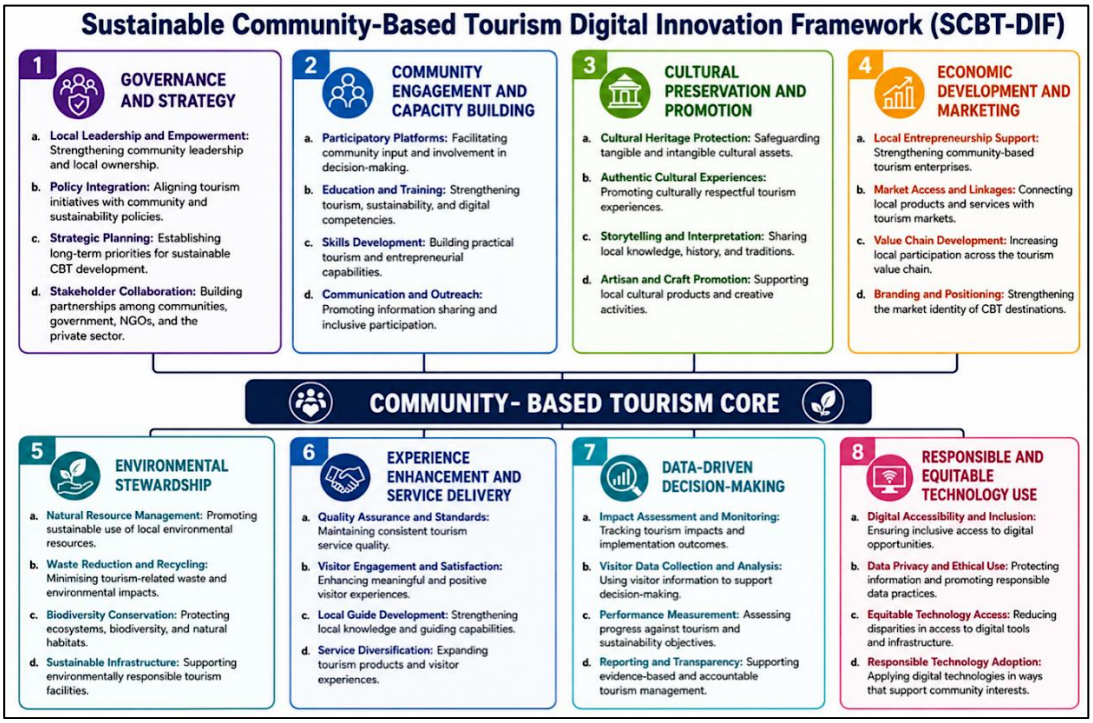


Figure 1: Sustainable Community-based Tourism-digital Innovation Framework (SCBT-DIF) Community-based Tourism Core

In cultural preservation and promotion, cultural assets are safeguarded, ensuring they are part of the tourism offering in an ethical manner. Economic Development and Marketing are shaped by the economic visions set within this framework, promoting sustainable growth and equitable benefit distribution. Environmental stewardship follows the governance-led policies for conserving natural resources, while Experience Enhancement and Service Delivery are directed to fulfil strategic objectives, enhancing tourist satisfaction. Data-driven decision-making and Ethical and Equitable Technology Use are also influenced, ensuring decisions and technology implementations are aligned with ethical and equitable principles, a strategy mirrored in New Zealand's tourism framework that emphasises sustainable growth and cultural integrity (31, 32).

Community Engagement and Capacity Building

Community engagement and capacity building emphasise the active involvement of local communities in tourism development, equipping them with the skills and knowledge needed for sustainable success. This critical component ensures equitable distribution of tourism benefits and empowers residents to influence decisions impacting their environment and culture. For instance, in Sauraha, Nepal, a community deeply involved in eco-tourism, local engagement has led to the development of tourism that supports conservation efforts and economic growth, showcasing a model where community participation drives the tourism agenda, reinforcing ownership and accountability (33). The homestay program is a prime example of community engagement and capacity building in Malaysia, where local villagers host tourists in their homes. The program includes training hosts in various aspects of tourism service provision, from hospitality management to cultural presentation (34, 35).

The interaction between community engagement capacity building and other components catalyses a holistic and sustainable tourism model. Effective governance in places like

Sauraha integrates local insights into strategic planning, aligning development with community aspirations. This engagement fosters cultural preservation, enabling locals to authentically present their heritage, as seen in the Maori tourism initiatives in New Zealand, where cultural experiences are rooted in deep community knowledge and participation. These initiatives demonstrate the importance of local capacity in enhancing economic, cultural and environmental objectives. Furthermore, community engagement in New Zealand has facilitated sustainable practices and quality service delivery, proving essential for data-driven decision-making and equitable technology use in tourism (34, 35). This interconnectedness within the SCBT-DIF framework exemplifies a sustainable, inclusive tourism ecosystem, underscoring the transformative power of community engagement and capacity building in global tourism landscapes.

Cultural Preservation and Promotion

Cultural Preservation and Promotion are key in maintaining and showcasing the unique cultural heritage of communities, ensuring that tourism development respects, celebrates and utilises this heritage for sustainable growth. In George Town and Melaka, Malaysia, recognised as UNESCO World Heritage Sites, concerted efforts have been made to preserve and promote their rich cultural legacy through initiatives like restoring historic buildings and organising cultural festivals. These efforts not only enhance the local identity and pride but also attract tourists seeking authentic cultural experiences, thus contributing to the local economy and ensuring the authenticity of the cultural heritage (36, 37). Stone Town in Zanzibar is a UNESCO World Heritage site known for its rich cultural heritage, including Swahili architecture and historical sites. Efforts to preserve this cultural heritage are integrated with tourism development, including restoration projects and cultural tours that provide income for local communities (34, 35).

Integrating Cultural Preservation and Promotion with other components like Governance and Strategy, Community Engagement and Economic Development underscores a comprehensive approach to sustainable tourism. Effective governance in these Malaysian cities ensures that cultural strategies are aligned with broader sustainability goals, enhancing community well-being. Furthermore, such preservation efforts are intricately linked with environmental stewardship, as seen in other global examples like the Maasai communities in Kenya, where cultural practices are entwined with conservation efforts, safeguarding cultural and natural heritage (34, 38, 39). These examples highlight the essential role of cultural preservation in enriching tourist experiences and contributing to sustainable economic and environmental objectives, illustrating the successful application of SCBT-DIF principles in fostering a holistic and sustainable tourism model.

Economic Development and Marketing

This strategic component entails crafting and promoting tourism products and services that provide livelihoods, enhance local communities' economic standing and distribute tourism benefits equitably. Estonia's e-Estonia initiative exemplifies this approach, where the integration of digital solutions like e-marketing and online booking platforms has revitalised rural tourism, making it more accessible to tourists and thereby stimulating local economic development. Tuscany's agriturismo model is a quintessential example of how agriculture and tourism can be interwoven to create sustainable economic growth (34, 40). This approach allows visitors to experience rural life in Italy firsthand, staying on farms, participating in agricultural activities and enjoying locally produced food and wine. Agritourism provides additional earnings for farmers and supports the conservation of Tuscany's rural heritage and farming customs.

It aligns with the principles of the SCBT-DIF by promoting cultural sustainability, supporting local economies and offering tourists authentic experiences deeply rooted in the community and its heritage. The efficacy of Economic Development and Marketing is amplified through its integration with other components, ensuring a holistic and sustainable tourism strategy. For instance, aligning with Governance and Strategy sets the foundation for inclusive growth, while Community Engagement and Capacity Building ensure that locals are integral to developing and promoting tourism offerings. In places like Rwanda, the development of gorilla trekking as a premium tourism product has successfully

harnessed cultural and environmental assets, boosted economic growth and promoted conservation (41, 42). This strategy enhances the tourism experience, driving satisfaction and repeat visits, supported by data-driven insights for market alignment and leveraging ethical digital marketing to broaden reach and inclusivity. Together, these elements underscore a comprehensive strategy where economic development in tourism is sustainably managed, community-focused and digitally enhanced.

Environmental Stewardship

Environmental sustainability encompasses adopting sustainable practices like biodiversity conservation, waste reduction and the sustainable use of resources, integrating these practices across the tourism spectrum. Examples of this commitment include Malaysia's Taman Negara National Park, where regulated tourism activities, conservation research and educational initiatives highlight the importance of preserving natural diversity (42). Similarly, Costa Rica's dedication to eco-tourism, with its network of eco-lodges and sustainable tour operations, underscores a national commitment to environmental stewardship, showcasing how tourism can actively contribute to conservation and sustainability (43). The integration of Environmental Stewardship with other components of the SCBT-DIF ensures a multifaceted approach to sustainable tourism. Governance and strategy provide the framework for implementing environmentally sound practices, while community engagement and capacity building empower local inhabitants to advocate for and participate in environmental conservation.

Cultural preservation is enriched through eco-cultural tourism, linking the environment and cultural heritage to offer a holistic tourism experience. Regarding economic development, eco-tourism initiatives generate income and promote environmental awareness, as seen in destinations like the Galápagos Islands, where tourism is intricately linked to conservation efforts (44, 45). Enhancing the tourist experience through education about local ecosystems, as practised in regions like the Amazon Rainforest, further emphasises the role of environmental stewardship in tourism. Utilising data for informed decision-making and adopting ethical technology for environmental monitoring are other key aspects that complete the framework's approach to integrating environmental stewardship into community-based tourism, creating a sustainable and enriching experience for all stakeholders involved.

Experience Enhancement and Service Delivery

Experience Enhancement and Service Delivery are critical for providing high-quality, accessible and sustainable tourism experiences that resonate with visitors and benefit local communities. These elements focus on refining the quality of tourism services, ensuring memorable and authentic engagements with the destination's cultural and natural assets. For example, traditional tea ceremonies and cultural tours in Kyoto, Japan, are meticulously designed to offer deep cultural immersion while supporting local artisans and cultural heritage (34). Similarly, in South Africa's community-based lodges, tourists receive an authentic safari experience that educates them about local conservation efforts and the importance of biodiversity (34). The effectiveness of Experience Enhancement and Service Delivery is bolstered through its integration with other SCBT-DIF components. Governance and strategy provide the framework for maintaining high service standards. At the same time, community engagement ensures that these services evolve to meet the needs and expectations of tourists and locals.

This approach is mirrored in initiatives like those in Bhutan, where tourism is carefully managed to ensure cultural authenticity and environmental sustainability, aligning with the country's broader development philosophy of Gross National Happiness. Economic development benefits from these enhanced experiences, drawing tourists and promoting local businesses, as seen in the successful eco-tourism models of Costa Rica, where visitor experiences are tightly integrated with conservation and community welfare. Through commitment to environmental stewardship, cultural preservation and ethical use of technology, the SCBT-DIF ensures that tourism development is economically beneficial and socially and environmentally responsible, creating a comprehensive and sustainable

approach to enhancing tourist experiences worldwide.

Data-driven Decision Making

Data-driven decision-making in this framework underscores the significance of harnessing data to steer tourism initiatives' planning, development and management toward sustainability and effectiveness. By collecting, analysing and acting upon data, stakeholders can make informed decisions that enhance the tourism experience and contribute to the long-term viability of tourism projects. Examples of this approach include visitor feedback systems in Singapore's Gardens by the Bay, which inform ongoing improvements and sustainability initiatives and Barcelona's use of tourism data to manage visitor flow and reduce the impact on historical sites, ensuring cultural preservation and community well-being (46).

Integrating Data-Driven Decision Making with other SCBT-DIF components establishes a comprehensive ecosystem where data underpins all aspects of tourism development. For instance, in New Zealand, data analysis supports community engagement by involving local Maori tribes in creating culturally respectful and sustainable tourism experiences. Similarly, in Iceland, environmental data guide the development of eco-tourism practices, balancing visitor needs with conservation priorities. Economic strategies in regions like Tuscany, Italy, benefit from market analytics to promote agro-tourism that supports local agriculture and sustains rural communities. Through these interconnections, data-driven practices enhance tourism's economic and environmental aspects and contribute to preserving cultural heritage and improving the quality-of-service delivery, ensuring tourism development is aligned with sustainability, equity and community empowerment.

Ethical and Equitable Technology Use

This approach entails making digital tools accessible and beneficial to all community members while respecting data privacy and cultural integrity. During the COVID-19 pandemic, Malaysia introduced virtual tourism experiences to continue engaging tourists with local culture and destinations (47, 48). This initiative demonstrated how technology could ethically and equitably be used to maintain economic benefits for local communities and cultural institutions. In the Middle East, countries like Jordan have embraced this by offering virtual reality tours of archaeological sites like Petra, allowing global access to cultural heritage while preserving the physical integrity of the sites and distributing tourism revenue more broadly.

The integration of ethical technology use with other SCBT-DIF components forms a cohesive strategy for sustainable tourism development. For example, in Dubai, United Arab Emirates, innovative tourism initiatives harness technology for sustainable urban development, enhancing visitor experiences through digital services while ensuring that the local economy and cultural heritage are preserved and promoted (49). Similarly, in Oman, digital platforms showcase lesser-known natural and cultural sites, driving visitor traffic to these areas in a controlled manner that supports conservation and local business (50). These examples highlight how ethical and equitable technology use, underpinned by strong governance, community engagement and strategic marketing, can lead to more sustainable, inclusive and culturally respectful tourism practices, setting a benchmark for other regions to follow.

Implementation Phases

The Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF) implementation is sequenced into phases that actualise the integration of sustainability principles and digital innovation in community-based tourism as depicted in Figure 2. The phases provide a systematic route to implementing the conceptual dimensions of the framework into tangible actions while facilitating implementation responsiveness to local contexts and community needs.

Phase 1: Assessment and Planning

Phase 1, Assessment and Planning, prepares the contextual baseline for SCBT- DIF imple-mentation, emphasising the assessment of existing local environments and aligning tourism development strategies on local community needs and aspirations. The assessment covers existing tourism resources, digital infrastructures, cultural and environmental resources and current community participation levels. The stakeholder engagement process is performed to establish local priorities, concerns,

expectations and future tourism objectives. It follows that the stakeholders' inputs inform the development of a strategic plan to delineate the framework's vision, objectives and implementation priorities to ensure that the proposed initiatives are consistent with sustainability principles, satisfy local needs and produce significant community impacts.

Phase 2 focuses on strengthening the capabilities of the local communities through appropriate skills and infrastructure improvement to promote sustainable, technology-driven tourism. This phase is designed to fortify local abilities via training and educational sessions on digital literacy, entrepreneurship and sustainable tourism practices to guarantee community readiness for beneficially engaging in tourism-related activities. The addition of infrastructure improvement or initiation of sustainable tourism endeavours is contingent on the challenges or impacts tourism has on the community in question. This stage underscores the use of digital technology, such as establishing digital platforms for information exchange and marketing and enhancing internet connectivity to augment or create tourism infrastructure. These actions ascertain that the progress of tourism is resilient, inclusive and future proof.

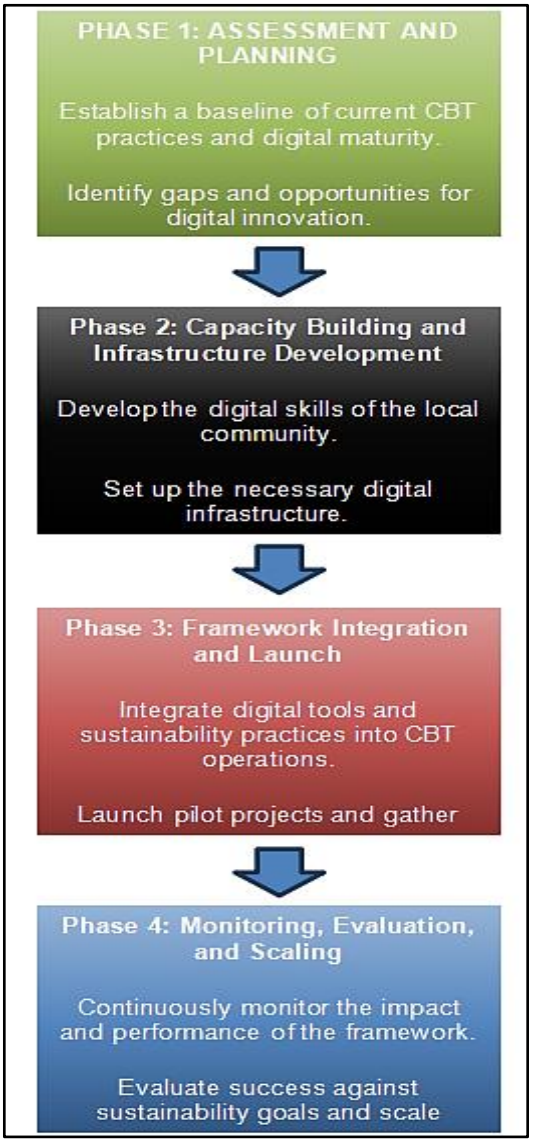


Figure 2: Implementation Phases

Phase 3 focuses on the Framework Integration and Launch of the Sustainable Community-Based Tourism Digital Innovation (SCBT- DIF) Framework, which focuses on implementing the plan within the local tourism system. The primary goal is to implement all the predetermined components and ensure seamless integration into community tourism projects. This phase

starts with executing plans like launching digital marketing, initiating sustainability programs and promoting unique cultural heritage. It also stresses persistent community engagement, ensuring local stakeholders' continued involvement, feedback provision and adaptive framework customisation as necessary. This collaborative technique is fundamental in ensuring the long-term success and pertinence of the initiative. It also reiterates the needs tailored to the participation and the asset-based nature that recognise the values of the community and emphasise collaboration.

Phase 4, Monitoring, Evaluation and Scaling, seeks to appraise the SCBT-DIF results, demonstrating continuous relevance and effectiveness. The goal is to evaluate tourism interventions impacts and identify adaptive approaches to improve sustainable and digitally enabled tourism results. It demands the formulation of monitoring and evaluation strategies to monitor the advancements towards the goals and sustainability metrics. The next step is data gathering and analysis to examine tourism interventions' economic, environmental, cultural and social impacts. After data analysis, essential modifications are implemented and successful options are widened to assist numerous economies and reinforce the initiative's prolonged sustainability.

Evaluation and Feedback Loop

The Evaluation and Feedback Loop is the adaptative mechanism of the Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF) that enables continuous learning, modification and improvement of its implementation, departing from the conception of its implementation processes as linear and leading to the understanding that priority issues for the community, context and other stakeholders and tourism implications and technological capacity may change over time. The evaluation process hence considers the need to systematically assess the performance of implemented strategies, collect stakeholder sentiments and utilise the evidence to inform subsequent planning and implementation decisions.

Evaluation uses quantitative and qualitative information regarding relevant economic, social, environmental, technological, legal and ethical metrics. Similar to past studies, observed results are viewed through the lens of their intended targets to determine performance gaps/outcomes, emerging challenges and drivers of effectiveness and ineffectiveness. The same process also allows the systematic consideration of interdependencies between various interventions and the reality that some results may take longer than expected to emerge. The evidence will inform tourism planners, policymakers, community stakeholders and service providers in terms of maintaining, modifying, enhancing, or discontinuing the various strategies.

Although this will be a recursive process, the evaluation insights and stakeholder feedback will be integrated into the SCBT-DIF's planning and implementing operations. The feedback loop will thus enhance the ability to adapt the strategies to the context-sensitivity and align the tourism initiatives to the community priorities, objectives of sustainability and changing tourism conditions.

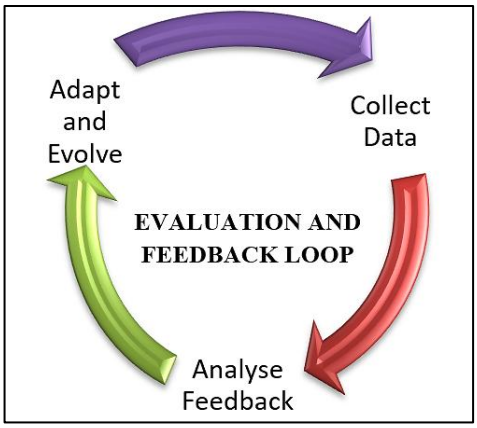


Figure 3: Evaluation and Feedback Loop

The evaluation process in adaptive evaluation of SCBT-DIF is illustrated via the Evaluation and Feedback Loop denoted by Figure 3. Feedback collection is a crucial part of the development of the tourism sector, geared towards capturing the stakeholders' opinions and experiences. The primary goal of feedback is to obtain essential insights from tourists, members of the indigenous community and other involved stakeholders. It ensures that tourism projects are continually enhanced, inclusive and responsive. The feedback collection process is based on collection through various methodologies, such as online platforms, focus group discussions, surveys and interviews. Moreover, it highlights the essence of maintaining consistent and open feedback loops, allowing stakeholders to share their concerns, suggestions and opinions freely. The inclusive approach ensures that tourism plans align with the needs and expectations of the most affected people to enhance the well-being and economic development of the local community.

Loop (Iterative Process) is essential for ensuring a progressive and adaptive approach to tourism planning and decision-making by continuously integrating assessment findings and input from the stakeholders. The fundamental idea is to promote a culture of continuous improvement and innovation when implementing tourism projects. The process starts with a regular review of assessment findings and stakeholder feedback to evaluate the strengths and limitations of ongoing strategies. Drawing from these reflections, improvements and modifications are enacted to refine administrative initiatives and methods for improved sustainability and efficacy. Ultimately, the cycle concludes with renewed engagement with the community and stakeholders, whereby any changes or modifications are shared, thus confirming that the adaptations address their evolving expectations and needs. This feedback-attuned loop is vital for keeping the community's confidence and keeping the tourism program pertinent over time.

The Evaluation and Feedback Loop is intrinsically linked to all components of the SCBT-DIF, providing a dynamic mechanism that underpins the framework's effectiveness and relevance. By systematically incorporating evaluation and feedback, the SCBT-DIF remains adaptable, responsive and aligned with the principles of sustainable and community-based tourism, ensuring that the initiatives meet the current needs of the community and stakeholders and are resilient to future challenges and opportunities. In essence, the Evaluation and Feedback Loop acts as the connective tissue of the SCBT-DIF, enabling a cyclical learning, adaptation and growth process that continuously enhances the quality and sustainability of community-based tourism initiatives.

Discussion

Understanding of the Proposed Framework

The SCBT-DIF is in line with previous studies that identify community involvement as a critical component of sustainable community-based tourism development. Existing research has also identified local participation, equitable engagement and community benefits as vital components which strengthen the sustainability of tourism initiatives (2, 14–16, 27). The proposed framework aligns with these propositions, but furthers the concepts from community involvement to include governance, cultural preservation, economic development, environmental stewardship, service delivery, data-driven decision-making and responsible technology. This broad integration indicates that sustainable community-based tourism relies on the interaction between institutional, community, sustainability and technological elements instead of the contribution of one element in isolation.

The emphasis on governance and community capacity are also aligned with more previous research on institutional arrangements, social capital, community-level decision-making and stakeholder coordination in community-based tourism (22, 23). However, existing studies have mainly focused on these elements by examining the perspective within specific tourism destinations or particular aspects of tourism development. The SCBT-DIF extends this viewpoint by portraying governance and community capacity as the foundational mechanisms (i.e., the underlying drivers) which influence the implementation of other dimensions in the framework. This distinction is particularly relevant across destinations where

institutional capacity, stakeholder relationships and community involvement may fluctuate.

The treatment of digital innovation in the framework supports and extends the previous research literature. Prior studies have documented the role of digital technologies in tourism marketing, visitor engagement, entrepreneurship, information dissemination and destination management (10–13, 24–26). Further, the SCBT-DIF is consistent with these findings but does shed light on digitalisation beyond the domain of a promotional or service-delivery tool and identifies it with regards to community empowerment, data-driven decision-making, monitoring, continuous evaluation and adaptive management in tourism. This broader role is critical because the potential benefits of digitalisation may differ based on the context of local digital infrastructure, technological skills, resource accessibility and institutional readiness. Therefore, digital initiatives that are effective in technologically advanced destinations may require adaptation in rural, remote, or under-resourced community-based tourism contexts.

The sustainability dimensions included in the SCBT-DIF are aligned with current studies that link community-based tourism with economic benefits, cultural preservation, environmental protection and community resilience (33–35, 38). Conversely, the framework distinguishes itself from the aforementioned approach because it systematically addresses the economic, cultural, environmental and technological aspects of tourism in an integrated implementation process. This differentiation is critical because tourism destinations differ in resource endowments, cultural context, environmental pressure, market access and community priorities. Therefore, resources and operational considerations may vary by tourism destination, which explains why some dimensions of sustainable tourism are emphasised in some but unobtainable in others.

Finally, the implementation phases and the evaluation and feedback loop extend previous literature findings by conceptualising sustainable community-based tourism as a more adaptive and dynamic process, rather than a static approach. The SCBT-DIF takes into account that community priorities, visitor expectations, tourism markets, institutional conditions and technological capabilities are dynamic and context-based and likely to change. Continuous monitoring, therefore, provides the evidence on the effectiveness that forms a crucial part of the strategies implemented, while stakeholder feedback informs the necessary changes and adjustments. Therefore, the proposed framework provides a process-oriented conceptualisation of sustainable community-based tourism, identifying integration, implementation, evaluation and adaptation as interconnected processes rather than as separate or coinciding activities.

Theoretical Contribution

As the SCBT-DIF generates new knowledge regarding the interplay of sustainability, community participation and digital innovation within a comprehensive community- based tourism construct, it represents a groundbreaking stride in the academic community. Indeed, previous research tended to isolate or, at best, delimit the areas of community participation, sustainable tourism and digital transformation into subcomponents rather than viewing them as parts of the broader experience economy continuum. Specifically, SCBT-DIF expands the influence of SCBT-DIF beyond the mere identification of components or pillars to clarify how institutional, participatory, sustainability-oriented and digitally enabled dimensions combine to foster community-based tourism development.

Specifically, governance and strategy underpin the institutional platform for implementation, while community engagement and capability building enhance local participation and implementation competencies. Cultural heritage, human capital and ecological sustainability are central sustainability dimensions. Experience enhancement, data-driven decision-making and responsible and equitable technology utilization are supportive mechanisms that integrate tourism management and service delivery. Implementation sections depict these dimensions in action and describe how they are implemented in practice. Finally, the evaluation and feedback loop incorporate continuous learning and adaptation to changing community priorities and tourism conditions. Through this integrative and process-oriented lens, SCBT-DIF engenders greater understanding among scholars into how digital innovation can spur tangible economic,

social, cultural and environmental benefits across community-based tourism destinations.

Practical and Policy Implications

The SCBT-DIF provides several implications for practitioners involved in tourism planning, destination management, local authorities, community-based tourism organisations and policymakers. First, prior to the introduction of digital and sustainability interventions, a systematic assessment of local conditions should be performed. This should consider community priorities, existing tourism products, digital connectivity, infrastructures, institutional capacity, local skills, environmental constraints and community readiness to embrace the suggested initiatives. Such an assessment can help facilitate local needs and ensure that technology interventions are proposed to solve locally identified problems rather than introduced as externally defined technology prescriptions.

Second, the introduction of digital technology should be accompanied by capacity development. This will help to equip local communities with the necessary skills and knowledge in digital literacy, tourism management, entrepreneurship, service delivery, data use and sustainable management of resources. Adaptation of capacity development programs to current knowledge preparation and technology access will help to guarantee that digitalisation does not inadvertently exclude technology-nonendowed individuals or groups from technology deployment initiatives. It is also important to engage local communities in all stages of the project implementation such as planning, decision-making, monitoring and evaluation.

Third, the framework can advocate for the gradual or staged implementation of the digital technology deployment initiatives. Instead of introducing a wide range of digital and sustainability interventions at the same time, tourism destinations can first implement smaller scale or pilot interventions, which can be tested and analysed before implementing them at a broader scale. The experience gained from earlier applications can inform the following interventions regarding adjustments required, allocation of resources and scale of interventions. Notably, the evaluation and feedback loop of the SCBT-DIF are critical because they can aid stakeholders in identifying interventions that work, those that need adjustments and whether to address emerging community or sustainability issues.

Fourth, the potential for implementing community-based digital tourism interventions can be enhanced by improvements in the enabling environment by policymakers and supporting organisations. Key areas include the affordability and reliability of digital connectivity, access to a requisite technological infrastructure, representation of the community in tourism governance, data privacy and responsible data use, equitable distribution of tourism benefits and financial or technical support for community-driven initiatives. Moreover, public agencies, private sector organisations, non-governmental organisations and tourism associations can also support implementation by providing funding mechanisms, technical assistance, knowledge-sharing platforms and collaborative models for monitoring.

Finally, it is important to note that while the SCBT-DIF presents guidelines for action, it should be regarded as a context-sensitive framework rather than a one-size-fits-all approach. The tourism destinations vary in terms of their institutional capacity, cultural values, environmental conditions, market access, infrastructure and technological readiness. Therefore, the process of implementation should be modified by local conditions while the main emphasis on community engagement, sustainability, responsible technology application and constant evaluation should prevail. This way, the framework can help to create community-driven, the technology-enhanced tourism development adherent to local conditions and able to keep pace with changing community needs in a sustainable and responsible way.

Implications for Stakeholders

For local communities, the framework offers a chance for people to be more engaged in tourism planning, better advocate for promote local products and cultural aspects and attain improved economic benefits from tourism activities. But the local communities should be engaged in a participative way in the decision-making process to integrate digital innovation in

a way that does not displace local ownership nor increase inequalities in the access to tourism.

For tourism professionals and destination managers, the framework displays a pathway toward developing tourism products and marketing that are more responsive, inclusive and sustainable. Digital platform can help tourism professionals to better market their products, communicate with visitors, deliver services and collect feedback. The policymakers may implement the SCBT-DIF through better coordination of tourism development with social, economic, cultural and environmental agendas. Tourists are aligned to benefit from improved access to information, more authenticity and more awareness regarding responsible tourism.

Limitations and Future Research

While this research article contributes to the conceptual knowledge, it has some limitations to be acknowledged. First, the SCBT-DIF is a conceptual framework and has not been empirically tested in a particular tourism destination or community setting. Hence, the relationship among its dimensions and implementation phases should be verified through empirical studies. Second, community-based tourism occurs in various socio-economic, cultural, institutional, environmental and technological contexts. Therefore, the applicability and relevance of the components of the framework might be different in various destinations, particularly those with different levels of digital readiness, infrastructure, institutional support and access to technology. Third, since the framework was developed based on a rigorous synthesis of the relevant literature and exemplary tourism practices, its scope is constrained by the literature and contexts referred to in the process of conceptual development. Lastly, the rapid development of digital technology may be required to revise the framework periodically to meet the new technological opportunities, risks and ethical issues.

Future studies should investigate and validate the SCBT-DIF through empirical studies in various community-based tourism settings across the world. Quantitative studies should assess the relationships in the framework dimensions and their impact on sustainability, community engagement, tourism performance and visitor experience; while qualitative work based on discussions with local communities, tourism operators and policymakers, will provide important insights into the contextual implementation challenges. Comparative studies across destinations would further assess whether specific components of the framework need to be modified for varying socio-economic and institutional environments. Longitudinal research would contribute further to the process of evaluating how digital interventions and sustainability outcomes may develop over time. This empirical application conventionalizes the SCBT-DIF as a tool for testing, refining and generalizing it for policy and practice.

Conclusion

The Sustainable Community-Based Tourism Digital Innovation Framework (SCBT-DIF) embodies a comprehensive approach to revitalising and sustaining tourism through community engagement, digital innovation and sustainable practices. Starting with the core components of CBT, we delved into governance and strategy, community engagement, cultural preservation, economic development, environmental stewardship, experience enhancement, data-driven decision-making and ethical technology use. These elements form the backbone of a framework designed to leverage the unique strengths and meet the specific needs of local communities while ensuring tourism remains a beneficial, enriching and sustainable activity. In implementing this framework, we outlined phases from assessment and planning, capacity building and infrastructure development, integration and operationalisation, monitoring, evaluation and scaling. These phases ensure the framework's application is systematic, responsive and adaptable to changing conditions and needs, allowing continuous improvement and growth.

The Evaluation and Feedback Loop, integral to the SCBT-DIF, emphasises the importance of ongoing assessment and responsive interaction among all stakeholders. This iterative process ensures the alignment of tourism activities with strategic goals and community values and fosters an environment of learning and adaptation. The implications of the SCBT-DIF are far-reaching, affecting local communities, tourists and

policymakers. For local communities, it offers pathways to sustainable economic development, cultural preservation and environmental stewardship. Tourists benefit from enriched and authentic experiences grounded in sustainability and ethical engagement. Guided by the framework, policymakers are equipped to develop and implement strategies that promote sustainable, community-based tourism, ensuring long-term benefits and the resilience of tourism destinations. In conclusion, the SCBT-DIF stands as a model for future tourism development, advocating for an integrated approach that harmonises economic objectives with social and environmental responsibilities. As by integrating sustainability and digital innovation into the fabric of community-oriented tourism, the conceived framework paves way for a more sustainable, inclusive and vibrant tourism industry that advocates for and safeguards the distinctive traits of local communities while advancing a more fair and sustainable international tourism environment.

Abbreviations

AI: Artificial Intelligence, CBT: Community-Based Tourism, DMO: Destination Management Organisation, ICT: Information and Communication Technology, SDGs: Sustainable Development Goals.

Acknowledgment

The author declares that no funding was received to support the development of this research.

Author Contributions

Nur Fadzlunnisaa Wakimin: Conceptualisation, Methodology, Investigation, Writing - Original Draft, Normah Awang Besa, Affendy Hassan, Thamer A Thabet, Aida Nabihah M Khatta, Dayang Affizzah binti Awang Marikan: Literature Review, Validation, Writing - Review and Editing, Johnson Sinaga: Data Interpretation, Validation and Review And Editing, Silvi Asna Prestianawati: Literature Review, Investigation, Writing - Review & Editing, Bob Foster: Supervision, Validation, Writing - Review and Editing, Jumadil Saputra: Conceptualisation, Methodology, Supervision, Validation, Writing -Review and Editing. All authors read and approved the final version of the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

No new data were created or analysed in this study. All information used in developing the conceptual framework was obtained from the published literature cited in the manuscript.

Declaration of Artificial Intelligence (AI) Assistance

Generative artificial intelligence tools including ChatGPT (OpenAI) were utilized to aid language polishing, sentence restructuring and clarity and readability improvement during the revision of the manuscript. AI-assisted tools were also used to help support the visual design and presentation of Figure 1. Data analysis was not performed using artificial intelligence. All AI-assisted outputs were critically evaluated, verified and edited by the authors. The authors take full responsibility for the originality, interpretation, accuracy, integrity and final content of the manuscript.

Ethics Approval

Ethical approval was not required for this study because it is conceptual in nature and did not involve human participants, personal data, surveys, interviews, or experimental procedures.

Funding

This research received no specific grant from any funding agency.

References

1. Lee TH, Jan FH. Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability. Tour Manag. 2019;70:368-80. https://doi.org/10.1016/j.tourman.2018.09.003
2. Han H, Eom T, Al-Ansi A, *et al.* Community-based tourism as a sustainable direction in destination development: An empirical examination of visitor behaviors. Sustainability. 2019;11(10):2864. https://doi.org/10.3390/su11102864
3. Pasanchay K, Schott C. Community-based tourism homestays' capacity to advance the Sustainable Development Goals: A holistic sustainable livelihood perspective. Tour Manag Perspect. 2021;37:100784. https://doi.org/10.1016/J.TMP.2020.100784
4. Villacé-Molinero T, Fuentes-Moraleda L, Orea-Giner A, *et al.* Service learning via tourism volunteering at university: skill-transformation and SDGs alignment through rite of passage approach. Sustain Account Manag Policy J. 2025;16(4):1072-100.

https://doi.org/10.1108/SAMPJ-12-2022-0639
5. Freitag AM, Camargo-Borges C. The Digital Bow: Exploring the Potential of Digital Presence for Indigenous Community-Based Tourism in Brazil. Tour Plan Dev. 2024;21(6):755-72. https://doi.org/10.1080/21568316.2024.2307974
6. Tongdaeng W, Mahakanjana CN. Thai SMEs' Response in the Digital Economy Age: A Case Study of Community- Based Tourism Policy Implementation. Soc Sci. 2022;11(4):180. https://doi.org/10.3390/SOCSCI11040180
7. Cooper E. Making sense of sustainable tourism on the periphery: perspectives from Greenland. Tour Geogr. 2023;25(5):1303-21. https://doi.org/10.1080/14616688.2022.2152955
8. Yang Y, Wani GA, Nagaraj V, *et al.* Progress in Sustainable Tourism Research: An Analysis of the Comprehensive Literature and Future Research Directions. Sustainability. 2023;15(3):2755. https://doi.org/10.3390/SU15032755
9. Schönherr S, Peters M, Kuščer K. Sustainable tourism policies: From crisis-related awareness to agendas towards measures. J Destin Mark Manag. 2023;27:100762. https://doi.org/10.1016/J.JDMM.2023.100762
10. Gretzel U, Sigala M, Xiang Z, Koo C. Smart tourism: foundations and developments. Electron Markets. 2015;25:179-188. https://doi.org/10.1007/s12525-015-0196-8
11. El Archi Y, Benbba B, Kabil M, *et al*. Digital Technologies for Sustainable Tourism Destinations: State of the Art and Research Agenda. Adm Sci. 2023;13(8):184. https://doi.org/10.3390/ADMSCI13080184
12. Schönherr S, Eller R, Kallmuenzer A, *et al*. Organisational learning and sustainable tourism: the enabling role of digital transformation. J Knowl Manag. 2023;27(11):82-100. https://doi.org/10.1108/JKM-06-2022-0434
13. Rahmadian E, Feitosa D, Virantina Y. Digital twins, big data governance and sustainable tourism. Ethics Inf Technol. 2023;25(4):61. https://doi.org/10.1007/S10676-023-09730-W
14. Zielinski S, Jeong Y, Kim SI, *et al*. Why Community-Based Tourism and Rural Tourism in Developing and Developed Nations are Treated Differently? A Review. Sustainability. 2020;12(15):5938. https://doi.org/10.3390/SU12155938
15. Dłużewska A, Giampiccoli A. Enhancing Island tourism's local benefits: A proposed community-based tourism-oriented general model. Sustain Dev. 2021;29(1):272-83. https://doi.org/10.1002/SD.2141
16. Krittayaruangroj K, Suriyankietkaew S, Hallinger P. Research on sustainability in community-based tourism: a bibliometric review and future directions. Asia Pac J Tour Res. 2023;28(9):1031-51. https://doi.org/10.1080/10941665.2023.2276478
17. Mayaka M, Croy WG, Wolfram Cox J. Participation as motif in community-based tourism: A practice perspective. J Sustain Tour. 2018;26(3):416-32. https://doi.org/10.1080/09669582.2017.1359278
18. Li W, Zhang Q, Liu C, *et al*. Tourism's impacts on natural resources: A positive case from China. Environ Manage. 2006;38(4):572-9. https://doi.org/10.1007/s00267-004-0299-z
19. Stone LS, Stone TM. Community-based tourism enterprises: Challenges and prospects for community participation; Khama Rhino Sanctuary trust, Botswana. J Sustain Tour. 2011;19(1):97-114. https://doi.org/10.1080/09669582.2010.508527
20. Mensah I, Afenyo- Agbe EA. Introduction: community-based tourism and community development: the prospects, challenges and trends. In: Mensah I, Afenyo-Agbe E, editors. Prospects and challenges of community-based tourism and changing demographics. Hershey (PA): IGI Global; 2022: p. xix-xxxi. https://doi.org/10.4018/978-1-7998-7335-8
21. Agyeman YB, Yeboah AO, Ashie E. Protected areas and poverty reduction: The role of ecotourism livelihood in local communities in Ghana. Community Dev. 2019;50(1):73-91. https://doi.org/10.1080/15575330.2019.1572635
22. Bello FG, Lovelock B, Carr N. Constraints of community participation in protected area-based tourism planning: the case of Malawi. J Ecotour. 2017;16(2):131-51. https://doi.org/10.1080/14724049.2016.1251444
23. Rocca LHD, Zielinski S. Community-based tourism, social capital and governance of post-conflict rural tourism destinations: the case of Minca, Sierra Nevada de Santa Marta, Colombia. Tour Manag Perspect. 2022;43:100985. https://doi.org/10.1016/j.tmp.2022.100985
24. Ngo T, Lohmann G, Hales R. Integrating the third way and third space approaches in a post-colonial world: marketing strategies for the business sustainability of community-based tourism enterprises in Vietnam. Curr Issues Tour. 2020;23(15):1914-32. https://doi.org/10.1080/13683500.2019.1694494
25. Leung D, Law R, van Hoof H, Buhalis D. Social Media in Tourism and Hospitality: A Literature Review. J Travel Tour Mark. 2013;30(1-2):3-22. https://doi.org/10.1080/10548408.2013.750919
26. Tang GN, Ren F, Zhou J. Does the digital economy promote "innovation and entrepreneurship" in rural tourism in China? Front Psychol. 2022;13:979027. https://doi.org/10.3389/fpsyg.2022.979027
27. Quang TD, Nguyen QXT, Van Nguyen H, *et al*. Toward sustainable community-based tourism development: Perspectives from local people in Nhon Ly coastal community, Binh Dinh province, Vietnam. PLoS One. 2023;18(10):e0287522. https://doi.org/10.1371/journal.pone.0287522
28. Khadaroo J, Seetanah B. Transport infrastructure and tourism development. Ann Tour Res. 2007;34(4):1021-1032. https://doi.org/10.1016/j.annals.2007.05.010
29. Agarwal S, Page SJ, Mawby R. Tourist security, terrorism risk management and tourist safety. Ann Tour Res. 2021;89:103207. https://doi.org/10.1016/j.annals.2021.103207

30. Mihalic T. Sustainable-responsible tourism discourse – Towards 'responsustable' tourism. J Clean Prod. 2016;111:461-70. https://doi.org/10.1016/j.jclepro.2014.12.062
31. Scott M. A space tourism destination: environmental, geopolitical and tourism branding considerations for New Zealand as a 'launch state'. J Sustain Tour. 2022;30(9):2240-53. https://doi.org/10.1080/09669582.2020.1817049
32. Yeoman I, Andrade A, Leguma E, *et al*. 2050: New Zealand's sustainable future. J Tour Futures. 2015;1(2):117-30. https://doi.org/10.1108/JTF-12-2014-0003
33. Nyaupane GP, Poudel S, Timothy DJ. Assessing the sustainability of tourism systems: A social-ecological approach. Tour Rev Int. 2018;22(1):49-66. https://doi.org/10.3727/154427218X152027340
34. Kunjuraman V, Hussin R. Challenges of community-based homestay programme in Sabah, Malaysia: Hopeful or hopeless? Tour Manag Perspect. 2017;21:1-9. https://doi.org/10.1016/j.tmp.2016.10.007
35. Zamzuki FA, Lola MS, Aruchunan E, *et al*. Assessing the sustainability of the homestay industry for the East Coast of Malaysia using the Delphi approach. Heliyon. 2023;9(11):e21433. https://doi.org/10.1016/J.HELIYON.2023.E21433
36. Amir S, Osman MM, Bachok S, *et al*. Socio-demographic variation on tourism expenditure in Melaka UNESCO World Heritage Area. Adv Sci Lett. 2017;23(4):2958-61. https://doi.org/10.1166/asl.2017.7618
37. Amir S, Osman MM, Bachok S, *et al*. Sustaining Local Community Economy Through Tourism: Melaka UNESCO World Heritage City. Procedia Environ Sci. 2015;28:443-52. https://doi.org/10.1016/J.PROENV.2015.07.054
38. Holland KK, Larson LR, Powell RB, *et al*. Impacts of tourism on support for conservation, local livelihoods and community resilience around Maasai Mara National Reserve, Kenya. J Sustain Tour. 2022;30(11):2526-48. https://doi.org/10.1080/09669582.2021.1932927
39. Hahn AH. Maasai online petitions. In: Hahn AH. Media culture in nomadic communities. Amsterdam: Amsterdam University Press; 2021, p.55-74. https://doi.org/10.5117/9789463723022_CH03
40. Corinto GL. Food and Gastronomic Tourism for Developing Rural Areas Around the Via Francigena in Tuscany. AlmaTourism. 2017;8(6):106-22. https://doi.org/10.6092/ISSN.2036-5195/6228
41. Muresherwa G, Makuzva W, Dube CN, *et al*. The management of mountain gorilla tourism in Uganda: Are the socio-economic benefits realised? J Transdiscipl Res S Afr. 2022;18(1):a1136. https://doi.org/10.4102/td.v18i1.1136
42. McGrew WC. Walking with gorillas: the journey of an African wildlife vet, by Dr Gladys Kalema-Zikusoka. Primates. 2023;64(5):549-50. https://doi.org/10.1007/s10329-023-01079-4
43. Carvache-Franco M, Pérez-Orozco A, Carvache-Franco W, *et al*. Motivations and their influence on satisfaction and loyalty in eco-tourism: a study of the foreign tourist in Costa Rica. Anatolia. 2022;33(3):347-61. https://doi.org/10.1080/13032917.2021.1933115
44. Díaz-Sánchez JP, Obaco M. The effects of Coronavirus (COVID-19) on expected tourism revenues for natural preservation: the case of the Galapagos Islands. J Policy Res Tour Leis Events. 2020;13(2):285-9. https://doi.org/10.1080/19407963.2020.1813149
45. Icaza-Alvarez D, Jurado F, Tostado-Véliz M, *et al*. Decarbonization of the Galapagos Islands. Proposal to transform the energy system into 100% renewable by 2050. Renew Energy. 2022;189:199-220. https://doi.org/10.1016/J.RENENE.2022.03.008
46. Tan KKH, Kusumo CML. Modern architectural tourism in Singapore. Int J Tour Cities. 2022;8(1):30-52. https://doi.org/10.1108/IJTC-02-2021-0032
47. Osman S. Virtual tourism experience: A tale from Malaysia. In: Hassan A, editor. Technology application in tourism in Asia. Singapore: Springer; 2022, p. 283-94. https://doi.org/10.1007/978-981-16-5461-9_17
48. Inam G, Ullah I, Singh J, *et al*. Digital tourism: a possible revival strategy for Malaysian tourism industry after COVID-19 pandemic. Electron J Bus Manag. 2020;5(2). https://doi.org/10.65136/ejbm.v5i2.159
49. Khan MS, Woo M, Nam K, *et al*. Smart City and Smart Tourism: A Case of Dubai. Sustainability. 2017;9(12):2279. https://doi.org/10.3390/SU9122279
50. Mathew V, Soliman M. Does digital content marketing affect tourism consumer behavior? An extension of technology acceptance model. J Consumer Behav. 2020;20(1):61-75. https://doi.org/10.1002/cb.1854

How to Cite: Wakimin NF, Besar NA, Hassan A, Thabet TA, Khatta ANM, Marikan DABA, Sinaga J, Prestianawati SA, Foster B, Saputra J. A Sustainable Community-based Tourism Digital Innovation Framework: Conceptualising Holistic Tourism Development. Int Res J Multidiscip Scope. 2026;7(4):1895-1911. DOI: 10.47857/irjms.2026.v07i04.012307