

NJABULO NDLOVU^a, PORTIA PEARL SIYANDA SIFOLO^b, NDIVHUWO TSHIPALA^c

Leveraging Online Digital Technologies for Sustainability in Community-Based Rural Tourism

Abstract. The article addresses the challenge of promoting online digital technologies in community-based rural tourism (CBRT) in sub-Saharan Africa and the region's socio-economic development. The authors explore the issue of digitalisation within the context of CBRT, which is an area that has so far received little attention. The study focuses on the efficiency and role of online digital technologies in promoting sustainable socio-economic development through CBRT initiatives. The problem is analysed in the light of ecological modernization theory and the theory of empowerment, both of which promote autonomous and digital-driven initiatives as a way of implementing sustainable socio-economic development in CBRT. The analysis is based on qualitative data collected from 22 respondents from Dinokasi (South Africa) and Binga (Zimbabwe), who participated in semi-structured, in-depth interviews. The results indicate that online digital technologies enhance CBRT sustainability and socio-economic development.

Keywords: community-based rural tourism, online digital technologies, CBRT sustainability

Article history. Submitted 2024-10-08. Accepted 2024-12-19. Published 2025-01-09.

1. Introduction

The tourism sector plays a critical role in addressing socioeconomic challenges (Woyo & Musavengane, 2023). The economic benefits generated by the sector are predicted to increase in the coming years. In Africa, the number of international tourist arrivals is projected to reach 126 million by 2030 (United Nations World Tourism Organisation, 2011). The tourism agenda, particularly in the African context, is associated with fundamental developmental programs designed to

^a Tshwane University of Technology, ndlovunj4@gmail.com, <https://orcid.org/0000-0001-5008-5469>

^b Tshwane University of Technology, SifoloPS@tut.ac.za

^c Tshwane University of Technology, TshipalaNN@tut.ac.za

improve community livelihood and limit poverty. Different national governments have decided to encourage local authorities or municipalities to undertake many community-based rural tourism projects within their jurisdictions.

Unfortunately, the efforts to promote rural socioeconomic development do not seem to be producing the expected results in the context of developing countries (Woyo & Musavengane, 2023). For instance, many CBRT initiatives are characterized by poor local governance systems, which have contributed to their current problems and made them unsustainable (Ohe, 2020). As a result, a number of these ecotourism projects have failed to improve the socio-economic situations of host communities mainly owing to the lack of their involvement in rural tourism activities (Setokoe, Ramukumba & Ferreira, 2019; Shereni & Saarinen, 2021).

These adverse developments occur in an environment endowed with vast, world-known natural resources, forest landscapes, cultural museums, and handicrafts that could potentially turn such places into very attractive tourist destinations. This explains why there are growing calls for sustainable developmental tourism initiatives that will benefit underprivileged host communities (Musavengane, 2018). Sustainable developmental tourism can take the form of conserving forestry, wildlife, and the preservation of culture and heritage places for the benefit of communities. Interestingly, CBRT-driven initiatives can lead to discoveries of other destinations, especially in poor communities in developing countries.

The visibility of CBRT initiatives undertaken by rural actors can be improved through the effective utilization of affordable online digital technologies. What CBRT and digital platforms have in common is the ability to offer personalized services that can attract and leave lasting memories for tourists (Maquera et al., 2022). These digital technologies offer many businesses, particularly SMES an opportunity to constantly interact with their customers (Ndlovu, Ochara & Martin, 2023).

The promotion of tourism has also been a priority for governments. Socio-economic initiatives in rural tourism settings require the effective utilization of affordable digital platforms such as social media, Gmail, and Google by communities. However, in many cases, these tools are used informally and in an uncoordinated manner, which leads to the dissemination of flawed, incomplete, inaccurate, and sometimes outdated information to potential clients. Similar problems also afflict established institutions such as municipalities, whose web pages often remain outdated for long periods (Ndlovu et al., 2023). This state of affairs has only exacerbated unsustainable practices due to a lack of developmental strategies and consistent campaigns that can be launched via digital technologies.

Despite several attempts by different governments to promote tourism initiatives aimed at alleviating poverty through CBRT in Africa, the situation in many cases has not improved and prospects remain gloomy. Part of the blame these poor

results can be placed on inefficiencies in the use and adoption of online digital technologies. Such inefficiencies lead to low tourist turnout. Hence, the present study aims to answer the following questions:

1. How can CBRT actors effectively use online digital technologies to enable sustainable socio-economic development of marginalised rural settings?
2. How do CBRT actors perceive the usability of online digital technologies?
3. What are the key benefits of adopting online digital technologies for CBRT actors?
4. How do digital technologies contribute to promoting sustainability in CBRT?

2. Literature Review

2.1. The Role of Community-Based Rural Tourism

The purpose of community-based rural tourism is to promote social-economic development within rural areas controlled by their inhabitants (Rosalina, Dupre, & Wang, 2021). Generally, CBRT is meant to replace traditional mass tourism, which mainly benefits the richest elites, while local communities are left impoverished and deprived of the proceeds derived from their local natural resources (Matura, 2022). CBRT is an opportunity for visitors to gain experiences associated with nature-based activities, wildlife, forestry and agricultural landscape, rural culture, heritage, sightseeing, and handicrafts (UNWTO, 2011). For some time now, CBRT has been used as a strategy for rural setting development. The goal of the strategy is to enable socio-economic growth while preserving the natural environment, culture, and heritage (Musavengane & Musakwa, 2023).

CBRT can include the likes of cultural tours, traditions, hunting, crafts centres, wildlife tracking, and heritage tourism (Maquera et al., 2022). Rural tourism helps to promote the understanding and appreciation of multicultural divides, bridging the gap between rural and urban communities (Priatmoko et al., 2021). More importantly, CBRT provides income from the sale of craft items, wild fruits, agricultural produce and the showcasing of traditional dances and wildlife tracking skills. For example, local rural communities in Zimbabwe can participate in CBRT initiatives undertaken as part of government programs such as Communal Areas Management Program For Indigenous Resources (CAMPFIRE). However, the impact of such initiatives remains relatively limited, largely because of the inefficient use of online advertising.

2.2. Sustainable Community-Based Rural Tourism

Sustainable CBRT is consistent with the sustainable development goals (SDG), especially SDG 8, which promotes “sustained, inclusive sustainable economic growth and productive employment for all” “through diversification, technological upgrading, and innovation” (Target 8.2). CBRT has been shown to contribute by stimulating socioeconomic growth, alleviating poverty, and subsequently improving living standards for rural communities (Laxmita, Setyaningsih & Purwani, 2021; Bakker et al., 2023). Sustainable development goals are embedded in the context of economic, sociocultural, leisure, and educational dimensions, which play a significant role in their implementation (Liu, Chiang & Ko, 2023; UNWTO, 2023).

The CBRT initiatives serve as an important source of economic benefits. They can create employment opportunities and ensure decent living standards to communities (Woyo & Musavengane, 2023). Rural tourism can take advantage of diverse natural resources and activities, which offer communities many business opportunities (Ngwetjana & Sifolo, 2023; Liu, Chiang, & Ko, 2023). Other benefits of CBRT initiatives include improved lifestyles, revived practice of handicrafts and local traditions, and the renewal of community identities, which are crucial in promoting and extending social exchange networks and increasing community visibility.

2.3. The Use of Online Digital Technologies in CBRT

The use of cloud-based services has become indispensable for the development of rural tourism (Suryani, 2024). Studies focusing on CBRT and cloud computing in developing countries like Zimbabwe and South Africa are limited. However, there are other studies looking at cloud computing in education in Southern Africa. For example, Mlitwa & Simbarashe (2019) identified key issues that are not adequately evident in research agendas when dealing with cloud computing such as access, connectivity, literacies, data sharing infrastructure, collaborative learning platforms (Mlitwa & Simbarashe, 2019). A study conducted by Wang, Li and Huang (2023) on cloud computing technology and big data-driven rural revitalization in China, revealed a weak link in China’s digital village construction. The same paper proposed developing a big data-driven rural revitalization governance, sharing, and monitoring platform based on cloud computing technology to promote the reshaping of rural governance patterns and to provide systematic support for the implementation of rural revitalization strategies. The present article focuses on the use of cloud-based services in CBRT in Zimbabwe and South Africa.

Cloud-based computing is used to power popular tools such as social media, Gmail, and Google. Digital platforms integrate various technologies such as geographic information systems (GIS), big data analytics, and the Internet of Things, to improve the efficiency of the digital infrastructure (Xue, 2021). They are also crucial to the achievement of Sustainable Development Goals (SDG) in CBRT, which requires the effective use of online platforms and associated technologies to facilitate access to information, shared knowledge, and experiences (Target 17.8) (UNWTO, 2023). These digital technologies are very convenient for tourists, which is why they are transforming aspirations and tourist experiences (Sifolo, 2023), thanks to their flexibility and affordability, enable greater interconnectivity of tourism destinations. (Azira et al., 2024).

South Africa has experienced a significant growth in internet access, with mobile technology playing a pivotal role. The expansion of 4G and the gradual rollout of 5G networks have enhanced connectivity, facilitating greater digital inclusion. In November 2024 MTN South Africa launched an affordable 5G smartphone priced at 2,499 rand (\$138), aiming to promote accessibility to mobile internet and encourage the transition from older network technologies to 4G and 5G (Reuters, 2024). In 2024, Zimbabwe had 5.48 million internet users, representing an internet penetration rate of 32.6% (Kemp, 2024). Social media usage was notably lower, with 2.05 million users accounting for 12.2% of the total population (Kemp, 2024). Adding to the ongoing phenomenon, the country saw some leading Telecommunications companies commissioning 2G base stations with some slowly moving to 4G/LTE base stations, indicative of the infancy digital infrastructure state (POTRAZ, 2024). These figures indicate substantial room for growth in digital connectivity and engagement.

Digital platforms make it possible for CBRT actors and micro-enterprises to market their services directly engage with potential tourists and deliver personalized experiences by giving them access to vast amounts of information about CBRT services, such as e-tour operators, e-destination, and e-hospitality. As already mentioned, despite their obvious advantages, the potential of digital information services remains largely unused in many rural settings in developing countries, and CBRT still largely relies on traditional forms of advertising such as radio, television, and word of mouth.

2.4. CBRT in the Light of Ecological Modernization Theory and Theory of Empowerment

As already mentioned, sustainable CBRT is a response to the culture of mass consumption, destruction, failing governments, and technological development, all of which contribute to the ongoing deterioration of the socio-economic environment

of rural communities (Ngo & Creutz, 2022; Azira et al., 2024). The idea of sustainable tourism comes from ecological modernization theory (EMT), which focuses on digital innovation (Spaargaren & Mol, 1992; Fisher & Freudenburg, 2001). It is regarded as a techno-economic management strategy aimed at preserving cultural and natural preservation resources (Mol & Spaargaren, 2000).

EMT emphasizes the growing significance of socioeconomic and market dynamics and the role of economic actors in the preservation of ecological resources (Julkovski et al., 2021). It suggests that CBRT sustainability issues can be resolved through digital technology-driven initiatives enhancing rural socioeconomic development. This approach is consistent with the theory of empowerment, which focuses on the process by which people, organizations, and communities gain mastery over their lives (Perkins & Zimmerman, 1995). The theory can be used to support the notion of empowering communities through autonomous involvement and collaborative participation in CBRT initiatives.

2.5. Community-Based Rural Tourism in Zimbabwe

While urban tourism in Zimbabwe receives much government support, the same cannot be said about CBRT initiatives, which are largely neglected, with some facing extinction, leaving rural communities in poverty (Musavengane & Musakwa, 2023; Shereni & Chambwe, 2024). As a matter of fact, rural poverty levels in Zimbabwe remain relatively high, for instance, approximately 83% of 70% of the country's population living in rural areas are economically marginalised (Nyathi, Ziga & Dube, 2020; Shingirirai, 2024). Despite a 18.9 percent increase in tourist arrivals from 320 592 recorded in the second quarter of 2023 to 381 293 in the second quarter of 2024 (Zimbabwe Tourism Authority, 2024), CBRT actors remain on the periphery of national tourism and are not sufficiently benefitting from government support programs to the detriment of rural communities. In the few CBRT initiatives managed by quasi-government institutions, local communities receive insignificant shares of total revenues and they are treated as passive participants (Shereni & Saarinen, 2021). This situation undermines efforts to make CBRT sustainable because some community members tend to adopt unsustainable practices thereby causing damage to ecotourism. This is confirmed by (Xue, 2021), who found that the participation in CBRT was low, owing to ineffective information dissemination, and the lack of technical talent. According to (Xue, 2021), the lack of rural digital information sharing is detrimental to sustainable practices in CBRT. In other words, there is a massive gap in digital information input by local government in rural areas.

2.6. Community-Based Rural Tourism in South Africa

The role of community-based tourism is strongly emphasised in various national policies and instruments established over the past thirty years. They provide a step-by-step approach to developing a community-based tourism venture, which helps to understand the concept of community-based tourism offers guidance on how to establish and operate commercially viable community-based tourism ventures in South Africa in urban and rural areas.

The literature includes several studies focusing on the potential of community-based tourism to drive development in rural areas (Matiku, Zuwarimwe & Tshipala, 2020). Some studies highlight CBRT's ability to generate economic benefits for local communities through job creation, income improvement, and infrastructure development (Woyo & Musavengane, 2023). Others emphasize the need for CBRT to be recognized for its role in cultural preservation, environmental protection, and community empowerment (Gohori & Merwe, 2020). Research identifies numerous challenges, such as securing funding, developing essential skills within communities, and ensuring equitable distribution of benefits (Gohori & Merwe, 2022). Hence sustainability is viewed as a key concern in the literature. A study conducted by (Agung et al., 2020) emphasizes the importance of developing CBRT initiatives that are environmentally responsible and contribute to long-term community well-being. According to (Maquera et al., 2022), collaboration between various stakeholders, including residents, government entities, and the private sector, is identified as crucial for successful CBRT initiatives (Maquera et al., 2022).

South Africa's unique history, particularly regarding land dispossession, presents an additional layer of complexity when it comes to CBRT initiatives in rural areas. Some studies explore how CBRT can address these issues and empower previously disadvantaged communities (Agung et al., 2020). In conclusion, CBRT in South Africa is seen as a promising approach to rural development but the literature emphasizes the need for thoughtful planning, collaborative efforts, and addressing historical inequalities.

3. Research Method and Data

The empirical data for this study were collected during open-ended semi-structured interviews with 22 respondents representing various CBRT initiatives and involved in working with local municipalities and local leadership. The interviewees were selected by snowball sampling. They were divided into three groups:

1. CBRT actors taking part in different forms of rural tourism,
2. community leaders such as traditional leaders and councillors,
3. members from the local municipality or local government working on community-based tourism projects in South Africa, specifically the CAMPFIRE officer in Zimbabwe.

The interviewees came from different CBRT initiatives or projects. They were further divided into 3 categories:

1. those who were not employed but were economically active within the CBRT projects,
2. those who worked or were self-employed in craft centres and other tourism-related activities,
3. those formally employed in the tourism sector. As already mentioned, the study includes data about Binga in Zimbabwe (15 interviewees) and Dinokasi in the north of the city of Tshwane in the province of Gauteng in South Africa (7 interviewees).

All interviews were conducted in July 2023.

Since the point of data saturation had been reached, the researchers decided to finish data collection after conducting 22 interviews. The choice of a cross-national comparison was motivated by the perception that the use of digital technologies contributed to increased digital space, interaction and intensification of internationalisation.

Table 1. Interview profiles

Interview ID	Age	Sex	Group	Category	Area
Inf1	35	Male	CBRT actor	2	B
Inf2	39	Male	Community leader	1	B
Inf3	37	Male	CBRT actor	2	B
Inf4	40	Male	CBRT actor	2	B

Interview ID	Age	Sex	Group	Category	Area
Inf5	38	Female	Municipal member	3	B
Inf6	43	Male	CBRT actor	2	B
Inf7	41	Female	CBRT actor	2	B
Inf8	40	Female	Municipal member	3	B
Inf9	49	Male	Community leader	1	B
Inf10	34	Male	CBRT actor	2	D
Inf11	52	Male	Municipal member	3	B
Inf12	48	Female	CBRT actor	2	B
Inf13	42	Female	CBRT actor	2	B
Inf14	51	Female	CBRT actor	2	B
Inf15	43	Female	CBRT actor	2	D
Inf16	53	Male	CBRT actor	2	B
Inf17	23	Male	CBRT actor	2	D
Inf18	29	Female	CBRT actor	2	D
Inf19	24	Male	CBRT actor	2	D
Inf20	34	Male	CBRT actor	2	D
Inf21	36	Male	CBRT actor	2	B
Inf22	26	Male	CBRT actor	2	D

(a) Category Key: 1 — Not employed but economically active in CBRT, 2 — Self-employed in CBRT, 3 — Employed in Municipal/tourism projects; (b) Area Key: Binga (B), and Dinokasi (D)

Source: Authors

Table 2. Interview questions

Research questions	In-depth interview questions
RQ 1	[How user-friendly are the identified digital platforms/technologies in CBRT?]
RQ 2	[Could you explain what benefits CBRT players derive from using digital platforms and associated technologies?]
RQ 3	[What are the roles of digital platforms in promoting sustainable CBRT?]

Source: Authors

The data was professionally analysed using Atlas.ti software version 9 to produce a comprehensive observation report on the views expressed by the respondents.

4. Results and Discussion

Table 3 summarises the findings from the thematic analysis regarding the usability of digital platforms, the benefits they offer to CBRT actors, and the role played by technology in promoting CBRT sustainability.

Table 3. Thematic analysis summary

Theme	Sub-theme	Findings
Digital platform navigation	Ease of use	Some CBRT actors found digital platforms (social media) and related technologies usable, while others found it difficult to use digital technologies for business purposes.
	Content integration skills	Many CBRT actors also found it difficult to combine online content, videos/pictures on social media platforms
CBRT benefits from using digital platforms	Revenue generation	All CBRT actors acknowledged that digital platforms have attracted many foreign currency-spending visitors through enhanced visibility and online marketing.
	Job creation	The influx of tourists enables more youths to reengage in income-generating activities.
	Global market penetration	Reliance on social media such as Facebook, Instagram, and WhatsApp enhances global reach and tourist engagement and helps to market CBRT initiatives globally. CBRT actors share their cultures, projects, and initiatives directly with global markets.
	Middleman elimination	All CBRT actors acknowledged that they should market their initiatives on their own to increase the benefits.
	Social cohesion	Digital technologies enhance communication, thereby bringing together members of the community.
	Attracting tourists	Experiences shared online attract many local and international clients, thereby improving CBRT initiatives' performance.
Role of digital platform promoting CBRT sustainability.	Preservation of resources	All CBRT actors acknowledged that the benefits derived from CBRT initiatives gave the community a sense of conserving culture and natural resources. Thus, digital pictures and videos of the local culture and natural resources have helped to create a new tourism destination in their community, which has become a source of pride for the community.
	Socio-economic development	Digital marketing of rural tourism has attracted more tourists thereby creating more employment opportunities for local communities.

Source: Authors

Most of the interviewees perceive digital platforms as tools for communication and marketing. They use social media, such as Facebook, WhatsApp, Instagram, and TikTok, as well as other digital tools like Google, Gmail, and various cloud-based applications. These technologies and online data can be used to conduct marketing campaigns, exchange resources, and improve the efficiency of product and service sales. All interviewees agreed that digital technologies are instrumental in enabling global connectivity, thereby promoting rural socio-economic development. Responses given by the interviewees from Dinokasi suggest that they

have more experience and are better at using digital technologies compared to the interviewees from Binga.

- *Using digital technologies and their applications has promoted an increase in tourist arrivals, and I can see that more recreational facilities were opened. We now have more restaurants run by locals here. (interviewee 17)*

4.1. Ease of Use

The interviewees said that they used online digital technologies for communication purposes to support their rural tourism businesses. Though some of them found these digital platforms simple to use, their use for business purposes remains limited. However, reliance on Facebook, radio, television, and WhatsApp reflects minimum engagement with a wide range of capable digital platforms. Some CBRT actors with little digital skill would delegate the role to younger ones. However, while acknowledging their usefulness and actually using some digital services particularly social media, some interviewees were not able to use them effectively for business purposes because of age and lack of digital infrastructural development. The following comments reflect the general sentiments expressed during the interviews:

- *Digital platforms are easy to access and everyone understands it. (Interviewee 11).*
- *Digital platforms such as social media are user-friendly though it has their challenges, however, remain very effective when it comes to marketing and advertising purposes, and many people world over have turned to these platforms. (Interviewee 13)*

These views confirm the fact that digital technologies have become ubiquitous even in rural areas, where many inhabitants own mobile or smartphones (Ndlovu et al., 2023).

4.2. Content Integration Skills

All interviewees agreed that online digital technologies can help improve business performance, but they admitted their ability to use them effectively was limited, for example to design engaging business content on social media and other digital platforms. This is particularly important given the fact that nowadays most potential visitors rely on the Internet to look for destinations.

- *The problem is that some CBRT members still need to be taught how to use Facebook when marketing products. (Interviewee 6)*

4.3. Revenue Generation

Some interviewees acknowledge receiving digital feedback from customers regarding the quality of their produce. For instance, the Lubu weavers in Binga partnered with a marketing agent to market and sell their produce locally and abroad, which earned them a good name amongst European and Asian visitors.

- *The digital platforms have helped me in modifying the products. Feedback from clients about baobab and marula juice has helped the producers improve the product. Using digital platforms to market tamarind in Binga has drawn so much local and international interest in the fruit because of its associated health properties. (Interviewee 11)*
- *There is increased income for us as communities and has improved livelihoods. (Interviewee 14)*

4.4. Job Creation

All interviewees acknowledged that the use of digital services to market rural tourism initiatives has helped to create employment, particularly for the youth. Apart from individuals selling their handicrafts to visitors, some community members are actively involved in the running of community initiatives such as beekeeping, and tour guide services, with some engaged in various rural recreational activities that were made popular through digital mass marketing. For example:

- *Using digital technologies and their applications has promoted an increase in tourist arrivals, and I can see that more recreational facilities were opened. We now have more restaurants run by locals here. (Interviewee 17)*

4.5. Global Market Penetration

While acknowledging that cloud-based services enhance the visibility of rural tourism, some interviewees expressed the need for a specialised interactive digital platform dedicated exclusively to rural tourism (Maquera et al., 2022). Most of them relied mainly on social media platforms such as Facebook, Instagram, and sometimes WhatsApp to reach out to their potential customers. Unfortunately, these social media platforms are not optimised for business purposes, which makes

global market penetration less effective. In some cases reaching out to the global market, the interviewees depend on agents who market and sell their services or products on their behalf, and that comes at a cost.

- *I use Facebook. Facebook is by far the most used social media used for advertising local events and projects. It reaches a big audience and is cheap, most local advertisers don't have to pay anything. Through Facebook pictures and videos can be uploaded reaching out to a large audience and creating awareness about the products and events of interest. (Interviewee 19).*

This confirms the fact that the higher demand for and supply of tourism offerings have created more interactions, with the internet becoming a key tool for mass marketing and promoting the flow of business information (Hang, Thi, & Nguyen, 2023).

4.6. Middleman Elimination

Until recently, owing to their limited online presence, many rural communities remained on the periphery of the digital space thereby creating room for intermediaries. However, thanks to ubiquitous online digital technologies, this situation is becoming a thing of the past, with more CBRT actors now engaging directly with potential clients. For instance, in Binga, particularly those involved in basket weaving and handicrafts occasionally use intermediaries such as ZimTrade organization who digitally market and sell their produce into the international marketing space.

4.7. Social Cohesion

Online digital technologies enable community members to share information any new developmental matters, and make potential visitors aware of their local customs. They can be used as a tool to educate the community about the local lifestyle or circulate information instantaneously about dark incidents taking place within the community. Community meetings can easily be coordinated and also help keep the database for tourists.

4.8. Attracting Tourists

All interviewees acknowledged the benefits derived from being present in the digital space. For instance, as the number of internet users keeps increasing, more virtual communities are being created through online digital technologies, which

have facilitated the spread of information, thereby providing convenient services to tourists, who search online for leisure and attractive tourist destinations.

- *Attracting the potential tourists to Binga. We should send correct details of tourist attraction activities, for example, the only sand beach in Zimbabwe being found in Binga may not carry weight to someone who has always looked down on Binga because of its remoteness. With the picture of the sand beach being posted on Facebook, it makes it easy for someone to believe. (Interviewee 8)*
- *Social media marketing has helped us attract many tourists to our community. We use Facebook to share our beautiful places such as hot springs, our only beach, and cultural museums. (Interviewee 21)*

These insights are consistent with the findings reported by Azira et al., 2024; Sifolo, 2023; Xue, 2021.

4.9. Preservation of Resources

The interviewees acknowledged that the use of online digital technologies has given the community a sense of pride and ownership, enabling them to conserve culture and natural resources (Ndhlovu et al., 2024). Communities can sustainably preserve the environment, which is the source of their livelihood.

- *I think technology helps us keep records, and monitor the state of our heritage places. (Interviewee 3)*

These views are consistent with insights from the literature that recognise the transformative potential of cloud-based technologies in promoting sustainable rural tourism, through constant monitoring of natural resources and heritage places (Hussain et al., 2023).

4.10. Socio-Economic Development

The growing popularity of digital technologies in rural tourism can create new opportunities for rural development, especially with regard to CBRT initiatives, which are seen as a panacea for rural economic development and a social renaissance (Zhang et al., 2024). For instance, increased online engagement can generate a greater inflow of tourists, which in turn boosts employment and social community cohesion, which is necessary to promote sustainability.

5. Conclusion and Recommendations

It is evident that cloud-based services can enhance the performance of CBRT initiatives, which provide a source of revenue and create jobs. With the help of these technologies, CBRT initiatives in the global south could boost rural socioeconomic development and contribute to their sustainability. They can help to improve global market penetration, cut out the middlemen, promote social cohesion and attract more tourists.

However, as the study showed, despite their familiarity with various digital platforms, and awareness of their benefits, the interviewees admitted that their skills were not always sufficient to use these tools effectively. To become more competent users of digital technologies they need training and new skills, which requires a collaborative effort from government agencies and established players in the tourism industry. There is also a need for a dedicated digital platform for CBRT that will be accessible globally.

While, as already noted, CBRT initiatives in Zimbabwe and South Africa are at different levels of development, the results of the study indicate that they can promote sustainability. This, however, requires sufficient stakeholder engagement if such initiatives are to succeed. In Zimbabwe, the use of cloud-based services in CBRT initiatives is still at its infancy stage, which means these tools have a lot of unused potential that could make CBRT projects more sustainable.

CRediT Authorship Contribution Statement

Conceptualization: **NN**; data curation: **NN & PPSS**; formal analysis: **NN**; investigation: **NN**; methodology: **NN & PPSS & NT**; project administration: **NN**; resources: **NN & PPSS**; software: **NN**; supervision: **PPSS & NT**; validation: **NT**; visualization: **NN**; writing – original draft: **NN & PPSS & NT**; writing – review & editing: **NN & PPSS & NT**.

Declaration of Competing Interest

None.

References

- Agung Prakoso, A., Pradipto, E., Sani Roychansyah, M., & Setya Nugraha, B. (2020). Community-based tourism: concepts, opportunities and challenges. *Journal of Sustainable Tourism and Entrepreneurship*, 2(2), 95–107. <https://doi.org/10.35912/joste.v2i2.563>
- Azira, N., Samad, A., Salehuddin, M., & Zahari, M. (2024). *Changer for Community-based Tourism (CBT) Homestay Operators : A Qualitative Investigation*. 1–21. <https://doi.org/10.1177/10185291241295439>
- Bakker, M., van der Duim, R., Peters, K., & Klomp, J. (2023). Tourism and Inclusive Growth: Evaluating a Diagnostic Framework. *Tourism Planning and Development*, 20(3), 416–439. <https://doi.org/10.1080/21568316.2020.1850517>
- Fisher, D.R., & Freudenburg, W.R. (2001). Ecological Modernization and Its Critics : Assessing the Past and Looking Toward the Future Insights and Applications Ecological Modernization and Its Critics : Assessing the Past and Looking Toward the Future. *Society & Natural Resources*, 14(8), 701–709. <https://doi.org/10.1080/08941920119315>
- Gohori, O., & van der Merwe, P. (2020). Towards a tourism and community-development framework: An African perspective. *Sustainability*, 12(13). <https://doi.org/10.3390/su12135305>
- Gohori, O., & van der Merwe, P. (2022). Tourism and Community Empowerment: The Perspectives of Local People in Manicaland Province, Zimbabwe. *Tourism Planning and Development*, 19(2), 81–99. <https://doi.org/10.1080/21568316.2021.1873838>
- Hang, T., Thi, V., & Nguyen, V. (2023). *Development Virtual Community For Community-Based Rural Tourism (CRT) in Vietnam*. Conference Paper. International Conference Proceedings Green Economic Development in Vietnam.
- Hussain, S., Ahonen, V., Karasu, T., & Leviäkangas, P. (2023). Sustainability of smart rural mobility and tourism: A key performance indicators-based approach. *Technology in Society*, 74. <https://doi.org/10.1016/j.techsoc.2023.102287>
- Julkovski, D.J., Sehnem, S., Bennet, D., & Leseure, M. (2021). Ecological Modernization Theory (EMT): Antecedents and Successors. *Indonesian Journal of Sustainability Accounting and Management*, 5(2). <https://doi.org/10.28992/ijSAM.v5i2.303>
- Kemp, S. (2024). *Digital 2024: Zimbabwe*. <https://datareportal.com/reports/digital-2024-zimbabwe/>
- Laxmita, N.A., Setyaningsih, W., & Purwani, O. (2021). Sustainable rural tourism development in the era of social media shape identities and discourse digital settings. *IOP Conference Series: Earth and Environmental Science*, 778(1). <https://doi.org/10.1088/1755-1315/778/1/012010>
- Liu, Y., Chiang, J., & Ko, P. (2023) The Benefits of Tourism for Rural Community Development. *Humanities and Social Sciences Communications*, 10, 1–12. <https://doi.org/10.1057/s41599-023-01610-4>
- Maquera, G., da Costa, B.B.F., Mendoza, Ó., Salinas, R.A., & Haddad, A.N. (2022). Intelligent Digital Platform for Community-Based Rural Tourism—A Novel Concept Development in Peru. *Sustainability*, 14(13), 1–18. <https://doi.org/10.3390/su14137907>
- Matiku, S., Zuwarimwe, J., & Tshipala, N. (2020). Community-driven tourism projects' economic contribution to community livelihoods-A case of makuleke contractual park community tourism project. *Sustainability*, 12(19). <https://doi.org/10.3390/su12198230>
- Matura, P. (2021). Domestic tourism promotion strategies during and after the Covid-19 pandemic in Zimbabwe. *The Dyke Journal*, 15(1), 85–103.
- Mlitwa, N., & Simbarashe, M. (2019). A CLOUD-A Cloud-Based Architecture For A Regional Trans University Learning Management System Collaboration On Digital Content Delivery Across Southern Africa. *Edulearn19 Proceedings*. <https://doi.org/10.21125/edulearn.2019.1903>
- Mol, A.P.J., & Spaargaren, G. (2000). Ecological Modernisation Theory in debate: A review. *Environmental Politics*, 9(1), 17–49. <https://doi.org/10.1080/09644010008414511>

- Musavengane, R. (2018). Toward pro-poor local economic development in Zimbabwe: The role of pro-poor tourism. *African Journal of Hospitality, Tourism and Leisure*, 7(1), 1–14.
- Musavengane, R., & Musakwa, W. (2023). Climate Change Impacts on Wildlife Protected Areas in Southern Africa: a Bibliometric Analysis. *Studia Periegetica*, 4(44). <https://doi.org/10.58683/sp.620>
- Ndhlovu, E., Dube, K., Shereni, N.C., Makuyana, T., & Africa, S. (2024). *Tourism and Hospitality for Sustainable Development Volume One: Technological Innovations*. Springer. <https://doi.org/10.1007/978-3-031-63069-9>
- Ndlovu, N., Ochara, N.M., & Martin, R. (2023). Influence of digital government innovation on transformational government in resource-constrained contexts. *Journal of Science and Technology Policy Management*, 14(5), 960–981. <https://doi.org/10.1108/JSTPM-11-2021-0173>
- Ngwetjana, S. & Sifolo, P. (2023). Voices of local communities on sustainable tourism: A case of Capricorn district in Limpopo, South Africa. *Journal of Tourism & Development*, 41, 9–19. <https://doi.org/10.34624/rtd.v41i0.30258>
- Nyathi, D., Ziga, M., & Dube, K. (2020). Rural Poverty Alleviation: Reflections on Zimbabwe's Experiences and Needed Strategy. *Scholars Journal of Economics, Business and Management*, 4(8A), 493–503.
- Ohe, Y. (2020). *Community-based Rural Tourism and Entrepreneurship. A Microeconomic Approach*. Springer. <https://doi.org/10.1007/978-981-15-0383-2>
- Ngo, T.H., & Creutz, S. (2022). Assessing the sustainability of community-based tourism: a case study in rural areas of Hoi An, Vietnam. *Cogent Social Sciences*, 8(1). <https://doi.org/10.1080/23311886.2022.2116812>
- Perkins, D.D., & Zimmerman, M.A. (1995). Empowerment theory, research, and application. *American Journal of Community Psychology*, 23(5), 569–579. <https://doi.org/10.1007/BF02506982>
- POTRAZ. (2024). *Abridged Postal & Telecommunications Sector Performance Report. Second Quarter 2024* (pp. 1–22). <https://t3n9sm.c2.acedn.net/wp-content/uploads/2024/09/Second-Quarter-2024-Abridged-Sector-Performance-Report.pdf>
- Priatmoko, S. Kabil, M. Purwoko, & Y. Dávid, L.D. (2021). Rethinking Sustainable Community-Based Tourism: A Villager's Point of View and Case Study in Pampang Village, Indonesia. *Sustainability*, 13, 3245. <https://doi.org/10.3390/su13063245>
- Reuters. (2024). <https://www.reuters.com/business/media-telecom/south-africas-mtn-launches-affordable-5g-smartphone-2024-11-26/>
- Rosalina, P.D., Dupre, K., & Wang, Y. (2021). Rural tourism: A systematic literature review on definitions and challenges. *Journal of Hospitality and Tourism Management*, 47, 134–149. <https://doi.org/10.1016/j.jhtm.2021.03.001>
- Setokoe, T.J., Ramukumba, T., & Ferreira, I.W. (2019). Community participation in the development of rural areas: A leaders' perspective of tourism. *African Journal of Hospitality, Tourism and Leisure*, 8(1), 1–15.
- Shereni, N.C., & Chambwe, M. (2024). Nature-based Tourism in Zimbabwe: Sustainability Issues. *Geographies of Tourism and Global Change, Part F2881*, 59–70. https://doi.org/10.1007/978-3-031-57252-4_5
- Shereni, N.C., & Saarinen, J. (2021). Community perceptions on the benefits and challenges of community-based natural resources management in Zimbabwe. *Development Southern Africa*, 38(6), 879–895. <https://doi.org/10.1080/0376835X.2020.1796599>
- Shingirirai, M. (2024). *Urban Proximity and Spatial Pattern of Rural Poverty and Livelihoods in Zimbabwe (English)*. World Bank Group. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099061424064642877/p1760801a271230b18c49161b5f86afc56>
- Sifolo, P.P.S. (2023). Digital Technology Adaptability: Insights from Destination Network Practices for Tourism Businesses in South Africa. *African Journal of Hospitality, Tourism and Leisure*, 12(4), 1425–1436. <https://doi.org/10.46222/ajhtl.19770720.440>

- Spaargaren, G., & Mol, A.P.J. (1992). Sociology, environment, and modernity: Ecological modernization as a theory of social change. *Society & Natural Resources: An International Journal*, 5(4), 323–344. <https://dx.doi.org/10.1080/08941929209380797>
- Suryani, W. (2024). *Cultural and Heritage Tourism Trends for Sustainable Tourism* (pp. 1–15). IGI Global. <https://doi.org/10.4018/979-8-3693-5903-7.ch001>
- UNWTO. (2011). *Tourism Towards 2030/Global Overview*. UNWTO. <https://www.e-unwto.org/doi/book/10.18111/9789284414024>
- UNWTO. (2023). *International Tourism Highlights, 2023 Edition – The Impact of COVID-19 on Tourism (2020–2022). Revised and updated, October 2023*. UNWTO. <https://www.e-unwto.org/doi/book/10.18111/9789284424986>
- Wang, P., Li, C., & Huang, C. (2023). The Impact of Digital Village Construction on County-Level Economic Growth and Its Driving Mechanisms: Evidence from China. *Agriculture*, 13(10), 1917. <https://doi.org/10.3390/agriculture13101917>
- Woyo, E., & Musavengane, R. (2023). Has Community-Based Tourism Been a Useful Tool for Poverty Eradication in Southern African Rural Destinations? *African Journal of Hospitality, Tourism and Leisure*, 12(2), 251–534. <https://doi.org/10.46222/ajhtl.19770720.383>
- Xue, F. (2021). The Development Of Rural Tourism Under Digital Economy. *Social Values and Society (SVS)*, 3(2), 51–53. <https://doi.org/10.26480/svs.02.2021.51.53>
- Zhang, Z., Zhang, H., Lin, M. S., & Jia, W. (2024). Is more rural digitization always better for tourism? An innovative multiscale spatial perspective. *Tourism Economics*, 0(0), 1–24. <https://doi.org/10.1177/135481662411273607>
- Zimbabwe Tourism Authority. (2024). *Tourism Trends and Statistics, first half*. <https://zimbabwetourism.net/download-category/tourism-trends-and-statistics-quarterly-reports/>

Wykorzystanie cyfrowych technologii sieciowych do wspierania zrównoważonego rozwoju turystyki z udziałem społeczności wiejskich

Streszczenie. Artykuł porusza kwestię wykorzystania cyfrowych technologii sieciowych do wspierania turystyki z udziałem społeczności wiejskich w Afryce Subsaharyjskiej oraz rozwoju społeczno-gospodarczego w tym regionie. Rola cyfryzacji w turystyce z udziałem społeczności wiejskich to zagadnienie, które do tej pory nie budziło większego zainteresowania. Autorzy skupiają się na efektywności i roli cyfrowych technologii sieciowych w promowaniu zrównoważonego rozwoju społeczno-gospodarczego poprzez inicjatywy turystyki z udziałem społeczności wiejskich. Problem jest analizowany w świetle teorii modernizacji ekologicznej i teorii umacniania (*empowerment*), które promują inicjatywy autonomiczne i cyfrowe jako sposób realizacji zrównoważonego rozwoju społeczno-gospodarczego w turystyce z udziałem społeczności wiejskich. Rozważania oparte są na danych jakościowych zebranych od 22 respondentów z Dinokasi (RPA) i Binga (Zimbabwe), którzy uczestniczyli w wywiadach pogłębionych. Wyniki wskazują, że cyfrowe technologie sieciowe przyczyniają się do zrównoważonego rozwoju turystyki z udziałem społeczności wiejskich i rozwoju społeczno-gospodarczego tych obszarów.

Słowa kluczowe: turystyka wiejska oparta na społeczności, platformy cyfrowe oparte na chmurze, zrównoważony rozwój w turystyce z udziałem społeczności wiejskich



Copyright and license. This article is published under the terms of the Creative Commons Attribution — NoDerivates 4.0 International (CC BY-ND 4.0) License, <https://creativecommons.org/licenses/by-nd/4.0/>