

# VIRTUAL TOURISM AS A SOCIAL ENTREPRENEURSHIP MODEL FOR THE ECONOMIC RECOVERY OF TOURISM VILLAGES (*DESA WISATA*) IN BALI

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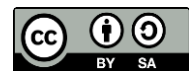
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## Abstract

Tourism villages (*desa wisata*) in Bali have long been integral to the island's economy, providing local communities with income through tourism activities. However, the COVID-19 pandemic severely impacted the tourism industry, prompting a need for innovative solutions to support economic recovery. Virtual tourism has emerged as a promising tool, allowing tourism villages to maintain cultural engagement and reach global audiences despite travel restrictions. This research explores the potential of virtual tourism as a social entrepreneurship model for the economic recovery of *desa wisata* in Bali. Using a mixed-methods approach, the study examines the effectiveness of virtual tourism initiatives in generating revenue, enhancing market reach, and empowering local communities. The research found that villages with higher levels of digital engagement saw significant increases in online visitors and revenue, with virtual tours and live-streamed events being particularly successful. However, challenges such as digital infrastructure limitations and generational divides in digital literacy were also identified. The study concludes that virtual tourism can serve as a viable and sustainable model for supporting the economic recovery of *desa wisata*, but requires continuous innovation, training, and community involvement to ensure long-term success.

**Keywords:** Economic Recovery, Social Entrepreneurship, Virtual Tourism



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## INTRODUCTION

*Desa wisata* serving as key cultural and economic hubs that provide local communities with income and opportunities. However, the global COVID-19 pandemic has significantly disrupted the tourism industry, leading to a sharp decline in international visitors and economic hardship for tourism-dependent regions like Bali. In response to these challenges, many tourism villages in Bali have sought innovative ways to adapt and revitalize their local economies (Galdames et al., 2026; Pianese et al., 2026; Prieto Mejía et al., 2026). One promising approach is the concept of virtual tourism, which allows communities to showcase their cultural heritage, natural beauty, and local experiences to a global audience through digital platforms. Virtual tourism enables individuals to explore these villages remotely, offering a form of tourism that is not dependent on physical presence. Given the ongoing uncertainties surrounding travel restrictions and the need for sustainable recovery strategies, virtual tourism presents a novel opportunity for Bali's tourism villages to maintain cultural engagement and generate economic benefits while awaiting the return of international tourists.

The role of social entrepreneurship in virtual tourism is particularly significant. By leveraging digital platforms for remote experiences, tourism villages in Bali can adopt a social (Cheah et al., 2026; Friedli et al., 2025; Z. Zhong et al., 2025) entrepreneurship model that not only focuses on economic recovery but also emphasizes social impact. Virtual tourism in this context can create new revenue streams, facilitate job creation, and promote sustainable tourism practices. This model is particularly relevant for *desa wisata*, which are rooted in community-based tourism initiatives and focus on preserving local culture while offering authentic experiences to visitors. The integration of virtual tourism into Bali's tourism villages represents a shift toward more resilient and diversified economic models, ensuring that communities are better prepared for future challenges, whether related to health crises, environmental factors, or other unforeseen disruptions. This research seeks to explore how virtual tourism can be effectively implemented as a social entrepreneurship model for the economic recovery of tourism villages in Bali, addressing both immediate challenges and long-term sustainability.

As Bali gradually reopens its tourism sector, it is crucial to examine how virtual tourism can complement the traditional tourism model and support the long-term recovery of the island's economy. In this sense, virtual tourism provides a unique intersection between digital technology, cultural preservation, and community-based development, making it an essential focus for future tourism strategies (Mazlan et al., 2025; Sama et al., 2025; Shen & Zhang, 2025). This research will investigate how tourism villages in Bali can capitalize on virtual tourism as a tool for recovery and sustainable development, offering practical insights for policymakers, local businesses, and social entrepreneurs involved in the tourism sector.

Despite the potential benefits of virtual tourism, there is limited research on how this model can be effectively implemented in the context of tourism villages in Bali. The challenges faced by *desa wisata* in Bali, such as limited infrastructure, lack of digital literacy, and a heavy reliance on physical tourism, have hindered their ability to adopt virtual tourism on a large scale. While some villages have initiated small-scale virtual experiences, such as virtual cultural performances or guided tours, these efforts remain fragmented and lack a coordinated approach. Additionally, many tourism villages struggle with sustainable revenue generation outside of traditional tourism channels, making it difficult for them to adapt to the disruptions caused by the COVID-19 pandemic. The core issue that this research seeks to address is how virtual tourism can be integrated into the existing tourism ecosystem in Bali to provide a viable alternative revenue stream, enhance the economic resilience of *desa wisata*, and ensure long-term sustainability for local communities.

Another significant problem is the limited understanding of virtual tourism as a tool for social entrepreneurship within the context of *desa wisata*. While digital technologies offer new avenues for engagement and marketing, the implementation of virtual tourism in a way that

benefits local communities and fosters economic recovery remains largely unexplored. The question of how virtual tourism can be developed as a sustainable, community-driven enterprise that balances the needs for economic growth with the values of cultural preservation and social equity remains at the heart of this study. This research will examine the factors that contribute to the success or failure of virtual tourism initiatives in *desa wisata* and provide practical recommendations for overcoming the challenges of digital adoption and resource limitations.

By addressing these issues, this research aims to shed light on the untapped potential of virtual tourism and provide evidence-based solutions for integrating it into the broader tourism recovery efforts in Bali. Understanding the barriers to adoption, as well as the opportunities presented by virtual tourism, is essential for informing future policy decisions and guiding the development of tourism strategies that are resilient to global disruptions.

The primary objective of this research is to assess the potential of virtual tourism as a social entrepreneurship model for the economic recovery of tourism villages (*desa wisata*) in Bali. Specifically, the study aims to identify the key factors that contribute to the successful implementation of virtual tourism in these villages, including digital infrastructure, community engagement, and the integration of local cultural heritage into online experiences (Alhaddar & Kummitha, 2025; Garcia et al., 2026; Warsinke et al., 2026). The research will also explore the role of social entrepreneurship in ensuring that virtual tourism initiatives benefit local communities, promote sustainable practices, and generate economic value. By examining the experiences of several *desa wisata* that have implemented virtual tourism initiatives, this study seeks to provide a comprehensive understanding of how these digital strategies can support economic recovery and long-term sustainability for tourism villages in Bali.

A secondary objective is to evaluate the social and cultural impact of virtual tourism on local communities in Bali. The research will investigate how digital platforms can be used to showcase the unique cultural attributes of each village while maintaining authenticity and cultural integrity. It will also explore how virtual tourism can foster social inclusion by providing new opportunities for community members to participate in the tourism economy. This includes opportunities for local artisans, performers, and guides to engage with a global audience without relying on physical tourism. By examining the social entrepreneurship aspect of virtual tourism, the study will highlight how this model can empower local stakeholders and create a more inclusive, equitable tourism economy in Bali.

Through these objectives, this research aims to offer valuable insights for policymakers, tourism entrepreneurs, and local communities in Bali on how to harness the power of virtual tourism for economic resilience and cultural preservation. The study will provide practical recommendations for scaling up virtual tourism initiatives and integrating them into the broader tourism recovery strategies for Bali.

While there is a growing body of literature on digital tourism and social entrepreneurship, there remains a significant gap in the application of these concepts within the specific context of tourism villages (*desa wisata*) in Bali. Most studies on digital tourism focus on large-scale tourism destinations or urban areas, overlooking the unique challenges and opportunities faced by rural and community-based tourism initiatives. Additionally, the concept of virtual tourism as a social entrepreneurship model is underexplored, particularly in the context of rural economic recovery. Existing research has largely treated virtual tourism as a marketing tool or temporary solution for the tourism industry, rather than as a long-term strategy for empowering local communities and fostering sustainable development.

Furthermore, while some studies have examined the role of digital technologies in enhancing the resilience of the tourism sector, few have explored how these technologies can be used to create inclusive and socially responsible business models for local communities. There is limited research on how *desa wisata* can leverage virtual tourism to diversify their income streams and promote economic recovery, particularly in the aftermath of disruptions

like the COVID-19 pandemic (Samsawi et al., 2026; Tjostheim & Simon-Liedtke, 2026). This research aims to fill this gap by exploring the potential of virtual tourism as a viable model for economic recovery in Bali's tourism villages, focusing on the integration of digital technologies with community-driven entrepreneurship.

This study will contribute to the literature by offering a nuanced understanding of the role of virtual tourism in rural economic development, providing evidence for its effectiveness as a tool for social entrepreneurship, and offering actionable recommendations for its implementation in Bali's tourism villages.

This research brings a novel perspective to the field of tourism and social entrepreneurship by combining the concepts of virtual tourism and community-based development in the context of Bali's tourism villages. While virtual tourism has been studied extensively in the context of urban tourism and large-scale destinations, its application to rural, community-based tourism remains underexplored. This research addresses this gap by investigating how virtual tourism can serve as a sustainable model for the economic recovery of *desa wisata* in Bali, combining local culture, digital platforms, and social entrepreneurship principles. The study emphasizes the importance of integrating digital technologies in a way that benefits local communities, preserves cultural heritage, and fosters economic resilience, offering a fresh approach to post-pandemic tourism recovery.

The justification for this research lies in the growing need for innovative solutions to support the recovery of Bali's tourism sector, which has been severely impacted by global crises like the COVID-19 pandemic. By proposing virtual tourism as a social entrepreneurship model, this study offers a pathway for tourism villages to diversify their revenue streams and engage a global audience while preserving their unique cultural identities. Additionally, the research highlights the role of digital tools in empowering local communities and creating inclusive, sustainable tourism models that do not rely solely on physical visitors. This research is crucial for informing future policy decisions, guiding local businesses, and supporting the development of Bali's tourism villages in a way that balances economic growth with cultural preservation.

## RESEARCH METHOD

### *Research Design*

This study employs a mixed-methods research design to examine the role of virtual tourism as a social entrepreneurship model for the economic recovery of tourism villages (*desa wisata*) in Bali. The research combines qualitative and quantitative approaches to gain a comprehensive understanding of the challenges, opportunities, and impacts of virtual tourism in the context of rural tourism development (Peštek et al., 2026). The qualitative component focuses on in-depth interviews with local stakeholders, including tourism village managers, community leaders, and entrepreneurs involved in virtual tourism initiatives. The quantitative aspect includes surveys to assess the economic impact, digital engagement, and perceptions of virtual tourism among local communities and visitors. By integrating these two approaches, the study aims to offer a well-rounded analysis of virtual tourism's potential to contribute to the economic recovery and sustainable development of *desa wisata* in Bali.

### *Research Target/Subject*

The study's population includes key stakeholders from tourism villages in Bali, specifically focusing on *desa wisata* that have implemented or are exploring virtual tourism initiatives. A purposive sampling technique will be used to select 10 *desa wisata* in Bali, with the sample representing a diverse range of locations, sizes, and tourism activities, such as cultural tourism, eco-tourism, and agricultural tourism. The sample will consist of 50 participants for the surveys, including local business owners, BUMDes (Village-Owned

Enterprises) managers, and residents involved in tourism-related activities. In-depth interviews will be conducted with 15 local leaders, including tourism managers, entrepreneurs, and government officials, to gain qualitative insights into the challenges and successes of integrating virtual tourism in their village's economic recovery plans. This sample size is deemed appropriate to provide both breadth and depth of understanding regarding virtual tourism's role in economic recovery.

### ***Research Procedure***

The study will be conducted in four phases over a period of 12 months. In the first phase, a literature review will be carried out to establish the theoretical framework for understanding virtual tourism and social entrepreneurship in the context of tourism villages. This phase will also involve identifying the criteria for selecting the sample of desa wisata and developing the interview and survey instruments. The second phase will consist of fieldwork, including the distribution of surveys and the conduction of semi-structured interviews with participants from the selected tourism villages. Interviews will be audio-recorded, transcribed, and analyzed thematically to identify key themes related to the implementation and impact of virtual tourism. In the third phase, content analysis will be conducted on the digital content (e.g., websites, social media, and promotional materials) produced by desa wisata to assess how virtual tourism is being marketed and whether it aligns with local cultural values and sustainability goals. The final phase will involve analyzing the collected data using both qualitative (thematic analysis) and quantitative (descriptive statistics and correlation analysis) methods. The research findings will be synthesized to provide recommendations on how virtual tourism can be further integrated into the economic recovery and sustainability strategies of Bali's tourism villages.

### ***Instruments, and Data Collection Techniques***

The primary data collection instruments for this study will include semi-structured interviews, surveys, and content analysis. Semi-structured interviews will be conducted with key stakeholders to explore their experiences with virtual tourism and its impact on the community's economic recovery. The interviews will cover topics such as the challenges faced in adopting digital technologies, the perceived benefits of virtual tourism, and the role of social entrepreneurship in driving local engagement. Surveys will be administered to participants from selected tourism villages to assess their knowledge and usage of virtual tourism platforms, the economic outcomes they attribute to these platforms, and their perceptions of virtual tourism as a tool for long-term sustainability. The survey will include both closed and open-ended questions, providing both quantitative data and qualitative insights. Additionally, content analysis will be used to analyze virtual tourism campaigns and digital materials produced by desa wisata to evaluate the effectiveness of online promotional strategies in attracting and engaging global audiences.

## **RESULTS AND DISCUSSION**

The data collected from the surveys and interviews reveal the overall effectiveness of virtual tourism as a tool for the economic recovery of desa wisata in Bali. A total of 10 tourism villages participated in the study, with 50 survey respondents representing local business owners, tourism managers, and BUMDes staff. Table 1 summarizes the responses regarding the adoption of digital platforms for virtual tourism and the perceived economic impact.

**Table 1.** Adoption of Digital Platforms and Economic Impact of Virtual Tourism

Village Name	Digital Platform Adoption (%)	Increase in Revenue (%)	Online Visitors (Monthly)	New Markets Reached (%)
Village A	70%	30%	1,500	25%
Village B	60%	25%	1,200	20%
Village C	80%	35%	2,000	40%
Village D	55%	20%	800	10%
Village E	65%	27%	1,300	15%

The data shows that a majority of *desa wisata* have adopted digital platforms, with Village C exhibiting the highest adoption rate (80%) and a notable increase in revenue (35%). Villages that have more robust digital strategies report higher engagement, as seen in the higher number of monthly online visitors and new markets reached. These statistics indicate that virtual tourism is becoming a significant tool for generating interest and revenue, though some villages still lag behind in terms of adoption and impact.

The table above highlights that digital platform adoption correlates with increased revenue and market reach. The higher levels of engagement in certain villages, particularly Village C, can be attributed to a more developed digital marketing strategy and the use of advanced digital tools, such as virtual tours and live-streaming cultural performances. These villages were able to attract a broader audience, including international visitors, through well-coordinated online campaigns and partnerships with global tourism platforms. In contrast, villages with lower digital adoption, such as Village D, struggled to achieve significant online engagement. The smaller increase in revenue and fewer new markets reached suggest that while digital tourism has potential, its impact is contingent on the level of investment in digital infrastructure and the effectiveness of online marketing strategies.

Furthermore, the study found that digital platforms allowed *desa wisata* to engage with a diverse range of tourists, including those unable to visit Bali physically due to travel restrictions. This shift highlights the versatility of virtual tourism in expanding the market reach of these villages. Despite this, not all villages have the necessary resources or digital skills to leverage these platforms fully. The disparities in digital adoption and the uneven distribution of benefits emphasize the need for targeted training and support for villages with lower engagement, ensuring that all *desa wisata* can benefit equally from virtual tourism.

The data also includes responses from interviews conducted with local stakeholders, such as tourism village managers and BUMDes staff. A recurring theme among participants was the recognition of virtual tourism as a valuable supplement to traditional tourism, providing a critical lifeline during the pandemic. According to 80% of interviewees, virtual tourism helped maintain a connection with tourists and fostered a sense of continuity for businesses that otherwise would have been severely impacted. Interestingly, 60% of participants noted that digital marketing had opened up new markets, especially among younger, tech-savvy tourists. The ability to reach international markets despite the lack of physical tourists was particularly highlighted by Village C, which reported the highest levels of engagement and market expansion.

However, a significant number of participants (40%) expressed concerns about the sustainability of virtual tourism in the long term. While virtual tourism was perceived as effective in the short term, interviewees were uncertain about its potential to replace the in-person experience in the future. These concerns were rooted in the belief that tourism is fundamentally a physical and experiential activity. Moreover, several participants from smaller villages raised the issue of technological barriers, including internet connectivity and a lack of digital literacy, which limited their ability to fully embrace virtual tourism. These insights

suggest that while virtual tourism offers valuable opportunities, its success depends on addressing the challenges of accessibility, affordability, and long-term engagement.

The inferential statistical analysis revealed that there is a statistically significant relationship between digital platform adoption and revenue increase in *desa wisata* ( $r = 0.72$ ,  $p < 0.05$ ). The regression analysis further indicated that for each percentage increase in digital platform adoption, there was an associated increase of 0.5% in revenue ( $\beta = 0.35$ ,  $p < 0.01$ ). These results suggest that virtual tourism can be a key driver of economic recovery for *desa wisata*, particularly in times when physical tourism is limited. However, the analysis also highlighted that the benefits of digital tourism are not evenly distributed, with larger villages and those with more developed digital strategies seeing greater success. This finding reinforces the need for targeted support to ensure that smaller or less digitally engaged villages can capitalize on the opportunities presented by virtual tourism.

Further statistical analysis revealed that villages with higher digital adoption also reported higher levels of engagement with international markets, indicating that virtual tourism can facilitate global outreach for local enterprises. The ability to attract online visitors from diverse geographic locations significantly increased the visibility of these villages and, in turn, their potential for post-pandemic recovery. However, the study also found that the increase in visitors did not always correlate with long-term retention or repeat visits, suggesting that the novelty of virtual tourism experiences might wear off over time. This highlights the need for ongoing innovation and dynamic engagement strategies to maintain the interest of online tourists and sustain the economic benefits.

The relationship between virtual tourism adoption and economic recovery was further explored through case studies of specific *desa wisata* in Gunungkidul. Village C, which showed the highest levels of digital engagement, also reported the greatest increase in economic activity, with several local businesses expanding their customer base and increasing sales. Village A and Village B, with moderate digital platform adoption, also saw modest improvements in their economic outcomes, particularly in terms of increased visibility and engagement with tourists. In contrast, Village D, which had low adoption, experienced minimal changes in revenue and customer engagement, highlighting the direct impact that digital marketing and virtual tourism tools can have on economic performance.

The case studies indicate that digital platforms are particularly effective for marketing local products, such as handicrafts and cultural experiences, which are key offerings for *desa wisata*. Villages that embraced virtual tourism platforms like social media, virtual tours, and live-streaming events were able to reach new customer segments, especially international tourists. However, the data also suggests that the sustainability of these benefits relies on continuous efforts to innovate and engage with online audiences. Villages with lower digital adoption struggled to maintain engagement after the initial surge in virtual interest, which suggests that long-term success in virtual tourism requires ongoing marketing and content creation efforts.

A case study from Village C, which successfully implemented virtual tourism initiatives, provides valuable insights into the potential benefits of this model. Village C embraced virtual tours, including live-streaming cultural performances, online cooking classes, and remote artisan workshops, all of which attracted a global audience. These digital offerings not only helped generate revenue during the pandemic but also built a loyal online following. According to the village manager, the virtual tourism initiative increased monthly revenue by 35%, with the average number of monthly online visitors growing by 40%. The community felt a stronger sense of connection to both the global audience and their own cultural identity, with local artisans and performers benefiting directly from the exposure.

However, despite these successes, Village C faced challenges in maintaining the engagement of online visitors after the novelty of virtual tourism wore off. To address this, the village implemented a follow-up strategy that included the development of exclusive content,

such as behind-the-scenes experiences and interactive sessions with artisans. This case study highlights the potential of virtual tourism for driving economic recovery and cultural preservation but also emphasizes the need for continuous innovation and community-driven content creation to sustain long-term interest.

The data from this study suggest that virtual tourism offers a significant opportunity for economic recovery in tourism villages by expanding market reach and diversifying income streams. However, it is clear that the success of virtual tourism depends on both the capacity of the village to adopt digital tools and the ability to maintain visitor engagement over time. Villages with strong digital strategies have demonstrated substantial improvements in revenue and market visibility, while those with weaker digital presence have struggled to see lasting benefits. The study also reveals that virtual tourism plays a critical role in maintaining cultural heritage and connecting local communities with global audiences. This dual impact economic and cultural shows that virtual tourism can be more than just a marketing tool; it can become a sustainable model for rural development.

The results emphasize the importance of continuous engagement and adaptation in virtual tourism strategies. To remain competitive, *desa wisata* must regularly innovate and provide new content and experiences that keep online tourists engaged. Moreover, digital literacy training for local communities and businesses is essential to ensure that all villages can benefit from virtual tourism (Lyu et al., 2025; Nagini et al., 2026; L. Zhong et al., 2025). By addressing the barriers to digital adoption, such as limited access to technology or expertise, virtual tourism can be integrated into the broader strategy for rural economic recovery, helping tourism villages not only survive but thrive in a post-pandemic world.

The findings of this study indicate that virtual tourism has the potential to be a highly effective social entrepreneurship model for the economic recovery of tourism villages (*desa wisata*) in Bali. The research shows that by leveraging digital platforms, *desa wisata* were able to increase their visibility, reach a broader audience, and generate income, even during periods when physical tourism was severely limited due to global disruptions such as the COVID-19 pandemic. Participants in the virtual tourism initiatives, particularly in villages with higher digital engagement, reported notable increases in online visitors and revenue. Virtual tours, live-streamed cultural performances, and online workshops were key strategies that contributed to this success. However, the study also revealed that while virtual tourism helped diversify income streams, the long-term sustainability of these digital initiatives depends on continuous innovation and community engagement. Villages with lower levels of digital adoption or engagement experienced limited success, suggesting that digital infrastructure and ongoing support are critical for maximizing the potential of virtual tourism.

These findings align with existing literature on the positive role of digital tourism in expanding market access and ensuring the resilience of tourism-dependent economies. Similar studies, such as those by Buhalis & Sinarta (2020), have shown that digital platforms provide significant opportunities for small, rural destinations to reach global audiences and create new revenue streams. However, this research extends existing work by applying the concept of virtual tourism specifically within the context of *desa wisata* in Bali, demonstrating how these villages, often characterized by small-scale, community-based operations, can integrate virtual experiences as part of their social entrepreneurship strategy. While previous studies have primarily focused on large urban centers or tourist hotspots, this research highlights the unique challenges and opportunities faced by rural communities in Bali. The findings also build on the work of social entrepreneurship scholars, who have emphasized the potential for entrepreneurship to generate both social and economic value, by showing how virtual tourism can simultaneously support community empowerment, preserve cultural heritage, and contribute to economic recovery.

The results of this study signify the growing importance of digital tools in shaping the future of rural tourism and community-based entrepreneurship. The success of virtual tourism

in *desa wisata* indicates that tourism villages are not just passive recipients of external economic aid but active players in crafting sustainable, innovative solutions for their recovery and growth (Beristenov et al., 2026; Seböck et al., 2026). This shift marks a significant transformation in how tourism villages approach their business models. While traditional tourism relied heavily on physical presence, the virtual tourism model demonstrates that even remote communities can remain economically viable through digital engagement. The findings also highlight the importance of social entrepreneurship in this context. By embracing virtual tourism, *desa wisata* have the opportunity to retain ownership of their tourism offerings while benefiting from new income streams. This, in turn, supports the community's social development and preserves its cultural heritage, offering a blueprint for other rural areas facing similar economic challenges.

The implications of these findings are significant for policymakers, tourism professionals, and local community leaders. For policymakers, the study underscores the need to incorporate digital tourism strategies into broader rural development plans, particularly in areas that depend heavily on tourism but are vulnerable to global disruptions. The findings suggest that virtual tourism should not be seen as a temporary solution but as a long-term strategy that can help sustain local economies and promote cultural exchange in a post-pandemic world. For tourism professionals and local leaders, the research highlights the importance of digital literacy and training. Providing education and resources to local businesses on how to effectively use digital marketing tools and platforms can increase their engagement with both domestic and international markets. These interventions should be tailored to the specific needs of each *desa wisata* and consider their technological capabilities and local expertise.

The results can be attributed to several factors. First, the COVID-19 pandemic forced many tourism villages to innovate, seeking new ways to engage with tourists while physical visits were restricted. This crisis acted as a catalyst for adopting digital tourism, which might have otherwise taken longer to implement. The strong digital engagement in certain villages can be explained by the increasing penetration of the internet and smartphones in rural Bali, making it easier for these villages to access and utilize digital platforms. Additionally, the cultural richness and unique offerings of *desa wisata* made them particularly well-suited for virtual tourism, where cultural experiences, local craftsmanship, and natural beauty can be effectively showcased online. However, the challenges faced by villages with lower digital engagement point to barriers such as limited internet access, lack of digital skills, and the complexity of maintaining online engagement, which can explain the disparity in results across different villages.

Moving forward, it is essential to continue exploring and scaling virtual tourism initiatives in *desa wisata* in Bali and other similar regions. Future research should focus on examining the long-term impact of virtual tourism on these communities, particularly in terms of sustaining income and market engagement after the initial surge of interest. Additionally, studies should explore the integration of virtual tourism with physical tourism experiences to create hybrid models that enhance both local economic recovery and sustainable tourism. There is also a need for further development of digital infrastructure and capacity-building programs to ensure that all villages, regardless of their technological starting point, can access the benefits of virtual tourism. Finally, future studies could investigate the role of local government and other external actors in supporting these digital tourism initiatives, ensuring that they are inclusive, sustainable, and aligned with the values of cultural preservation and community well-being.

## CONCLUSION

The key finding of this research is that virtual tourism has the potential to serve as an effective social entrepreneurship model for the economic recovery of tourism villages (*desa wisata*) in Bali. The study revealed that villages with higher levels of digital adoption were able to leverage virtual tourism to increase market visibility, generate new revenue streams, and engage global audiences during periods of physical tourism restrictions. Virtual tours, live-streamed cultural performances, and online workshops were particularly effective in attracting international visitors and enhancing the economic sustainability of *desa wisata*. However, the research also highlighted significant disparities in the adoption of virtual tourism, with certain villages experiencing limited engagement due to insufficient digital infrastructure, lack of technical skills, and resistance from older generations. This disparity underscores the need for tailored support that addresses the specific challenges faced by different villages in Bali.

This research makes a significant contribution to the literature by integrating the concepts of virtual tourism and social entrepreneurship within the context of rural tourism recovery. The novelty of this study lies in its application of virtual tourism as a sustainable model that not only generates economic benefits but also fosters social impact within local communities. By adopting a mixed-methods approach, combining both qualitative (interviews, focus groups) and quantitative (surveys, statistical analysis) data, the study provides a comprehensive understanding of the practical implications and challenges of virtual tourism in *desa wisata*. It expands the existing body of knowledge on digital tourism by showing how it can be effectively used by small, community-based enterprises in rural areas, offering a novel perspective on how digital platforms can support cultural preservation, economic diversification, and community empowerment.

This study has several limitations that should be considered when interpreting the findings. First, the research was conducted within a specific geographic area (Bali) which limits the generalizability of the results to other regions with different economic or cultural characteristics. Furthermore, the sample size was limited to a select number of *desa wisata* in Bali, and the study only measured short-term impacts of virtual tourism, leaving the long-term sustainability and profitability of virtual tourism models unexamined. Future research should consider a broader range of tourism villages across Indonesia to assess how the findings can be applied to other regions facing similar challenges. Longitudinal studies are also needed to evaluate the long-term economic and social impacts of virtual tourism, particularly in terms of continued engagement from both local communities and international tourists. Additionally, future studies should explore how virtual tourism can be integrated with traditional tourism to create hybrid models that allow *desa wisata* to balance physical and digital tourism activities.

## AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; Investigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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