Review of WonderVerse Indonesia, A Metaverse Applications in Tourism and Creative Economy Development

Ida Bagus Komang Surya Werdiyasa

ABSTRACT

The rise of digital technologies has transformed multiple industries, including tourism and the creative economy. The emergence of the metaverse has opened new possibilities for immersive tourism promotion, virtual interactions, and creative product marketing. This paper explores WonderVerse Indonesia, a metaverse platform initiated by the Indonesian Ministry of Tourism and Creative Economy (Kemenparekraf), as a case study of virtual tourism development. Drawing on recent research, the study examines factors influencing Generation Z and Y's adoption of WonderVerse Indonesia, including perceived complexity, cost, technological threat, and social threat, and how these factors affect user satisfaction. The findings highlight both opportunities and challenges in integrating metaverse technologies into tourism and creative economy promotion. The paper concludes with implications for policymakers, developers, and micro, small, and medium enterprises (MSMEs), emphasizing the need for simplification, affordability, and trust-building in virtual platforms.

*Ida Parida Digital Creator;
gusmang848@gmail.com

INTRODUCTION

Technological advancements have consistently reshaped industries worldwide, with the tourism sector being among the most affected by digital transformation. Over the past decade, information and communication technologies (ICTs) have redefined how tourists search, plan, and experience travel.[1] The COVID-19 pandemic accelerated this digital shift, as travel restrictions forced destinations and businesses to adopt virtual platforms and immersive technologies to maintain engagement with global audiences.[2,3] Consequently, the tourism industry has entered a new phase where digital innovation is not merely complementary but essential for resilience and competitiveness.[4]

One of the most transformative developments in this digital era is the emergence of the metaverse. The metaverse is broadly defined as an immersive, persistent, three-dimensional (3D) virtual environment where users, represented as avatars, can interact with each other, digital objects, and AI-driven agents in real time.[5,6] Scholars have emphasized that the metaverse can act as an extension of physical spaces, creating hybrid experiences that combine leisure, commerce, education, and culture.[7,8] In tourism, it holds the potential to revolutionize destination marketing, pre-trip planning, cultural preservation, and creative economy promotion by offering immersive previews of places and activities that enhance decision-making and stimulate travel intention.[9,10]

Indonesia, as an archipelagic nation with more than 17,000 islands, is uniquely positioned to benefit from such innovations. Its vast biodiversity, cultural heritage, and creative industries make it an ideal candidate for metaverse-based promotion. Recognizing this opportunity, the Ministry of Tourism and Creative Economy (Kemenparekraf) has integrated digital technologies into its strategic framework, aligning with global trends in digital transformation and sustainable tourism development.[11] One of the flagship initiatives is WonderVerse Indonesia, a metaverse platform launched in collaboration with Magnus Digital Indonesia, designed to promote tourism destinations, cultural assets, and creative products through immersive and interactive experiences.[12]

WonderVerse Indonesia is more than a promotional tool; it represents a paradigm shift in how the nation seeks to brand itself in the global tourism and creative economy markets. By leveraging virtual spaces, it enables broader international reach, enhances cultural diplomacy, and provides local micro, small, and medium enterprises (MSMEs) with innovative channels for digital entrepreneurship.[13,14] However, as with many emerging technologies, adoption challenges remain, particularly among younger generations, who may face barriers such as technological complexity, cost, and social acceptance.[15] This article examines the role of WonderVerse Indonesia in reshaping digital tourism, highlights its features and economic potential, and analyzes adoption challenges among young virtual tourists. In doing so, it contributes to ongoing academic and policy discussions on the integration of metaverse technologies in tourism and creative economy development.

METHODS

This study employed a qualitative case study approach to examine the application of metaverse technology in Indonesia's tourism and creative economy sector through the case of *WonderVerse Indonesia*. The research relied primarily on secondary data sources, including academic journals, official reports, media publications, and relevant government documents. Data were analyzed descriptively to identify key opportunities, challenges, and user adoption factors associated with the platform. The analysis was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT2) framework, which provided a theoretical basis for interpreting the influences of complexity, cost, and perceived risk on technology adoption. This approach enabled a comprehensive understanding of the potential and limitations of metaverse applications within the context of Indonesia's tourism development.

Defining the Metaverse

The metaverse is increasingly framed as the next stage of the internet's evolution: a network of persistent, multi-user, three-dimensional spaces where people, embodied as avatars, interact, create, transact, and carry identity and assets across interoperable environments.[6,16] Rather than a single platform, it is a convergence of technologies, notably virtual reality (VR), augmented reality (AR), mixed reality (MR), spatial computing, real-time 3D engines, blockchain/virtual assets, cloud-edge/5G networking, and AI. Those enabling immersive, synchronous, and economically meaningful experiences. In a frequently cited definition, Mystakidis (2022) describes the metaverse as a post-reality, persistent, multi-user universe that merges physical reality with digital virtuality and supports multisensory interaction.[17] This sociotechnical view emphasizes that metaverse systems are not only technical stacks but also social and economic infrastructures, supporting markets, communities, and organizational processes in virtual-physical hybrids.[18,19]

For tourism and creative-economy contexts, this definition implies hybrid affordances: destination previews, virtual events and performances, digital storefronts, and phygital (physical-digital) journeys that span inspiration, booking, and post-visit engagement.[6,20] Importantly, authoritative technology analysts argue the metaverse will be material to everyday life within this decade. Gartner projects that by 2026 about 25% of people will spend at least one hour per day in a metaverse for work, shopping, education, socializing, and entertainment, signaling mainstream, cross-sector relevance for platforms like WonderVerse Indonesia.[21] While the concept has earlier roots, the 2020–2025 wave of research highlights interoperability, user agency, safety/governance, and sustainability as critical design frontiers for realizing this vision at scale.[22,23]

The Metaverse in Tourism

Tourism stakeholders are increasingly deploying metaverse technologies, encompassing virtual reality (VR), augmented reality (AR), and persistent 3D worlds. The purpose is to enrich pre-trip information search, shape destination image, and stimulate visit and booking intentions. Empirical studies consistently show that immersive previews strengthen affective and cognitive destination image and, in turn, intention to visit (and sometimes to book) by elevating presence, enjoyment, and perceived usefulness while lowering perceived risk (e.g., VR "test-drives" of destinations, hotels, and attractions). Recent lab and field experiments demonstrate positive effects of immersive VR on destination image and visit intention and identify moderating roles for immersion level, familiarity, and VR sickness. Those are important considerations for experience design.

On the supply side, accommodation and attraction providers increasingly integrate AR/VR touchpoints across the decision journey. In hotels, for instance, AR and VR content can raise reservation intention and return likelihood by enhancing mental imagery and value co-creation before purchase; systematic reviews across tourism and hospitality corroborate these effects and outline design principles (e.g., vivid content, ease of use, and narrative coherence).

Cultural and heritage organizations have been early movers, using metaverse layers to expand access, personalize curation, and support education. University and museum consortia report that XR/metaverse platforms can scale access to digitized collections and produce measurable audience and economic impacts. Research prototypes now personalize museum tours in metaverse spaces based on user interests, while broader reviews argue that immersive museum experiences can deepen engagement and learning outcomes.

Smart-tourism cities and destination management organizations (DMOs) are also experimenting with AR navigation, 360° virtual tours, and social VR events to distribute demand, reduce perceived effort, and preview experiences safely. Location-based AR studies show effects across pre-, during-, and post-visit stages (e.g., spatial behaviors and post-visit sharing), while broader immersive-tech reviews synthesize benefits (presence, accessibility, sustainability cues) and risks (privacy, cybersickness, digital divide).

In Indonesia, the metaverse is framed as part of the national digital-ecosystem strategy for tourism and the creative economy. WonderVerse Indonesia, developed by the Ministry of Tourism and Creative Economy with Magnus Digital Indonesia, operationalizes this strategy by combining immersive destination previews (WonderReal), creative-goods showcases (WonderGoods), cultural games/performances (WonderFun), and wayfinding/community features (Lobby). Official communications emphasize dual goals, tourism promotion and MSME enablement, within a platform designed to be desktop-accessible now and extensible to VR.

Taken together, the emerging evidence suggests the metaverse will not replace physical travel but will complement it by (1) influencing upstream decisions (image formation, risk reduction, booking intention); (2) augmenting onsite experience (LBAR navigation, interpretation); and (3) extending post-visit engagement (sharing, community, and loyalty). Positioning WonderVerse Indonesia within these evidence-based pathways clarifies where design and policy levers—content quality, usability, inclusivity, safety, and affordability, most strongly affect outcomes.

WonderVerse Indonesia

WonderVerse Indonesia, officially launched in October 2023 in collaboration with Magnus Digital Indonesia, represents one of the first national-scale initiatives to integrate the metaverse into tourism and creative economy promotion in Southeast Asia. Designed as an immersive digital ecosystem, WonderVerse Indonesia is divided into four zones, each with distinct roles in facilitating tourism engagement and creative economy promotion.

Lobby

The Lobby functions as the initial entry point for virtual tourists, where users are greeted with representations of Indonesia's endemic fauna (e.g., komodo dragons, orangutans, whale sharks) and can access curated digital art galleries. A key feature is the artificial intelligence (AI)-driven tour guide named Maia, who assists users in navigating the environment. The integration of AI in tourism interfaces reflects a growing trend of leveraging conversational agents and intelligent avatars to enhance user interaction and personalization.[24,25] Such innovations help reduce entry barriers for first-time users of immersive platforms and provide a bridge between cultural heritage interpretation and digital navigation.

WonderReal

This zone provides 360-degree immersive video and image experiences of iconic destinations such as Bali, Wakatobi, and Raja Ampat. Additionally, it allows users to book flights through Garuda Indonesia, embedding a transactional dimension within an experiential environment. Immersive destination previews have been found to increase travel intention by enabling prospective tourists to visualize experiences prior to physical visits.[10,26] By embedding booking services directly into the virtual environment, WonderReal aligns with research suggesting that the metaverse can streamline travel planning and stimulate booking decisions through experiential marketing.[6,25]

WonderGoods

This zone highlights Indonesia's creative economy by featuring culinary products, fashion, and handicrafts from small and medium enterprises (SMEs). Integrated e-commerce links allow users to purchase products directly from the platform. Such initiatives demonstrate how the metaverse extends beyond tourism promotion to facilitate digital entrepreneurship, enabling MSMEs to reach global audiences.[27] This reflects findings that virtual marketplaces in the metaverse can democratize access to global markets and increase brand visibility for local creative industries.[28]

WonderFun

This zone provides interactive entertainment through mini-games and cultural performances, including Fahombo Runner, inspired by the traditional stone-jumping ritual from Nias. Cultural gamification in virtual tourism environments enhances engagement and provides educational value by embedding traditional practices into interactive play.[29,30] Similarly, the staging of virtual dance performances aligns with the global trend of digitizing intangible cultural heritage to ensure preservation and wider dissemination.[31]

Through these four zones, WonderVerse Indonesia integrates cultural promotion, digital commerce, and tourism booking within a single metaverse environment, exemplifying the convergence of entertainment, information, and transaction. This holistic approach mirrors what scholars have termed the "phygital" experience, where physical and digital tourism practices merge to create hybrid forms of engagement.[1,32] Positioned as both a marketing tool and a digital marketplace, WonderVerse Indonesia demonstrates how emerging economies can leverage the metaverse to expand global visibility, strengthen tourism resilience, and empower creative industries in the post-pandemic era.

Findings

A recent study investigated the determinants influencing Generation Z and Y's adoption of WonderVerse Indonesia, focusing on five hypotheses grounded in technology adoption and virtual tourism literature. These factors include perceived complexity, cost, technological threat, social threat, and user intention toward satisfaction.

Perceived complexity was found to have a significant negative effect on users' intentions to adopt the platform. When the interface is perceived as difficult to navigate or overloaded with features, users are less motivated to engage. This finding aligns with broader research on digital tourism adoption, where usability and intuitive design strongly predict user acceptance.[15,29] For Generation Z and Y, who generally demonstrate higher digital literacy, excessive complexity paradoxically acts as a deterrent, as they expect seamless, fast, and engaging experiences.[33]

Perceived cost, encompassing both financial investment (e.g., VR equipment, stable internet access) and temporal costs, also emerged as a barrier to adoption. Previous studies have emphasized that cost-related barriers significantly influence users' decision-making in adopting immersive technologies. In the context of emerging economies, affordability remains a critical determinant, as consumers weigh the perceived value of virtual tourism experiences against tangible travel opportunities.

Perceived technological threat includes concerns about privacy, data security, cybersickness, and potential physical discomfort from prolonged VR use. The findings revealed a strong negative impact of such threats on intention to adopt WonderVerse Indonesia. This is consistent with recent metaverse tourism research, which shows that security vulnerabilities and physiological risks can erode user trust and hinder sustained engagement.[34] Transparent communication of data policies, robust cybersecurity measures, and ergonomic VR design are crucial to address these concerns.[35]

Perceived social threat was also identified as a significant factor reducing users' willingness to engage with WonderVerse Indonesia. Social threats include fears of negative social evaluation, harassment in virtual environments, or stigma related to spending time in the metaverse. Recent studies confirm that social acceptability plays a key role in digital adoption, especially for younger cohorts who are highly sensitive to peer perceptions and online community norms.[36,37] Creating safe, inclusive, and community-driven virtual spaces may

help mitigate these threats and enhance positive social engagement.

Last, user intention showed a strong positive relationship with satisfaction, suggesting that motivated users derive more value from their interactions within the platform. This finding echoes previous research emphasizing that strong initial adoption intentions translate into deeper engagement, higher satisfaction, and greater brand loyalty in virtual tourism contexts.[38] For platforms like WonderVerse Indonesia, fostering clear user expectations and aligning features with user motivations is critical to sustaining long-term participation.

In summary, the study confirmed that negative perceptions act as barriers to adoption, while stronger intentions significantly enhance user satisfaction. These findings align with established models such as the Unified Theory of Acceptance and Use of Technology (UTAUT2), which emphasizes performance expectancy, effort expectancy, and risk perceptions as central determinants of technology acceptance. Addressing complexity, affordability, safety, and social acceptance is thus essential to unlocking the potential of metaverse platforms in tourism.

DISCUSSION

The case of WonderVerse Indonesia highlights the dual nature of metaverse tourism, where significant opportunities coexist with critical challenges.

On one hand, the platform demonstrates how metaverse applications can enhance destination marketing by offering immersive previews of iconic sites such as Bali and Raja Ampat. Research indicates that immersive technologies improve tourists' decision-making by allowing them to virtually explore attractions before committing to physical visits.[39] In this sense, WonderVerse Indonesia functions not only as a promotional tool but also as a pre-experience platform, bridging the gap between imagination and reality.

In addition, WonderVerse supports the visibility of Indonesia's creative economy and micro, small, and medium enterprises (MSMEs) by providing virtual marketplaces such as WonderGoods. This aligns with findings by Lee et al. (2023), who emphasize that virtual environments empower small businesses by expanding market access beyond geographical boundaries. By enabling MSMEs to showcase culinary, fashion, and handicraft products digitally, WonderVerse contributes to sustainable economic growth and inclusivity within the digital economy.[40]

However, adoption challenges remain. Studies consistently highlight perceived complexity, cost, and risks as barriers to adopting virtual tourism platforms.[41] For younger generations, a cluttered interface or steep learning curve can reduce willingness to engage. Moreover, affordability is critical: VR equipment and high-speed internet access remain unevenly distributed in Indonesia, reinforcing digital divides. Trust and safety are also paramount, as concerns about privacy, cyberbullying, and digital well-being have been shown to shape user acceptance of metaverse tourism.

At the global level, scholars argue that the metaverse will not replace physical tourism but rather act as a complementary layer that enhances and diversifies experiences. For instance, virtual platforms may prepare visitors for physical travel, provide accessible alternatives for those unable to travel, or extend experiences after trips through hybrid engagement.[42] This "phygital" model of tourism (a blend of physical and digital) is increasingly recognized as the future of smart tourism ecosystems.[43]

Overall, the WonderVerse initiative reflects Indonesia's proactive stance in leveraging digital innovation for tourism and creative economy development. Yet, its success will depend on striking a balance between technological sophistication and user inclusivity. Addressing usability, affordability, and safety concerns will be essential for sustained adoption, while fostering community-driven, culturally authentic content can differentiate WonderVerse Indonesia in the competitive global metaverse landscape.

CONCLUSION

WonderVerse Indonesia represents a pioneering initiative in the country's digital tourism ecosystem, reflecting Indonesia's commitment to embracing global trends in metaverse adoption. As a government-led innovation, it demonstrates how immersive virtual environments can function as powerful instruments for destination marketing, cultural preservation, and creative product promotion. By providing digital access to iconic locations such as Bali, Wakatobi, and Raja Ampat, as well as showcasing culinary, fashion, and handicraft products, WonderVerse Indonesia positions itself as both a tourism and creative economy accelerator. Importantly, this integration offers not only opportunities for international exposure but also pathways for empowering local micro, small, and medium enterprises (MSMEs) through digital transformation.

Nevertheless, findings from the study highlight several adoption barriers that must be addressed to ensure the platform's long-term sustainability and inclusivity. Perceived complexity, high costs of access, and technological as well as social risks remain significant deterrents, particularly among younger generations who are otherwise considered digital natives. These barriers underscore the need for a user-centered approach in both platform design and policy support. Simplified navigation, comprehensive onboarding tutorials, and intuitive interfaces will reduce the perception of complexity, while affordability measures such as free trials, bundled packages, or partnerships with educational institutions could increase accessibility for a broader demographic.

Equally critical is the issue of trust and safety. Strong cybersecurity frameworks, transparent data governance, and proactive community moderation are necessary to minimize perceived technological and social threats. Such measures will not only build user confidence but also create a welcoming environment that fosters meaningful interactions among virtual tourists. Furthermore, inclusivity should remain a guiding principle, ensuring that diverse cultural identities, regions, and creative industries are equitably represented within the virtual ecosystem.

From a policy perspective, stronger collaboration between the government, private developers, and MSMEs is essential. MSMEs in particular can benefit from digital marketplaces embedded in the metaverse, but their participation

requires capacity-building programs, digital literacy initiatives, and accessible technological tools. Supporting MSME integration will ensure that the economic benefits of WonderVerse Indonesia extend beyond large stakeholders and contribute to community-based tourism development.

Looking forward, academic research should continue to investigate the evolving role of the metaverse in tourism. Areas for further exploration include longitudinal studies on user behavior and retention, comparative analyses of cross-cultural adoption, and the integration of augmented reality (AR) and virtual reality (VR) technologies to deepen user immersion. Additionally, examining the emotional and psychological dimensions of virtual tourism could yield insights into how such experiences influence travelers' real-world decisions and brand loyalty.

In conclusion, while WonderVerse Indonesia is not a substitute for physical travel, it holds substantial promise as a complementary digital platform that enhances global visibility for Indonesian destinations and creative industries. By addressing adoption barriers, ensuring affordability, and building trust through inclusive and secure practices, the platform has the potential to become a sustainable model of digital tourism innovation in Southeast Asia and beyond.

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