



The Role of Chatbots in Enhancing Tourist Engagement: A Contextual Study of Bali

Anak Agung Gede Wijaya

Akademi Pariwisata Denpasar, Indonesia

Address: Denpasar, Indonesia

Corresponding author: agungwijaya@akpar-denpasar.ac.id

Abstract. Bali, a globally recognized tourism destination, is actively integrating digital technologies to improve visitor experiences, with chatbots emerging as a key interface for enhancing tourist engagement. This study explores how chatbots function within Bali's tourism ecosystem, focusing on their ability to deliver real-time assistance, personalized communication, and sustained interaction throughout the travel journey. Chatbots are found to play a strategic role in shaping tourist satisfaction and loyalty, yet their deployment in Bali is marked by uneven access, infrastructural limitations, and cultural considerations that affect user acceptance. Challenges such as limited digital readiness among small tourism enterprises and the need for culturally aligned chatbot interactions underscore the importance of localized solutions. The findings emphasize that the successful implementation of chatbot technologies in Bali depends on linguistic inclusivity, trust-building design, and supportive digital policies that enable broader adoption across the tourism sector.

Keywords: Bali tourism, chatbots, tourist engagement, digital innovation, smart tourism

Abstrak. Bali, sebagai salah satu destinasi pariwisata terkemuka di dunia, terus mengadopsi teknologi digital untuk meningkatkan kualitas pengalaman wisatawan, dengan chatbot menjadi salah satu inovasi utama dalam memperkuat interaksi dan keterlibatan pengunjung. Studi ini mengkaji peran chatbot dalam ekosistem pariwisata Bali, khususnya dalam menyediakan layanan informasi secara real-time, komunikasi yang dipersonalisasi, serta interaksi yang berkelanjutan sepanjang siklus perjalanan wisatawan. Chatbot terbukti memainkan peran strategis dalam membentuk kepuasan dan loyalitas wisatawan, namun penerapannya di Bali masih menghadapi tantangan seperti ketimpangan infrastruktur, keterbatasan literasi digital di kalangan pelaku usaha kecil, serta kesenjangan budaya dalam penerimaan teknologi. Temuan menunjukkan bahwa keberhasilan integrasi chatbot sangat bergantung pada kemampuan sistem untuk mengakomodasi keragaman bahasa, membangun kepercayaan pengguna, serta didukung oleh kebijakan digital yang inklusif dan kontekstual.

Kata kunci: Pariwisata Bali, chatbot, keterlibatan wisatawan, inovasi digital, pariwisata cerdas.

1. INTRODUCTION

The integration of artificial intelligence (AI) into tourism services has sparked a paradigm shift in how destinations engage with travelers, particularly through conversational technologies such as chatbots. These AI-driven agents simulate human conversation and have been increasingly utilized to enhance digital visitor experiences by offering instant, personalized, and context-aware assistance (Gursoy et al., 2022). As tourist behavior becomes more digitally oriented, destination management organizations (DMOs) are compelled to adopt innovative tools that can effectively manage tourist queries, provide real-time information, and maintain engagement throughout the customer journey (Mariani & Borghi, 2021; Tussyadiah et al., 2018). In this context, chatbots emerge as critical facilitators in bridging the interaction

gap between destinations and tourists, particularly in resource-constrained or high-demand settings.

The concept of tourist engagement itself has evolved, now encompassing multidimensional elements such as cognitive attention, emotional connection, and behavioral participation with tourism brands or destinations (Brodie et al., 2011; Hollebeek et al., 2022). As destinations compete for visitor attention and loyalty, maintaining continuous engagement across pre-visit, on-site, and post-visit stages has become increasingly vital. Chatbots, due to their ability to operate 24/7, provide multilingual support, and learn user preferences, are uniquely positioned to support this continuum of engagement (Buhalis et al., 2022; Ivanov & Webster, 2019). Not only do they support transactional functions like bookings and inquiries, but they also contribute to building emotional resonance with tourists through personalized dialogue and content delivery.

In regions like Southeast Asia, where digital adoption is accelerating, chatbots are gaining momentum as part of broader smart tourism strategies. Bali, Indonesia's premier tourist destination, has witnessed efforts to digitize its tourism offerings through initiatives such as "Bali Smart Island." While empirical evidence on chatbot implementation in Bali is limited, anecdotal accounts suggest increasing deployment by hotels, tour operators, and tourism boards to provide real-time assistance, offer itinerary suggestions, and deliver safety or cultural information (Putra & Astuti, 2021; M. M. Rahman et al., 2023). The region's cultural diversity, language multiplicity, and tourism dependence make it an important contextual lens to explore chatbot capabilities and challenges.

Despite growing enthusiasm, challenges persist regarding chatbot adoption in tourism, particularly around language nuances, emotion recognition, data privacy, and integration with local small and medium enterprises (SMEs) that may lack digital infrastructure (Lee et al., 2020; Zamora, 2020). In culturally rich and highly service-oriented destinations such as Bali, where human interaction plays a central role in the tourism experience, the deployment of AI must align with cultural expectations and emotional authenticity. Consequently, examining the role of chatbots through a literature-based perspective contextualized in Bali not only fills a gap in current academic discourse but also informs practitioners and policymakers seeking to modernize tourism engagement sustainably.

2. METHODS

This study employed a structured narrative literature review to explore how chatbots enhance tourist engagement, with a focus on insights relevant to Bali. Academic sources were identified through systematic searches in Scopus, Web of Science, and ScienceDirect, using keywords such as “chatbots,” “tourism,” “tourist engagement,” “destination marketing,” and “Bali.” The review was limited to peer-reviewed articles published in English between 2018 and 2024 to capture recent developments in AI-driven tourism technologies.

Inclusion criteria required that studies focus on chatbot applications within the tourism context and discuss aspects of user experience, engagement, or service delivery. After initial screening, 45 relevant articles were selected for full-text review. Thematic analysis was conducted inductively by identifying recurring patterns and organizing findings into key conceptual themes. Bali was chosen as a contextual reference due to its significance as a leading digital tourism destination in Southeast Asia, frequently mentioned in the reviewed literature.

3. RESULTS AND DISCUSSION

The systematic review of literature revealed several converging themes regarding the functional and strategic role of chatbots in enhancing tourist engagement. While research spans various geographic contexts and technological applications, three dominant thematic areas emerged: (1) the functional roles of chatbots in tourism service delivery, (2) the mechanisms by which chatbots influence tourist engagement, and (3) the contextual and infrastructural challenges faced by destinations—particularly those in emerging economies such as Bali. These themes reflect the multidimensional influence of chatbot technologies across operational, experiential, and strategic layers of destination management. In synthesizing these findings, this review presents each theme with distinct sub-sections to highlight theoretical contributions, application trends, and implications for practice.

Functional Roles of Chatbots in Tourism

The functional roles of chatbots in tourism have expanded significantly in recent years, aligning with broader shifts in smart tourism and digital service delivery. Chatbots primarily serve as automated information providers, helping tourists navigate destination offerings, book services, and receive real-time support. These capabilities are particularly valued in high-volume destinations, where human resources are often stretched thin and immediate responsiveness is essential to tourist satisfaction (Cicco et al., 2022; Shankar et al., 2020). Beyond basic transactional assistance, chatbots are increasingly used for customer relationship

management, offering personalized itinerary suggestions and emotional support through simulated conversational interfaces.

Recent advancements in natural language processing (NLP) and sentiment analysis have enabled chatbots to deliver more contextual and emotionally intelligent interactions, further enhancing their utility in tourism engagement. Studies have shown that conversational agents equipped with emotion-recognition capabilities can improve tourist trust and foster positive brand perception (Chung et al., 2020; Xu et al., 2022). For example, AI-based concierge systems in hospitality settings now use chatbots not only for booking management but also to respond empathetically to guest concerns, thereby replicating some dimensions of human interaction.

Another significant role of chatbots is in multilingual communication facilitation. In destinations like Bali, which attract a globally diverse tourist population, language barriers can hinder service accessibility. Chatbots programmed with multilingual capabilities can bridge this gap effectively, providing culturally appropriate and linguistically accurate responses (Belanche et al., 2020; Luo & Xu, 2021). These features contribute to a more inclusive and accessible tourism environment, especially for first-time or non-English-speaking travelers.

Moreover, tourism chatbots are increasingly integrated into broader digital ecosystems that include mobile apps, QR-based information kiosks, and social media platforms. This integration supports seamless engagement across touchpoints and enhances continuity in the tourist journey (Tonkin et al., 2022; Tung & Law, 2021). In this context, chatbots act as mediators between tourists and digital infrastructures, guiding users to transport services, cultural experiences, emergency contacts, and even sustainable tourism practices promoted by local authorities.

In summary, the functional scope of chatbots in tourism extends far beyond automation. They serve as facilitators of personalized, efficient, and accessible tourist experiences. The literature confirms that as chatbot technologies evolve, their roles in tourism will likely shift from merely transactional tools to relational, context-aware companions that enhance value at every stage of the tourist lifecycle.

Chatbots and Tourist Engagement Mechanisms

Tourist engagement is increasingly recognized as a dynamic, multidimensional construct involving emotional, cognitive, and behavioral connections between visitors and destinations. Within this framework, chatbots have emerged as mediating agents capable of stimulating and sustaining engagement at various touchpoints across the tourist journey.

Scholars have identified several psychological and experiential mechanisms by which chatbots contribute to tourist engagement, including perceived interactivity, personalization, and perceived control over the information search process (Alt & Reinhold, 2020; C. Li et al., 2021). These mechanisms are central to cultivating tourist interest and maintaining user involvement, particularly during pre-trip planning and on-site navigation.

One of the most commonly discussed mechanisms in the literature is interactivity. Chatbots simulate real-time conversations and offer instantaneous feedback, which gives tourists a sense of agency and immersion in their information-seeking behavior. High interactivity enhances user satisfaction and can foster a sense of co-creation, where tourists feel actively involved in shaping their experiences (Prentice et al., 2020; Tussyadiah et al., 2018). For instance, AI-based conversational systems allow tourists to ask destination-specific questions, receive customized suggestions, and even make bookings without switching platforms, which increases convenience and perceived value.

Another crucial mechanism is personalization. Chatbots can leverage user data to tailor content and suggestions, which significantly enhances emotional and cognitive engagement. Studies have shown that when users receive responses that align with their preferences, demographics, or travel context, they exhibit greater loyalty and intention to revisit or recommend the destination (Cui et al., 2022; Zhang & Zhang, 2020). This personalization also fosters relational engagement, as tourists develop an affinity for the destination through the chatbot interface, treating it as an extension of the brand identity.

In addition, perceived informativeness and trustworthiness are critical in the engagement process. Tourists are more likely to rely on chatbot-based recommendations when the system is seen as credible, accurate, and transparent. Trust, once established through repeated positive interactions, enhances behavioral engagement by increasing the likelihood of bookings, social media sharing, and post-visit reviews (Luong et al., 2021; Ng & Rezaee, 2021). Chatbots that are transparent about their AI nature and provide trustworthy third-party references can build trust more effectively than those designed to mimic human agents too closely, which may raise ethical or authenticity concerns.

Moreover, chatbots facilitate continuous engagement by maintaining touchpoints throughout the travel cycle. Some tourism service providers employ chatbots not only for pre-arrival planning but also for in-trip assistance and post-trip follow-up. This life-cycle approach creates sustained interaction and emotional resonance, reinforcing long-term engagement (Huang et al., 2021; Kim & Park, 2020). Tourists appreciate being able to access a single

conversational agent for multiple purposes, which fosters loyalty and enhances the destination's digital brand image.

Collectively, these mechanisms position chatbots as powerful engagement tools capable of enhancing both the tourist experience and the destination's relational value. The literature emphasizes that beyond functional convenience, chatbot interactions contribute to deeper levels of psychological involvement and affective attachment, which are key drivers of tourist retention and advocacy. As the tourism industry continues its digital transformation, understanding and optimizing these engagement pathways will be vital for competitive advantage.

Adoption Challenges in Emerging Destinations

While chatbot integration into tourism has shown notable benefits in enhancing engagement, its implementation in emerging destinations such as Bali faces multiple barriers. These challenges stem from infrastructural limitations, digital literacy gaps, cultural sensitivities, and regulatory constraints that are often underrepresented in global technology discourse. As noted in regional technology adoption studies, the lack of reliable digital infrastructure and inconsistent internet connectivity can significantly undermine chatbot performance, especially in semi-rural or peripheral tourism zones (George et al., 2021; Hassan et al., 2022). In Bali, while major urban areas are digitally connected, many community-based tourism sites still struggle with bandwidth limitations that disrupt real-time chatbot interactions.

Another prominent barrier is the limited digital capacity among small and medium-sized enterprises (SMEs) in the tourism sector. Unlike large hotels or international travel agencies, local operators often lack the financial, technical, or human resources to integrate and maintain AI-based systems (Daud et al., 2020; M. Z. Rahman & Theingi, 2021). This leads to uneven technological adoption across the tourism value chain, which can fragment the user experience and reduce chatbot effectiveness in delivering consistent engagement across different service providers. For example, while a hotel in Seminyak may offer AI-driven concierge services, a nearby traditional guesthouse might still rely solely on manual communication, leading to gaps in digital continuity.

Cultural and linguistic complexities also hinder chatbot usability in diverse destinations. Bali attracts tourists from various nationalities, each with unique language and interaction expectations. Standardized chatbot interfaces often fail to capture local linguistic nuances, honorifics, and culturally appropriate responses, potentially leading to

miscommunication or perceived inauthenticity (Marimuthu & Srinivasan, 2022; Nguyen et al., 2023). As chatbots are inherently shaped by their training data and interaction design, systems developed in Western contexts may not effectively reflect the communication norms or service expectations of Asian destinations.

Moreover, trust and data privacy concerns pose significant challenges to user acceptance in emerging regions. Tourists are increasingly aware of how their data is stored, shared, and used, yet many destinations lack clear regulatory frameworks on AI governance and consumer protection (Bakar et al., 2021; Nasir et al., 2022). In Indonesia, the absence of comprehensive AI or data privacy legislation comparable to GDPR-level standards raises concerns about transparency, which can deter chatbot use among both tourists and service providers.

Another obstacle lies in the low perceived return on investment (ROI) associated with chatbot implementation among smaller tourism actors. For many local operators, the cost of developing, localizing, and maintaining chatbot systems is perceived as too high relative to expected customer gains, particularly during post-pandemic recovery phases when resources are already stretched (Chandralal & Deans, 2020; Kumar et al., 2023). Without government incentives or public-private partnerships to support digital transformation, chatbot adoption may remain limited to higher-end or internationally backed institutions.

In sum, while chatbots offer considerable potential to transform tourist engagement in emerging destinations like Bali, their widespread implementation is contingent upon addressing structural, cultural, and regulatory challenges. Future chatbot strategies must be grounded in local realities, ensuring not only technological functionality but also cultural relevance, affordability, and trustworthiness to support inclusive digital tourism development.

Contextual Insights from Bali

Bali represents a unique convergence of global tourism demand, rich cultural heritage, and ongoing digital transformation efforts, making it an illustrative context for exploring chatbot adoption and engagement outcomes. Despite the global narrative around smart tourism and AI integration, Bali's digital readiness is shaped by uneven infrastructural development, cultural dynamics, and policy implementation. While larger hospitality establishments in areas such as Nusa Dua, Seminyak, and Ubud have begun to adopt chatbot services for concierge and booking functions, smaller businesses in rural or community-based tourism areas remain largely excluded from such advancements (Pertiwi & Adhiguna, 2022; Arimbawa & Arka, 2023).

The adoption of chatbots in Bali's tourism ecosystem has largely been led by private sector actors and multinational hotel chains. These implementations often involve WhatsApp-based chatbots or proprietary AI assistants integrated into hotel websites and mobile applications. Their primary functions include real-time room availability checks, digital check-in services, and recommendations for dining, wellness, and nearby attractions (Wibowo et al., 2021; Sutrisna et al., 2022). Tourists report increased satisfaction when engaging with chatbot services that reduce the language barrier or provide contextual recommendations—particularly in navigating cultural events or religious etiquette unique to Bali.

However, despite these advances, local tourism SMEs—especially homestays, tour guides, and art market vendors—face technological marginalization. Studies indicate that these businesses often lack awareness of chatbot benefits, have low digital literacy, or express mistrust toward AI systems perceived as impersonal or incompatible with Balinese hospitality values (Dwipayanti et al., 2023; Sari & Mahadewi, 2022). For instance, the concept of “*melayani dengan hati*” (serving with heart), which is central to Balinese service philosophy, is often cited as being at odds with the emotionally limited nature of chatbot interactions. This cultural nuance underscores the need for localized chatbot design that respects and reflects local values.

Government initiatives have acknowledged the potential of AI and chatbots, but practical support for implementation remains fragmented. Programs like “Bali Smart Island” aim to digitize public services and promote sustainable tourism, yet many of these policies focus on infrastructure rather than capacity-building for human capital in tourism microenterprises (Irawan et al., 2022; Susanto et al., 2021). Without targeted education, financial incentives, or public-private collaboration, chatbot adoption risks reinforcing digital divides rather than promoting inclusive innovation.

Language also plays a significant role in shaping chatbot success in Bali. While some systems offer Indonesian and English, few incorporate Balinese or other regional dialects, limiting their utility in community-based tourism contexts. As highlighted by local researchers, linguistic inclusivity in chatbot design not only enhances user engagement but also serves as a tool for cultural preservation and identity representation (Suamba & Suputra, 2023; Wardana et al., 2022).

Overall, Bali illustrates both the opportunities and constraints of chatbot-enhanced tourist engagement in emerging economies. On one hand, it demonstrates that when properly implemented, chatbots can enrich visitor experiences, support operational efficiency, and enhance destination branding. On the other hand, it reveals the socio-technical disparities that

must be addressed to ensure equitable and culturally appropriate AI integration in tourism. Future efforts should prioritize co-design approaches, empowering local stakeholders to shape chatbot technologies that align with the island's unique cultural, linguistic, and service values.

Discussion

The findings of this review indicate that chatbots are playing an increasingly strategic role in tourism engagement, yet their adoption and effectiveness are shaped by a complex interplay of technological capacity, cultural alignment, user trust, and regional readiness. Across the literature, chatbot integration is not only seen as a tool for improving information delivery but also as a means to foster emotional and behavioral engagement by simulating personalized, interactive, and responsive communication (H. Li et al., 2021; Prentice et al., 2020). This is particularly critical in the tourism industry, where consumer experiences are often co-created and emotionally charged, making engagement mechanisms central to service quality and destination loyalty.

In destinations like Bali, chatbots have the potential to augment the tourist experience across the pre-visit, in-visit, and post-visit stages. However, contextual challenges such as infrastructural disparities, cultural expectations, and digital skill gaps create barriers to widespread implementation. For instance, while higher-end tourism providers in Bali have begun to adopt AI-driven solutions, small and medium-sized enterprises remain technologically underserved, perpetuating digital inequality within the tourism value chain (Hassan et al., 2022; M. Z. Rahman & Theingi, 2021). This fragmentation can hinder the consistency of digital experiences and dilute the perceived reliability of chatbot interactions across service providers.

Furthermore, the review highlights that chatbot design must go beyond functional automation to incorporate cultural sensitivity and emotional intelligence. In the Balinese context, the traditional hospitality ethos—characterized by warm, personalized, and heart-centered service—clashes with the emotionally limited responses of current chatbot systems (Dwipayanti et al., 2023; Sari & Mahadewi, 2022). This cultural mismatch may explain the skepticism among local tourism actors, who perceive chatbot adoption as a potential erosion of personal service quality. Therefore, cultural co-design approaches and localized linguistic models are essential to developing chatbots that align with regional values and expectations (Nguyen et al., 2023; Suamba & Suputra, 2023).

Trust and data privacy also emerged as critical factors influencing chatbot use. While tourists often appreciate real-time, always-available assistance, concerns about how personal data is stored, used, or monetized can reduce user confidence—especially in jurisdictions with weak regulatory frameworks (Bakar et al., 2021; Nasir et al., 2022). This is especially relevant in Bali, where legal protections for digital consumers are still evolving. Thus, transparency in chatbot design, including explicit consent requests and clarity around data handling, is vital to fostering long-term user trust and acceptance.

The review also underscores the importance of ecosystem-level thinking. Rather than viewing chatbots as standalone technologies, their successful integration depends on interoperability with mobile platforms, payment systems, transportation services, and local tourism infrastructure (Tonkin et al., 2022; Tung & Law, 2021). In Bali, achieving this requires stronger coordination among tourism boards, technology providers, government agencies, and local communities. Public-private partnerships and inclusive digital policies could serve as catalysts for scalable, equitable chatbot implementation.

In summary, while chatbots show great promise in transforming how destinations engage with tourists, their deployment must be context-aware, ethically guided, and inclusively governed. For emerging tourism economies like Bali, future research should focus on user-centered design, cross-linguistic chatbot development, and the socio-cultural adaptation of AI technologies. Additionally, empirical fieldwork is needed to validate theoretical models of chatbot engagement and assess their real-world impact on tourist satisfaction, service consistency, and brand loyalty.

4. CONCLUSION

Chatbots have become essential tools in enhancing tourist engagement by offering real-time assistance, personalized interactions, and continuous support throughout the travel journey. In tourism, they serve not merely as automated service agents but as strategic interfaces that shape visitor experiences and satisfaction. However, in emerging destinations like Bali, the implementation of chatbots reveals a digital divide, where large tourism operators adopt AI-driven services while smaller enterprises face barriers related to infrastructure, digital literacy, cultural alignment, and financial capacity. To be effective in such contexts, chatbot systems must be culturally adaptive, linguistically inclusive, and built on transparent, trust-based data practices. Their success depends on co-designed solutions that respect local hospitality norms and integrate seamlessly with existing tourism ecosystems. Advancing chatbot adoption in Bali and similar regions will require coordinated efforts among government

agencies, tourism stakeholders, and technology providers to ensure that these digital tools contribute to inclusive, ethical, and sustainable destination development.

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