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Navigating the Future: The Intersection of Tourist Guiding and Immersive Technologies

Geleceğe Yolculuk: Turist Rehberliği ve Sürükleyici Teknolojilerin Kesişimi

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Abstract / Öz

Immersive technologies are profound and multifaceted in terms of the transformation of the roles and responsibilities of tourist guides and their interactions with tourists. As the travel sector continues to meet the challenges posed by global events and changing consumer preferences, the integration of immersive technologies will play a critical role in shaping the future of tourist guiding. As the sector increasingly integrates advanced technologies, the traditional functions of tour guides are evolving. The main aim of this paper is to examine the tourist guide profession in the context of immersive technologies. In this context, a qualitative literature review was adopted as the research approach to synthesize existing research that examines the relationship between tourist guiding and technology. The paper examines immersive technologies in the context of tour management, tourist experience, training and the future of the tour guide profession. The paper concludes that the integration of immersive technologies will play a critical role in shaping the future of tourist guiding as the travel sector meets the challenges of global events and changing consumer preferences. Therefore, tourist guides must evolve with these technologies, adopting new skills and approaches to deliver meaningful experiences that resonate with diverse audiences. By using technology to enhance the tourist experience and adapting to the changing needs of travellers, tourist guides can ensure their relevance and success in the future of tourism.

Sürükleyici teknolojiler, turist rehberlerinin rollerini, sorumluluklarını ve turistlerle etkileşimlerini yeniden şekillendirmesi açısından derin ve çok yönlüdür. Seyahat sektörü, küresel olayların ve değişen tüketici tercihlerinin yarattığı zorluklarla başa çıkmaya devam ederken, sürükleyici teknolojilerin entegrasyonu turist rehberliğinin geleceğini şekillendirmede kritik bir rol oynayacaktır. Seyahat sektörü ileri teknolojileri giderek daha fazla entegre ettikçe, tur rehberlerinin geleneksel işlevi de evrim geçirmektedir. Bu makalenin ana amacı, turist rehberliği mesleğini sürükleyici teknolojiler çerçevesinde incelemektir. Bu bağlamda, turist rehberliği ve teknoloji arasındaki ilişkiyi inceleyen mevcut araştırmaları sentezlemek için araştırma yaklaşımı olarak nitel bir literatür taraması benimsenmiştir. Çalışmada, sürükleyici teknolojiler tur yönetimi, turist deneyimi, eğitim ve turist rehberliği mesleğinin geleceği bağlamında incelenmiştir. Çalışma, seyahat sektörünün küresel etkinliklerin ve değişen tüketici tercihlerinin zorluklarıyla karşılaştıkça, sürükleyici teknolojilerin entegrasyonunun turist rehberliğinin geleceğini şekillendirmede kritik bir rol oynayacağını ortaya koymaktadır. Bu nedenle, turist rehberleri bu teknolojilerle birlikte gelişmeli, farklı kitlelerde yankı uyandıran anlamlı deneyimler sunmak için yeni beceriler ve yaklaşımlar benimsemelidir. Turist rehberleri, turist deneyimini geliştirmek için sürükleyici teknolojilerden yararlanarak ve turistlerin değişen ihtiyaçlarına uyum sağlayarak turizmin geleceğinde geçerliliklerini ve başarılarını garanti altına alabileceklerdir.

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1. Introduction

The impact of immersive technologies on tourist guiding is a multifaceted phenomenon that has gained significant traction in recent years, particularly in the context of the COVID-19 pandemic and the subsequent shift towards digital experiences. Immersive technologies, including Virtual Reality (VR), Augmented Reality (AR), and Extended Reality (XR), have transformed the way tourists engage with destinations, offering novel ways to experience and interact with cultural and natural sites. This transformation not only enhances the tourist experience but also reshapes the role of

tourist guides, who must adapt to these technological advancements. One of the primary benefits of immersive technologies in tourism is their ability to provide engaging and interactive experiences that traditional guiding methods cannot match. For instance, VR allows users to virtually explore destinations before visiting, significantly influencing their travel decisions and enhancing their overall experience (Alyahya & McLean, 2021; Stappung, 2023). This capability is particularly valuable in the context of destination marketing, where immersive virtual tours serve as effective tools for showcasing attractions and helping tourists plan their itineraries (Nazare et al., 2024). Such technologies enable potential visitors to familiarize themselves with a location's offerings, thereby increasing their likelihood of visiting in person.

Integrating immersive technologies into tourist guiding can enhance the educational aspect of the experience. By utilizing AR applications, guides can provide real-time information and context about the visited sites, enriching the narrative and making the experience more informative (Ma, 2024; Zhang, 2024). This approach not only captivates tourists but also fosters a deeper understanding of the cultural and historical significance of the sites, which is essential for promoting sustainable tourism practices. As tourists increasingly seek meaningful and authentic experiences, the role of guides evolves from mere facilitators to educators who leverage technology to enhance learning outcomes (Podolskaya, 2024).

The COVID-19 pandemic has accelerated the adoption of immersive technologies in tourism, as travel restrictions and health concerns prompted many to seek alternatives to traditional tourism experiences. Virtual tours became a popular substitute, allowing individuals to explore destinations from the safety of their homes (Patria et al., 2023; Ye et al., 2022). This shift has not only expanded the reach of tourist attractions but has also introduced a new demographic of "digital tourists" who may not have otherwise engaged in these experiences. Consequently, tourist guides are now tasked with developing skills in digital storytelling and virtual engagement to cater to this emerging audience (Nazare et al., 2024).

The immersive technologies have the potential to foster greater inclusivity in tourism. By providing virtual access to destinations, individuals with mobility challenges or those unable to travel for various reasons can still experience cultural and historical sites (Vasyuta 2024; Zheng, 2023). This democratization of access is crucial for promoting equity in tourism, allowing a broader audience to engage with and appreciate diverse cultures and histories. As guides adapt to these changes, they must also consider creating inclusive experiences catering to a wide range of abilities and preferences.

The economic implications of immersive technologies in tourism are also noteworthy. The ability to offer virtual experiences can serve as a revenue stream for tourist attractions, particularly during periods of low physical visitation (Canio et al., 2022; Prados-Castillo et al., 2023). By monetizing virtual tours and experiences, destinations can sustain their operations and continue to engage with potential visitors, even in challenging times. This economic resilience is essential for the long-term sustainability of the tourism sector, which has been disproportionately affected by global events such as the pandemic.

As immersive technologies continue to evolve, the potential for innovation in tourist guiding is vast. For example, the emergence of the metaverse presents new opportunities for creating immersive environments where tourists can interact with digital representations of destinations and engage in shared experiences with others. This shift towards a more interconnected and interactive tourism landscape necessitates that guides embrace new technologies and adapt their approaches to meet the changing expectations of tourists (Sharma, 2024; Zhang, 2023).

2. Methodological Approach

The main aim of the paper is to examine the profession of tourist guiding within the framework of immersive technologies. Therefore, a qualitative literature review was adopted as the research approach to synthesize existing research examining the relationship between tourist guiding and technology and to offer insights into the field. A qualitative literature review typically involves several basic steps, such as formulating research questions, conducting literature reviews, selecting relevant studies, and synthesizing findings (Tufa et al., 2023). In this paper's research, data collected from various sources, including empirical studies, theoretical articles, and narrative reviews, align with the research's primary purpose. A systematic approach was used throughout the process, from data collection to interpretation. The keywords ‘tourist guiding and technology, tourist guiding and immersive technologies, tourist guiding and reality technologies, reality technologies and tour management, reality technologies and tour experience, technology and tourist guiding education’ were used to identify patterns, themes, and gaps in the literature. Thus, it was tried to provide a deeper understanding of the subject.

3. Findings for Literature Review

3.1. The Content of Immersive Technologies

Immersive technologies represent a broad spectrum of digital innovations designed to create engaging, interactive experiences that simulate real-world environments or enhance user perception of reality. This category encompasses various forms of technology, including Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Extended Reality (XR), each offering different levels of immersion and interactivity. The core objective of these technologies is to provide users with a heightened sense of presence, allowing them to interact with digital content in a natural and intuitive manner.

The classification of immersive technologies is often based on their degree of immersion. Non-immersive systems like traditional computer screens offer limited interaction and engagement. Semi-immersive systems, like projection-based environments, enhance user experience but do not fully envelop the user in a virtual world. Fully immersive systems, typically utilizing head-mounted displays (HMDs), create a comprehensive sensory experience by engaging multiple senses, including sight, sound, and touch, thereby allowing users to feel as though they are physically present in the virtual environment (Chan et al., 2023; Chengoden et al., 2023; Llanes-Jurado et al., 2020; Pallavicini et al., 2022).

The applications of immersive technologies are vast and varied, spanning multiple fields such as education, healthcare, entertainment, and the sector. In education, immersive technologies have been shown to enhance learning experiences by providing interactive simulations that allow students to engage with complex concepts hands-on. For instance, VR can facilitate experiential learning by immersing students in realistic scenarios, thereby improving retention and understanding of the subject matter (Beachum & Krallman, 2023; Chen, 2023; Tao et al., 2021). Similarly, in healthcare, VR is utilized for therapeutic purposes, such as pain management and rehabilitation, by creating controlled environments where patients can practice movements or confront fears in a safe space (Baragash et al., 2022; Hajesmaeel-Gohari et al., 2021; Palacios-Navarro & Hogan, 2021).

In entertainment, immersive technologies have revolutionized gaming and storytelling by enabling users to step into the narrative and interact with characters and environments in unprecedented ways. This level of engagement not only enhances user enjoyment but also fosters emotional connections to the content, making the experiences more impactful (Capato, 2024; Fang, 2024; Melo, 2023). Furthermore, in the business sector, immersive technologies are increasingly used for training and development, allowing employees to practice skills in simulated environments that mimic real-world challenges without the associated risks (Fraile, 2023; Fracaro et al., 2022; Uribe, 2023).

The psychological impact of immersive technologies is also a critical area of study. Research indicates that these technologies can significantly influence user behavior and attitudes, particularly in promoting pro-environmental behaviors and enhancing empathy through virtual experiences that simulate the consequences of actions on the environment or others (Nelson et al., 2020; Mosca, 2024; Soliman et al., 2017;). The immersive nature of these experiences can lead to greater emotional engagement, which is essential for fostering behavioral change and social awareness.

3.2. The Impact of Immersive Technologies on Tourist Guiding

The impact of immersive technologies on tourist guiding is a multifaceted phenomenon that has gained significant traction in recent years, particularly in the context of the COVID-19 pandemic and the subsequent shift towards digital experiences. Immersive technologies, including Virtual Reality (VR) and Augmented Reality (AR), have transformed the way tourists engage with destinations, offering novel ways to experience and interact with cultural and natural sites. This transformation not only enhances the tourist experience but also reshapes the role of tourist guides, who must adapt to these technological advancements.

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As immersive technologies continue to evolve, the potential for innovation in tourist guiding is vast. For example, the emergence of the metaverse presents new opportunities for creating immersive environments where tourists can interact with digital representations of destinations and engage in shared experiences with others (Sharma, 2024; Zhang, 2023). This shift towards a more interconnected and interactive tourism landscape necessitates that guides embrace new technologies and adapt their approaches to meet the changing expectations of tourists.

3.3. Development of Immersive Technologies on the Management of Guided Tours

The impact of technology on tour management, particularly in the realm of tourist guiding, has been profound and multifaceted. As the travel sector evolves, integrating digital technologies has become essential in enhancing the efficiency and effectiveness of tour management practices. This transformation is largely driven by the emergence of smart tourism, which leverages advanced technologies to improve the overall tourist experience and streamline operations within the travel sector (Any, 2024; Asif, 2024; Purnama, 2023).

One of the most significant advancements in tour management is the utilization of Geographic Information Systems (GIS) and remote sensing technologies. These tools enable tourism managers to analyze spatial data, thereby enhancing destination marketing, planning, and management (Magige et al., 2020). By employing GIS, tour guides can provide tourists with real-time information about their surroundings, including historical context, cultural significance, and logistical details, which enriches the overall experience (Magige et al., 2020; Zheng, 2023). Furthermore, integrating big data analytics allows for a more nuanced understanding of tourist behaviors and preferences, enabling personalized tour experiences that cater to individual needs (Any, 2024; Purnama, 2023).

The COVID-19 pandemic has further accelerated the adoption of technology in tourism management. The need for contactless services and enhanced health safety protocols has led to the implementation of digital health passports, crowd control technologies, and real-time management systems (Li et al., 2022; Trunfio & Pasquinelli, 2021). These innovations not only address immediate health concerns but also pave the way for a more resilient tourism infrastructure that can adapt to future challenges (Mihigo, 2023). For instance, smart tourism technologies facilitate the management of visitor flows, ensuring that tourist destinations can maintain safety while providing enjoyable experiences (Susanto et al., 2020; Trunfio & Pasquinelli, 2021).

Moreover, the rise in mobile applications has transformed how tourists interact with tour guides and manage their travel itineraries. Mobile platforms enable tourists to access information, book tours, and communicate with guides seamlessly, enhancing the convenience and accessibility of tourism services (Any, 2024; Qin & Younghwan, 2023). This shift towards mobile technology aligns with the growing expectation for instant access to information and services, which is increasingly becoming a standard in the travel sector (Any, 2024; Khan et al., 2023; Qin & Younghwan, 2023).

Additionally, the use of augmented reality (AR) and virtual reality (VR) technologies is reshaping the tourist experience by providing immersive storytelling and interactive learning opportunities that engage visitors in novel ways (Leung et al., 2022; Sousa et al., 2023; Tian et al., 2019).

The implementation of blockchain technology in tourism management also holds significant promise. Blockchain can enhance transparency and security in transactions, which is particularly important in online bookings and payments (Raluca-Florentina, 2022; Tyan et al., 2021). This technology can also facilitate the creation of decentralized platforms for sharing tourist information, thereby empowering local communities and enhancing the authenticity of the tourist experience (Tyan et al., 2021). Furthermore, the potential for blockchain to streamline supply chain processes in tourism can lead to more efficient resource management and improved service delivery (Raluca-Florentina, 2022; Tyan et al., 2021).

In addition to these technological advancements, the role of leadership in fostering a culture of innovation within tourism organizations cannot be overstated. Effective leadership is crucial for adopting new technologies and ensuring that staff are adequately trained to utilize these tools (Buhalis, 2019; Giotis & Papadionysiou, 2022). As tourism managers embrace digital transformation, they must also consider the implications of these technologies on the workforce and the overall tourist experience (Buhalis, 2019; Giotis & Papadionysiou, 2022; Park et al., 2023). Technology integration should enhance, rather than detract from, the personal touch that is often a hallmark of effective tour guiding (Buhalis, 2019; Giotis & Papadionysiou, 2022; Park et al., 2023).

Smart tourism encompasses technological advancements and a holistic approach to destination management that prioritizes sustainability and community engagement (Errichiello & Micera, 2021; Serra et al., 2022; Vecchio et al., 2021). By leveraging digital technologies, tourism stakeholders can create more sustainable practices that minimize environmental impact while maximizing economic benefits for local communities (Errichiello & Micera, 2021; Serra et al., 2022; Vecchio et al., 2021). This approach aligns with the growing demand for responsible tourism practices that prioritize the well-being of both tourists and host communities (Errichiello & Micera, 2021; Serra et al., 2022; Vecchio et al., 2021).

As the travel sector adapts to technological advancements, the importance of data privacy and security cannot be overlooked. With the increasing reliance on digital platforms for managing tourist information and transactions, protecting personal data is paramount (Li et al., 2022; Raluca-Florentina, 2022; Trunfio & Pasquinelli, 2021). Tourism organizations must implement robust cybersecurity measures to safeguard sensitive information and maintain consumer trust (Li et al., 2022; Raluca-Florentina, 2022; Trunfio & Pasquinelli, 2021). This focus on data security will be critical in fostering a safe and secure environment for tourists, particularly in an era where digital interactions are becoming the norm.

3.4. The Influence of Immersive Technologies on the Sophistication of Tourists

The impact of technology on the sophistication of tourists, particularly in the realm of tourist guiding, has become increasingly significant in recent years. As tourists become more knowledgeable and discerning, the role of technology in enhancing their experiences has evolved. This transformation is evident in various aspects of tourist guiding, including mobile applications, augmented reality (AR), and artificial intelligence (AI), which have collectively contributed to a more interactive and personalized travel experience.

One of the most notable advancements in tourist guiding is the integration of mobile applications that serve as electronic guides. These applications provide tourists with real-time information, navigation assistance, and personalized recommendations based on their preferences and location. For instance, it highlights the emergence of mobile tourism, where smartphones act as electronic guides, replacing traditional printed travel books and enhancing the overall tourist experience by providing immediate access to information and services (Lestari et al., 2021). Furthermore, the development of personalized multimodal tourist tour planners has addressed the challenges of trip design, allowing tourists to customize their itineraries according to their interests and preferences (Gavalas et al., 2014). This shift towards mobile technology not only empowers tourists but also necessitates that tour guides adapt their roles to incorporate these technological tools effectively.

The sophistication of tourists is also reflected in their expectations for immersive experiences, which the advent of augmented and virtual reality technologies has significantly enhanced. emphasizes that technologies like AR and VR are revolutionizing how historical sites and cultural narratives are presented, offering tourists immersive encounters that were previously unimaginable (Yehia, 2024). This technological evolution allows tourists to engage with destinations more profoundly, fostering a deeper connection to the cultural and historical context of the places they visit. As a result, tour guides are increasingly required to integrate these technologies into their guiding practices, enhancing the educational and experiential aspects of their tours.

Moreover, the role of tour guides has evolved from mere information providers to facilitators of rich, interactive experiences. Note that the changing roles of tour guides reflect a shift from being agents of service to becoming agents of change, where they must adapt to the sophisticated demands of modern tourists (Ren et al., 2023). The findings further support this evolution, which argues that tour guides are transitioning into co-creators of the tourist experience, collaborating with tourists to enhance their engagement and satisfaction (Weiler & Black, 2015). This collaborative approach not only enriches the tourist experience but also empowers guides to leverage technology in ways that resonate with the interests and expectations of contemporary travelers.

Incorporating technology in tourist guiding also addresses the challenges posed by knowledgeable tourists seeking authentic and meaningful interactions. discusses how tourists have become more inquisitive, often turning to technology to supplement their understanding of destinations, creating knowledge/information asymmetry in guiding contexts (Rihova, 2024). This dynamic necessitates that tour guides possess not only strong communication skills but also a deep understanding of the technological tools at their disposal, enabling them to provide accurate and engaging information that meets the sophisticated demands of their audience.

In addition to enhancing the guiding experience, technology also plays a crucial role in the operational aspects of tourism. The use of Geographic Information Systems (GIS) and Global Navigation Satellite Systems (GNSS) in mobile applications allows tourists to explore destinations independently while still benefiting from the insights of tour guides when necessary (Rahim & Naqvi, 2021). This shift towards self-guided exploration reflects a broader trend in the tourism sector, where tourists increasingly prefer to curate their own experiences while still having access to expert guidance when needed. Consequently, tour guides must adapt to this changing landscape by developing skills that allow them to complement the independent exploration of tourists with their expertise.

Furthermore, the impact of technology on tourist guiding extends to the training and professional development of guides themselves. As the sector evolves, there is a growing recognition of the need for tour guides to effectively enhance their competencies in utilizing digital tools. For instance, developing intelligent tourist guide systems that incorporate real-time navigation and automatic interpretation capabilities highlights the necessity for guides to be proficient in these technologies (Kaijian & Zhu, 2015). This emphasis on technological competence not only improves the quality of service provided by guides but also enhances tourist satisfaction and engagement.

Integrating technology into tourist guiding also raises important considerations regarding the ethical implications of its use. While technology can enhance the tourist experience, it also poses challenges related to authenticity and the potential for over-reliance on digital tools. As noted, immersive technologies can personalize experiences, but it is essential to balance technological enhancement and the preservation of genuine human interactions (Torres, 2022). Tour guides must navigate this delicate balance, ensuring that technology complements, rather than replaces, personal connections that are integral to the guiding experience.

Moreover, social media and online platforms have transformed how tourists share their experiences and seek information. The proliferation of user-generated content has empowered tourists to become active participants in the tourism narrative, influencing the perceptions of destinations and guiding practices. As highlighted, the digital age has redefined tourist experiences, necessitating that guides adapt their communication strategies to engage with tourists who are increasingly informed and connected (Islam, 2024). This shift underscores the importance of developing rapport and effective communication skills among tour guides, enabling them to foster meaningful interactions with tourists who are well-versed in online information.

3.5. The Contribution of Immersive Technologies to the Education and Training of Tourist Guides

The impact of technology on training and education in the field of tourist guiding is profound and multifaceted, reflecting broader trends in the tourism sector. As technology continues to evolve, it reshapes the roles and responsibilities of tour guides, enhances the educational frameworks within which they operate, and transforms the overall tourist experience. This synthesis will explore these dimensions in detail, supported by various scholarly references.

Firstly, integrating digital technology into tourist guiding has significantly altered the traditional roles of guides. Historically, tour guides served primarily as information providers, sharing knowledge about destinations and cultural contexts. However, with the advent of mobile applications and digital platforms, the role of the tour guide is evolving from a mere information source to a facilitator of experiences. Ren (2023) discusses the transition of tour guides from "agents to serve" to "agents of change," emphasizing their new role in curating and enhancing tourist experiences through technology. This shift necessitates that guides possess extensive knowledge and the ability to engage with technology effectively.

Moreover, augmented reality (AR) and virtual reality (VR) technologies are revolutionizing how tourists interact with their surroundings. Zhang (2024) highlights how AR applications can provide immersive experiences that enhance the learning and engagement of tourists at attractions. This technological advancement allows guides to offer enriched narratives beyond traditional storytelling, making the tourist experience more interactive and memorable. Similarly, Atienza et.al (2024) points out that virtual tour guides can adaptively assist tourists, providing personalized experiences that cater to individual preferences and enhance overall satisfaction.

Incorporating technology into the curriculum for aspiring tour guides is crucial in terms of training and education. Using e-training platforms allows for delivering multimedia content that can improve the quality of education and enhance trainees' performance. This approach not only makes learning more accessible but also prepares future guides to navigate the complexities of modern tourism, which increasingly relies on digital tools. Furthermore, Abdelhamid (2020) emphasizes the importance of specialized training programs that incorporate advanced technologies, such as 3D holograms, to enhance the professional skills of tour guidance students.

The role of gamification in tourist education is another innovative approach that leverages technology to enhance learning outcomes. Swacha (2019) argues that gamification can significantly improve engagement and retention of information among trainees, making the learning process more enjoyable and effective. By incorporating game-like elements into training programs, educators can foster a more dynamic learning environment that encourages active student participation and collaboration.

Additionally, mobile devices as collaborative tools in education are gaining traction. Lopez et al. (2015) highlight how mobile technology facilitates collaborative learning, which is essential for developing the interpersonal skills critical for successful tour guide. This collaborative approach not only enhances the learning experience but also prepares guides to work effectively in teams, a skill that is increasingly important in the travel sector.

The impact of technology on tourist guiding extends beyond education and training; it also influences how guides interact with tourists. Effective communication skills are paramount in this profession, directly affecting tourist satisfaction. Menshawy (2016) emphasizes that accurately interpreting and conveying information is essential for building rapport with tourists. In this context, technology can serve as a valuable tool for guides to enhance their communication strategies, allowing them to tailor their messages to diverse audiences.

Furthermore, integrating technology into tourist guiding has implications for sustainability and ethical practices within the sector. As guides adopt new technologies, they must also navigate the ethical considerations associated with their use. For instance, the reliance on digital tools raises questions about the authenticity of experiences and the potential for over-reliance on technology at the expense of personal interaction. Weiler and Black (2015) discuss how the evolving role of guides necessitates a balance between technological integration and maintaining the human element of guiding.

3.6. Integration of Immersive Technologies and New Challenges in Tourist Guidance

Integrating technology into the travel sector has transformed the landscape of tourist guide, presenting both opportunities and challenges. As destinations increasingly adopt smart tourism technologies, the expectations and behaviors of tourists evolve, necessitating a re-evaluation of traditional guiding practices. This paper explores technology's multifaceted challenges for tourist guiding, drawing on recent research to highlight key areas of concern.

One of the primary challenges is the increasing reliance on technology, which can lead to a disconnect between tourists and their surroundings. While mobile applications, augmented reality (AR), and virtual reality (VR) enhance the tourist experience by providing personalized information and immersive experiences, they can also detract from genuine engagement with the destination. For instance, studies indicate that tourists often become preoccupied with capturing experiences through their devices, leading to a diminished presence now and a superficial understanding of the cultural context they are visiting (Benckendorff et al., 2005; Yuan, 2023). This phenomenon, termed "digital distraction," can undermine this guide's traditional educational and interpretive roles, as tourists may prioritize technology over human interaction and narrative (Benckendorff et al., 2005; Islam, 2024).

Moreover, the rapid pace of technological advancement creates a significant knowledge gap between tourists and guides. Many tourists, particularly younger generations, are adept at using digital tools, while some guides may struggle to keep pace with these developments. This disparity can lead to frustration on both sides; tourists may expect guides to be as technologically savvy as they are, while guides may feel pressured to adapt to new tools without adequate training or resources (Femenia-Serra et al., 2019). The challenge lies in bridging this gap to ensure that guides can effectively utilize technology to enhance the tourist experience without compromising their unique contributions to the journey.

Another critical challenge is the issue of data privacy and security. As tourists increasingly share personal information through apps and online platforms, concerns about data misuse and breaches have escalated. Guides and tourism operators must navigate these concerns while leveraging technology to provide personalized experiences (Heidari, 2024; Mularsari, 2024). The balance between utilizing data for enhancing tourist experiences and protecting individual privacy is delicate and requires clear communication and trust-building between guides and tourists (Benckendorff et al., 2005; Wan & Onuike, 2021). Failure to address these concerns can lead to a loss of confidence in technology and a reluctance to engage with digital tools, ultimately hindering the potential benefits of smart tourism.

Additionally, implementing technology in tourist guiding raises questions about the authenticity of experiences. AR and VR can create highly curated and sometimes artificial representations of cultural heritage, which may not accurately reflect the realities of the destination (Tsang et al., 2022; Yuan, 2023). This raises ethical considerations regarding the portrayal of cultural narratives and the potential commodification of experiences. Guides must navigate these complexities, ensuring that technology enhances, rather than distorts, the understanding of cultural contexts (Xiong, 2024; Yuan, 2023). The challenge lies in maintaining the integrity of the guiding experience while embracing the innovative possibilities that technology offers.

Furthermore, the economic implications of technological adoption in tourism cannot be overlooked. The initial investment in smart technologies can be substantial, and smaller operators may struggle to compete with larger entities with the resources to implement cutting-edge solutions (Moreira, 2024; Rafdinal, 2021). This disparity can lead to homogenizing tourist experiences, where unique local insights and personalized guiding diminish in favor of standardized, technology-driven offerings (Pai et al., 2020; Yuan, 2023). Guides must find ways to differentiate their services, leveraging their local knowledge and interpersonal skills to provide value that technology alone cannot replicate.

Despite the numerous benefits, adopting immersive technologies is not without challenges. Issues such as cybersickness, user comfort, and the digital divide can hinder widespread acceptance and effective implementation. Additionally, the rapid pace of technological advancement necessitates ongoing research to understand the long-term effects of immersive experiences on cognition and behavior (Anastasaki, 2023; Lingan et al., 2021; Veličković & Milovanović, 2021). Furthermore, ethical considerations regarding user data privacy and the potential for addiction to immersive experiences must be addressed to ensure responsible use of these technologies (Poncin et al., 2022; Rueda & Lara, 2020).

Moreover, the advent of robotic and AI-driven tour guides presents both opportunities and challenges for human guides. While these technologies can enhance efficiency and provide consistent information, they also raise concerns about job displacement and the potential loss of the personal touch that human guides offer (Nazlı, 2020; Demir & Vatan, 2024). The integration of robots into the travel sector has sparked discussions about the future of the profession, with some studies suggesting that human guides need to focus on areas where they can provide unique value, such as emotional engagement and cultural storytelling (Pian et al., 2022; Yehia, 2024). As the sector navigates this transition, it is crucial for guides to embrace technology as a complementary tool rather than a replacement, leveraging their unique skills to enhance the overall tourist experience.

4. Conclusion and Discussion

One of the most significant changes in the tourist guiding profession is the emergence of digital tools that enhance the tourist experience. For instance, mobile applications have become essential for tourists seeking information on the go, allowing them to access real-time data about attractions, routes, and local insights (Lestari et al., 2021). These applications often use gamification techniques to engage users, making exploring destinations more interactive and enjoyable (Swacha, 2019). Furthermore, integrating AR technology into guided tours provides immersive experiences that allow tourists to visualize historical events or cultural narratives in a way that traditional methods cannot achieve. The integration of mobile applications, augmented reality, and artificial intelligence has transformed how tourists engage with destinations, necessitating that tour guides adapt their roles to meet the evolving expectations of their audience. As tourists become more knowledgeable and discerning, the ability of guides to leverage technology effectively will be crucial in enhancing the overall travel experience. This evolution not only enriches the tourist experience but also empowers guides to become co-creators of memorable journeys, fostering deeper connections between tourists and the cultural narratives of the places they visit. This shift not only enhances the tourist experience but also requires guides to adapt their skills to incorporate these technologies into their storytelling and engagement strategies (Zhang, 2024).

The role of tour guides has also evolved in response to the increasing sophistication of tourists. Today's travelers are often more informed and tech-savvy, seeking deeper connections and personalized experiences during their journeys.

This trend necessitates that tour guides develop a more nuanced understanding of their audience, employing cultural intelligence and effective communication strategies to meet the expectations of diverse groups (Alhasanat, 2023; Güzel et al., 2020). The ability to interpret and convey information in a relatable manner is critical, as guides must now compete with the wealth of information available online (Rihova, 2024). Consequently, the emphasis on rapport-building and interpersonal skills has intensified, as guides strive to create memorable experiences that resonate with tourists personally (Menshawy, 2016; Suryana, 2022).

In addition to technological advancements, the COVID-19 pandemic has accelerated the adoption of virtual tours and online experiences, reshaping the landscape of tourist guiding. Virtual museums and online guided experiences have gained popularity, allowing tourists to explore destinations from the safety of their homes (AbuElEnain, 2022; Atienza et.al., 2024). This shift has prompted guides to diversify their skill sets, incorporating digital platforms into their offerings and adapting to new modes of interaction with tourists. Creating engaging virtual content and facilitating online experiences has become an essential competency for modern tour guides, highlighting the need for continuous professional development in response to changing market demands (Abdelhamid, 2020; Coşkun, 2023).

Furthermore, the impact of technology on the tourist guiding profession extends to the operational aspects of tour management. Digital payment systems and online booking platforms have streamlined the process of securing tours, enhancing convenience for both tourists and guides (Hermanto et al., 2023). These systems improve operational efficiency and contribute to higher tourist satisfaction levels, enabling seamless transactions and reducing wait times (Zhang et al., 2022). As guides adapt to these technological advancements, they must also be equipped to handle the associated challenges, such as managing customer data privacy and ensuring the security of online transactions. Integrating smart technologies, GIS, mobile applications, blockchain, and data analytics has revolutionized how tourism is managed and experienced. As the sector continues to evolve, it is essential for tourism stakeholders to embrace these technological advancements while prioritizing sustainability, community engagement, and data security. By doing so, the travel sector can enhance the overall tourist experience and contribute to the sustainable development of destinations worldwide (Islam, 2024).

The evolution of the tourist guiding profession in the context of technology is also reflected in the training and education of future guides. The immersive technologies represent a transformative force across various domains, offering unique opportunities for enhanced interaction, learning, and engagement. Educational institutions increasingly incorporate technology-focused curricula, emphasizing the importance of digital literacy and technological proficiency in guiding practices. This shift in training paradigms is essential for preparing guides to navigate the complexities of a tech-driven sector, ensuring they possess the skills necessary to thrive in an increasingly competitive landscape. As these technologies continue to evolve, their potential to reshape how we experience and interact with the world around us is immense. Future research and development will be crucial in addressing the challenges associated with their use, ensuring that immersive technologies can be harnessed effectively and ethically for the benefit of society (Коваленко et al., 2021).

It should not be overlooked that while technology offers numerous opportunities to enhance the tourist guiding experience, it also brings significant challenges that must be addressed. As the travel sector evolves, guides must adapt to these changes by embracing technology while remaining committed to the core values, such as cultural interpretation and personal connection. With these challenges in mind, the travel sector must harness the benefits of technology without losing sight of the human element essential to meaningful travel experiences. For these reasons, future scientific research on tourist guiding and technology should focus on the potential for digital distraction, information gaps, data privacy concerns, authenticity issues, and economic disparities. Conversely, the sector should make further assessments and implement strategic plans for these technologies.

Etik Kurul İzni / Ethics Committee Permission:

Bu çalışma Etik Kurul Onayı gerektiren çalışma grubuna dahil değildir.

This study is not included in the study group that requires Ethics Committee Approval.

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