

# The mobile app frontier in the hotel sector: App-solutely essential?

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**Abstract** | This study aims to investigate the benefits, challenges, opportunities, and risks of mobile app technology in the hotel sector. Data was collected through interviews with twelve managers from 5-star hotels operating in Turkey. The collected data was analysed to explore the advantages, obstacles, prospects, and potential risks related to the adoption of mobile app technology. In this study, a kappa analysis was performed by two experts in the field who coded the interview data. The resulting value was 0.77, indicating a high level of agreement among the findings. The study revealed various opportunities such as personalised customer experiences, improved efficiency, and enhanced communication through mobile apps in hotels. However, it also identified challenges like technical issues, concerns about data security, obstacles to adoption, and staff adaptation. Furthermore, potential risks such as reduced traditional interactions and technological glitches underscore the need for careful consideration. This research delves into the complex landscape of mobile application technology within the hotel sector, uncovering its potential for transformation, navigating challenges, and highlighting key opportunities while addressing associated risks meticulously.

**Keywords** | mobile app impact, digital transformation risks, hotel sector

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## 1. Introduction

In the dynamic and ever-changing realm of technological advancements in the modern world, it is evident that various sectors are undergoing transformative processes. The hotel sector, too, is not exempt from the influence of this trend. In recent years, mobile app technologies have played a crucial role in driving a notable shift and revitalization process within the many sectors. Mobile apps are software programs utilised on smartphones and tablets, designed to address a wide array of needs and deliver various services (Oyeniran et al., 2023). For example, social media apps such as Instagram and Twitter enable communication and content sharing, while shopping apps like Amazon and Trendyol facilitate product purchases (Mroz, 2021). Additionally, mobile apps play a significant role in sectors such as education (Duolingo), healthcare (HES), finance (PayPal), and travel (Google Maps), rendering them essential tools that enhance users' daily lives.

The benefits, challenges, opportunities, and risks posed by mobile app technology in the hotel sector are significant factors that shape its future. With the rapid proliferation of mobile apps, hotel customers now expect a more interactive and personalised experience during their stays (Buhalis & Cheng, 2020). Advantages such as streamlined reservation processes, efficient check-in and check-out options, and real-time addressing of customer requests are just a few of the benefits offered by mobile app technology in the hotel sector (Erdem & Barakazi, 2023).

However, despite the numerous innovations that mobile app technologies bring to the hotel sector, their integration also presents certain challenges. Specifically, concerns related to security, data privacy, and technological infrastructure deficiencies emerge as crucial factors limiting the widespread acceptance of mobile app technologies (Yap et al., 2021). Given the sensitivity of customer data in today's context, concerns regarding data security arising from the use of mobile apps are of paramount importance. Apps of this nature can introduce risks such as unauthorised access or the exposure of personal customer data to malicious entities (Tabrizchi & Kuchaki Rafsanjani, 2020). Therefore, the safeguarding and security of customer data assume critical significance in the adoption of mobile app technologies within the sector. Additionally, the lack of necessary technological infrastructure for the utilisation of mobile app technologies also emerges as a prevalent issue in the sector. Hotel establishments may encounter challenges in aligning their existing systems and infrastructure with mobile

app technologies. Moreover, technical issues arising from high data traffic or user volume can further exacerbate the difficulties in this process (Ghani et al., 2022).

This study addresses a significant research gap by thoroughly examining the benefits, challenges, opportunities, and risks of mobile app technology in the hotel sector. Specifically, the impact of mobile app technologies on the hospitality industry (Vayghan et al., 2023) has been rapidly increasing in recent years, necessitating a comprehensive understanding and evaluation of these effects. The significance of this research lies in its contribution to our understanding of how this technology affects the operations of hotel establishments and how it can shape future strategies. To achieve this, data collected through interviews involving opinions of managers from 5-star hotels provides an opportunity to analyse the tangible effects of mobile app technology in the sector based on concrete data. The data analysis will enable us to understand how this technology influences interactions with hotel customers, operational processes, and competitive advantage. The findings of this study will offer valuable insights for stakeholders, managers, and investors in the hotel sector to guide their future investment and strategic decisions. The evolving dynamics of mobile app technology and its transformative impact on the sector are of critical importance for businesses aiming to gain a competitive edge. Therefore, this study is poised to play a guiding role in shaping the future of the hotel sector.

## **2. Literature review**

### **2.1. A concise history of mobile application technology in the hotel industry**

The hotel sector has undergone significant transformations due to technological advancements. Mobile app technology has emerged as one of the latest trends in the sector, playing a crucial role in enhancing both guest experience and operational efficiency (Bharwani & Mathews, 2021). The adoption of mobile app technology in the hotel sector initially began with the increasing popularity of smartphones. Initially, hotels primarily utilised mobile apps to offer basic information and facilitate reservations. These apps helped guests acquire information about the hotel and make reservations effortlessly (Wang et al., 2016).

Over time, the hotel sector has recognised the potential of mobile app technology and has started offering more advanced features. These features include mobile check-in and check-

out, which allow guests to manage their hotel-related tasks without having to visit the reception (Erdem & Barakazı, 2023). For example, the Marriott Bonvoy app enables guests to check in and check out directly from their mobile devices, bypassing the front desk entirely. Additionally, it offers a room selection feature that allows guests to choose their preferred room type and view the layout prior to arrival. Furthermore, mobile apps have enabled hotels to communicate with guests more effectively and provide personalised experiences. Guests can choose their preferred room type, control in-room settings, and even make service requests throughout their stay using the mobile app (Stringam & Gerdes, 2021).

Mobile app technology in the hotel sector has reached a significant stage of full integration and versatile usage (Rosete et al., 2020). Hotel apps assist guests in shaping their entire in-hotel experiences while also offering solutions to enhance operational efficiency for hotel enterprises. These apps can remember guests' personal preferences, integrate with loyalty programs, facilitate mobile payments, and enable guests to explore hotel activities, restaurants, and other services (Çınar, 2020). For instance, the Accor app enables guests to check in, select their rooms, and utilise the "room service" feature to order food directly to their accommodations. The Hyatt app offers comprehensive check-in and check-out services, mobile key access, and options for room customisation. Additionally, it provides detailed information regarding hotel amenities, activities, and restaurant reservations. The Four Seasons app further enhances the guest experience with personalised services, allowing guests to control room settings, such as lighting and temperature, and make service requests directly through the app.

## **2.2. Pros and cons of mobile apps in hotel sector**

Mobile apps within the hotel industry significantly enhance guest experiences by facilitating expedited, personalised services and streamlining processes such as reservations and check-ins (Salazar, 2018). These apps improve operational efficiency and enable the tracking of guest preferences, allowing for tailored experiences (Tong et al., 2020). Furthermore, hotel applications offer extensive information regarding facilities, dining options, activities, and local attractions (Lukanova & Illieva, 2019). Mobile apps facilitate seamless communication between guests and hotel staff, enabling the submission of requests and prompt assistance. These apps integrate with loyalty programs to enhance customer loyalty and allow for the collection of data on guest preferences for targeted marketing initiatives. Additionally, mobile

apps promote special offers and events, thereby enhancing competitiveness and delivering personalised guest experiences (Adukaite et al., 2013).

Mobile app technology in the hotel sector provides personalised and convenient experiences, enabling rapid reservations, seamless check-ins, and easy access to services (Awara et al., 2022). It supports loyalty programs and rewards to enhance customer retention while providing data on guest behaviours to refine marketing strategies. Additionally, apps facilitate efficient communication through special offers, event updates, and targeted advertising. Mobile app technology enhances operational efficiency in hospitality by enabling guests to submit requests, order services, and communicate needs, thereby improving staff productivity (Lukanova & Illieva, 2019). It also opens new revenue streams by offering services such as local tours and restaurant reservations (Prentice et al., 2020). Furthermore, apps contribute to sustainability goals by reducing paper usage, assisting establishments in lessening their environmental impact (Gretzel & Koo, 2021). Mobile app technology provides hotels with a competitive edge by attracting customers and differentiating them from competitors through advanced, user-friendly apps. It plays a crucial role in digital marketing strategies, enhancing customer engagement through social media integration, campaigns, and content sharing (Stocchi et al., 2021). Additionally, apps introduce innovative solutions to the hotel sector, with technologies like augmented and virtual reality (AR/VR) offering guests unique experiences. These features boost competitiveness, enrich guest experiences, and improve operational efficiency (Buhalis et al., 2023).

Implementing mobile app technology in hotels poses several challenges, including technological compatibility and the integration of existing infrastructure (Li et al., 2015). Data security and privacy concerns arise from the management of sensitive customer information. Furthermore, user acceptance can be problematic, particularly among older or less tech-savvy guests, which may hinder effective utilisation and necessitate additional educational efforts (Tajudeen et al., 2022). The rapid pace of technological advancements also requires ongoing staff training and regular app updates, which demand considerable time and resources. The adoption of mobile apps in the hotel industry faces obstacles such as competition and the development of effective marketing strategies (Nam et al., 2021), as well as ensuring technological compatibility across various devices. High costs associated with development, testing, and maintenance may serve as barriers for smaller hotels with limited budgets. Additionally, a malfunctioning app could adversely affect guest satisfaction (Moon &

Armstrong, 2020), and the need for continuous innovation necessitates regular monitoring and updates (Sen & Kaushik, 2016). These challenges underline the importance of strategic planning for successful app implementation within the hotel sector.

The integration of mobile app technology in the hotel sector presents several risks. Data security and privacy concerns underscore the necessity of safeguarding customer information against malicious attacks. Technological and compatibility issues may arise from the alignment of different systems (Seo & Lee, 2021). Challenges in user adoption and education can be attributed to the diverse age range and varying technological proficiency of guests. Additionally, operational disruptions have the potential to negatively impact the guest experience (Han et al., 2021). Financial investment in app development and maintenance poses a significant concern, alongside the challenge of establishing a strong market position amidst competition and enhancing brand awareness. Customer dissatisfaction indicates that negative experiences with the app can substantially affect overall satisfaction, while ongoing technological advancements present continuous challenges. The evaluation process involves assessing return on investment and potential risks, considering the app's value for hotel establishments. Issues arising from different devices and platforms can affect the user experience within the tourism industry. These risks and challenges emphasise the need for strategic planning and solution-oriented approaches in the implementation of mobile app technology in the hotel sector (Zangiacomi et al., 2017). Table 1 summarises the pros and cons of mobile app technology in the hotel sector.

Table 1. Pros and cons of mobile app technology in the hotel sector

Pros	Cons
<i>Enhanced Guest Experience</i> Streamlined services such as reservations, check-ins, and requests (Salazar, 2018).	<i>Data Security and Privacy Risks</i> Threats to customer data due to sensitive information storage (Barona & Anita, 2017).
<i>Personalised Services</i> Tailored experiences based on guest preferences (Tong et al., 2020).	<i>Technological Compatibility Issues</i> Difficulties integrating with existing infrastructure (Li et al., 2015).
<i>Operational Efficiency</i> Improved staff productivity through easier communication and service requests (Lukanova & Illieva, 2019).	<i>User Adoption Challenges</i> Difficulty for older or less tech-savvy guests to use the app effectively (Tajudeen et al., 2022).

<i>Increased Revenue</i> Additional income streams from offering local tours, restaurant bookings, and more (Prentice et al., 2020).	<i>High Costs</i> Development, maintenance, and testing can be costly, especially for smaller hotels.
<i>Sustainability</i> Reduced paper usage, supporting environmental goals (Gretzel & Koo, 2021).	<i>Operational Disruptions</i> Technical issues or app failures could negatively affect the guest experience (Han et al., 2021).
<i>Competitive Edge</i> Differentiation through advanced, user-friendly apps (Buhalis et al., 2023).	<i>Market Competition</i> Difficulty establishing strong brand awareness in a competitive market.
<i>Enhanced Marketing</i> Integration with loyalty programs and targeted promotions.	<i>Constant Innovation Required</i> Ongoing app updates and staff training are necessary to keep up with technological advancements (Sen & Kaushik, 2016).
<i>Technological Innovation</i> Integration of AR/VR for unique guest experiences.	<i>Risk of Customer Dissatisfaction</i> Negative app experiences can directly impact overall guest satisfaction..

Source: Own elaboration

### 3. Methods

#### 3.1. Research design

The present study aims to conduct an in-depth analysis of mobile app technology widely used in the hotel sector. Grounded in a qualitative research framework, the investigation seeks to explore how hotels have adopted and optimised mobile apps technology, as well as the strategies they employ to address associated challenges. To support this inquiry, theoretical frameworks such as the Technology Acceptance Model (El Archi & Benbba, 2023) and Diffusion of Innovations Theory (Chan et al., 2023) were incorporated to contextualise the adoption and implementation processes.

- (i) What are the primary benefits that hotels identify from the adoption of mobile apps technology?
- (ii) What challenges do hotels face in the implementation and utilisation of mobile apps?
- (iii) How do hotels assess and mitigate the risks associated with mobile apps technology?

- (iv) In what ways do mobile apps enhance customer experiences within the hotel sector?

This research seeks to critically examine the benefits, challenges, opportunities, and risks associated with mobile apps in the hotel industry. Qualitative research has been chosen as an appropriate approach to gain a deeper understanding of participants' nuanced experiences and perspectives (Lim, 2024; DiCicco-Bloom & Crabtree, 2006). This approach involves a participant-centred and comprehensive qualitative in-depth analysis, aiming to achieve a thorough understanding (Foley, 2012). The focus has been on capturing participants' experiences to better understand the role of mobile app technology in the hotel sector and to uncover how this technology is integrated into business strategies.

### 3.2. Data collection method

A semi-structured interview approach was selected as the method for collecting data. These interviews were conducted individually with hotel managers to obtain a thorough comprehension of participants' perspectives regarding the benefits, challenges, opportunities, and risks of mobile app technology. The interview questionnaire comprised a total of twelve inquiries, with three inquiries from each category of benefits, challenges, opportunities, and risks associated with mobile app technology. Each category included three specific questions, meticulously crafted to align with the study's research objectives and grounded in relevant literature. By drawing from existing research, these questions align with established academic frameworks, thereby enhancing the study's credibility and replicability. The questions and pertinent studies are presented in table 2.

Table 2. The questions are in line with the objectives and the proposed literature review

Category	Questions	Some Relevant Studies
Benefits	How does the adoption of mobile app technology in your hotel generally enhance the customer experience?	(Lei et al., 2022; Kim et al., 2021)
	Mobile apps contribute to organising hotel operations and enhancing efficiency through which methods?	(Gebauer & Shaw, 2004)
	Could you explain how mobile apps impact customer interaction and satisfaction, and how they contribute to potential loyalty and the likelihood of revisiting the hotel?	(Wu et al., 2021)



<b>Challenges</b>	What are the main challenges that your hotel encounters during the implementation and integration of mobile app technology?	(Neuhofner & Buhalis, 2014)
	How do you address data security and privacy concerns when processing customer information through mobile apps?	(Hayes et al., 2020; Sutanto et al., 2013)
	What obstacles do you encounter in ensuring effective adoption and utilisation of the hotel's mobile app by both customers and employees?	(Bitner et al., 2000)
<b>Opportunities</b>	What avenues do mobile apps open up for creating new revenue sources or business models for your hotel?	(Vaska et al., 2021)
	How do mobile apps enable your hotel to better personalise its services and cater to individual customer preferences?	(Lukanova & Ilieva, 2019)
	Could you explain how mobile app technology enables your hotel to create unique and unforgettable customer experiences?	(Lei et al., 2019)
<b>Risks</b>	What are the potential risks or drawbacks of relying primarily on mobile apps for customer interactions and service delivery?	(Avram, 2014)
	How do you mitigate the risk of technological glitches or disruptions that could potentially disrupt customer experiences and operational processes?	(Buhalis et al., 2019)
	Have you observed any negative effects of increasing reliance on mobile apps in traditional customer-staff interactions, and how do you address this concern?	(Murphy et al., 2019)

Source: Own elaboration

### 3.3. Validity and reliability

To evaluate the validity and reliability of the interview questions, a pilot study was conducted with five participants, including academics, hotel managers, and employees from the reservation department. The objective of these interviews was to assess the clarity, simplicity, and relevance of the questions, ensuring alignment with the study's objectives. Based on the feedback received and the subsequent analysis, the interview guide was refined to enhance external validity and improve the reliability of the data collection instrument.

The internal reliability of the collected data was evaluated using the Kappa statistic, a robust method for measuring inter-rater agreement beyond chance (Landis & Koch, 1977). The Kappa statistic was selected due to its effectiveness in qualitative research, where subjective classification or coding is often required (Cheung & Tai, 2023). It quantifies the level of agreement between two independent coders by subtracting the expected agreement rate from the observed agreement rate, then dividing by the maximum possible agreement (Halpin, 2024). Values ranging from 0.60 to 0.80 indicate a strong level of agreement (McHugh, 2012), which is essential for ensuring the consistency and reliability of data analysis. In the

study, Kappa analysis was conducted by two field experts who independently coded the interview data. The resulting Kappa value of 0.77 indicates a strong level of agreement, thereby confirming the reliability of the coding process.

### **3.4. Population and sample**

The population comprises 5-star hotels operating nationwide in Turkey. The decision to focus exclusively on 5-star hotels was predicated on the assumption that these establishments are more inclined to adopt and integrate advanced technologies, such as mobile apps, than hotels with lower star ratings (Kilali, 2016). 5-star hotels generally possess greater resources, infrastructure, and a heightened demand for enhanced customer experiences, making them a pertinent group for examining the impact of mobile app technology. Furthermore, these hotels often provide a wider array of sophisticated services, which could yield deeper insights into the benefits, challenges, opportunities, and risks associated with the use of mobile apps in the hospitality sector. The selection of these specific hotels aimed to ensure that the sample reflected a diverse range of geographic locations and service levels within the 5-star category. By incorporating hotels from cities such as Antalya, İstanbul, Ankara, and İzmir, the research captures a broad spectrum of regional variations, essential for understanding the application of mobile app technology across different hotel environments. These locations are strategically significant as they represent various tourism markets within Turkey, each with distinct customer expectations and service requirements, thereby providing a unique and comprehensive perspective on the utilisation of mobile technology in the hotel industry.

A randomly selected sample was utilised from this pool of hotels. The sample was carefully diversified to accurately represent various locations and service levels. The sample comprised twelve hotel managers from various locations and with diverse years of experience, suggesting that the researchers likely approached saturation, particularly in relation to specific themes such as the adoption of mobile app technology. In qualitative research, saturation is achieved when further interviews do not yield new information or themes (Braun & Clarke, 2021). Considering the diversity of the sample, which included hotel managers from different regions such as Antalya, İstanbul, Ankara, and İzmir, it is reasonable to conclude that a broad

range of perspectives was captured. The demographic information of the participants is outlined in table 3.

Table 3. Participant characteristics

Participant Code	Age	Years of Experience in the Hotel Sector	Hotel Location
P1	42	15	Antalya, Turkey
P2	38	13	Antalya, Turkey
P3	45	20	Antalya, Turkey
P4	50	17	Antalya, Turkey
P5	36	10	Antalya, Turkey
P6	41	15	İstanbul, Turkey
P7	48	22	İstanbul, Turkey
P8	52	23	İstanbul, Turkey
P9	43	17	Ankara, Turkey
P10	39	11	Ankara, Turkey
P11	47	20	İzmir, Turkey
P12	44	14	İzmir, Turkey

Source: Own elaboration

### 3.5. Data analysis

The interview data collected have been thoroughly and meticulously analysed using the qualitative content analysis method. Content analysis is a fundamental method in qualitative research for systematically analysing and interpreting textual data, enabling researchers to derive meaningful patterns, themes, and insights from complex and unstructured data, such as interview transcripts (Krippendorff, 2018). The application of content analysis in the study is particularly significant as it facilitates a rigorous examination of the interview data, ensuring that the information is accurately represented and analysed in relation to the research questions. Furthermore, the implementation of content analysis provides a robust framework for processing, categorising, and interpreting complex qualitative data, thereby enhancing the understanding of the research topic (Kleinheksel et al., 2020). This approach improves the validity and reliability of the findings and fosters deeper insights into the adoption and integration of mobile app technology within the hotel sector.

The audio recordings and transcribed notes from the interviews have been carefully processed to enhance understanding and provide in-depth content. At this stage, the data obtained from

the interviews have undergone a detailed analysis, scanning meticulously for recurring themes, key concepts, and significant patterns. During the analysis process, expressions and thoughts that revolve around specific subjects and concepts have been organised into thematic groups. These thematic groups cover fundamental areas of the study, such as ‘benefits,’ ‘challenges,’ ‘opportunities,’ and ‘risks.’ Each thematic group has further been detailed with subcategories, facilitating comprehensive classification and analysis of the interview data. These derived thematic groups will present answers aligned with the research objectives more clearly, enabling a deeper understanding of participants’ experiences, viewpoints, and perspectives.

#### **4. Results**

The responses of the participants have undergone content analysis in relation to the aspects of benefits, challenges, opportunities, and risks.

The “benefits” category revealed six significant subthemes that illustrate the transformative role of mobile apps in enhancing the hotel guest experience. These subthemes provide a structured understanding of how technology influences operational efficiency, customer loyalty, and overall satisfaction. “Personalisation and Facilitation of the Customer Experience” have emerged as significant benefits, with the mobile app streamlining processes such as room reservations, check-in/check-out, and service requests. Many participants emphasised the convenience of requesting specific services in advance, which tailored their experiences to individual preferences.

"Using the app to request services before arrival made guests’ stay much smoother" shared one participant.

“Operational Efficiency and Communication Enhancement” was another prominent theme. Staff could instantly track and address guest requests via the app, ensuring faster response times and reducing communication errors. This was further supported by automated recording features that ensured operational consistency. The importance of operational consistency aligns with studies on hotel service efficiency through digital tools (Buhalis & Leung, 2018).

The mobile app also played a critical role in “Customer Interaction and Enhancement of Loyalty.” Features that facilitated guest feedback, suggestions, and complaints reinforced the connection between satisfaction and loyalty. Participants valued personalised recommendations and special offers, which effectively encouraged repeat visits.

Another participant noted that “The app’s tailored offers make guests feel valued as a returning guest.”

The ability to provide a “Faster and Personalised Experience” was another key finding. Guests valued instant access to hotel amenities and the app’s capability to remember previous preferences, fostering satisfaction and loyalty. “Effective Communication and Quick Solutions” was facilitated through real-time messaging features within the app. These tools allowed for the prompt resolution of issues and reinforced positive guest-service interactions. Finally, the importance of “Continuous Improvement and Feedback” was highlighted, with participants noting how the app encouraged them to share insights that directly contributed to service enhancements. Table 4 outlines the subthemes, description and key insights.

Table 4. Subthemes, description and key insights of benefit theme

Subtheme	Description	Key Insight
<b>Personalisation &amp; Facilitation</b>	Streamlining room reservations, check-ins, check-outs, and service requests.	Enhanced guest experience through tailored services and process automation.
<b>Operational Efficiency</b>	Improving staff communication and response times via app features like automated requests tracking.	Faster resolution of guest needs and reduced errors, boosting operational consistency.
<b>Customer Interaction &amp; Loyalty</b>	Encouraging feedback and offering personalised recommendations and special offers.	Stronger guest connection and repeat visits through enhanced satisfaction and loyalty.
<b>Faster &amp; Personalised Experience</b>	Providing instant access to amenities and remembering guest preferences for future visits.	Guests felt valued with faster, customised services, increasing satisfaction.
<b>Effective Communication</b>	Utilising real-time messaging to resolve issues promptly.	Strengthened trust and positive interactions between guests and staff.
<b>Continuous Improvement &amp; Feedback</b>	Encouraging feedback for ongoing service enhancements.	Fostered a culture of continuous development, aligning services with guest expectations.

Source: Own elaboration

Within the ‘challenges’ theme, four subthemes have been identified. Figure 1 outlines the subthemes and key points. The integration of mobile app technology with hotel systems posed

a considerable challenge within the “Technical Challenges” subtheme. Participants frequently noted issues such as software compatibility and data integration, which can render the merging of new apps with existing infrastructure both time-consuming and complex. One participant remarked, “Aligning the app infrastructure with our existing systems requires both time and specialised expertise.” Additionally, optimising app design to ensure a consistent user experience across devices was identified as a key priority, underscoring the necessity for technological adaptability. Furthermore, participants emphasised the importance of continuously monitoring technological trends to foster innovation and maintain competitiveness in the evolving hospitality industry.

Concerns about “Data Security and Privacy” were prevalent among participants. To address these issues, robust security measures have been implemented to safeguard customer information during app usage. One participant remarked, “We rely on specialised teams and advanced security technologies to prevent unauthorised access and ensure compliance with data protection standards.” During the app development process, particular attention is given to minimising unnecessary data storage, thereby reinforcing privacy protection while adhering to best practices in the industry. These measures underscore the essential balance between technological advancement and ethical responsibility in the management of sensitive customer data (Ahmad & Khan, 2024).

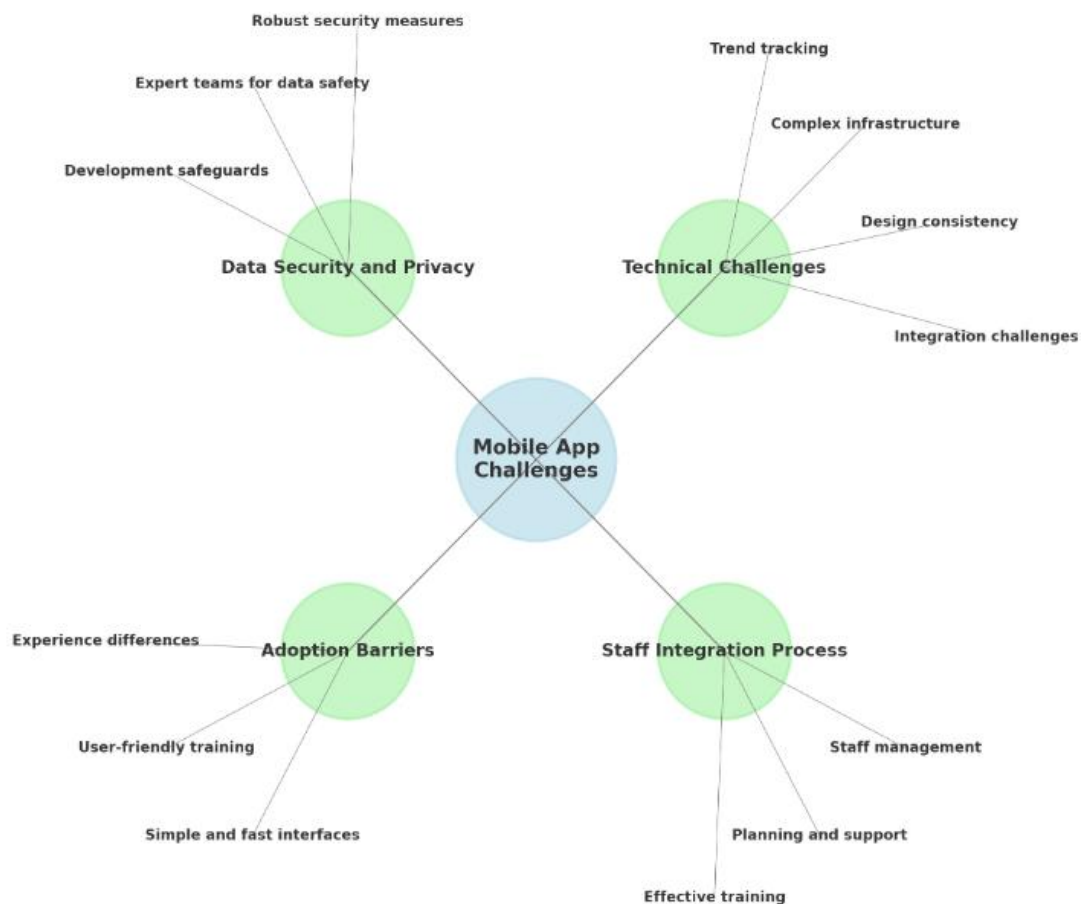


Figure 1. Main themes and subthemes of challenges dimensions

Source: Own elaboration

The “Adoption Barriers” subtheme examined the differing levels of technological proficiency among users, which frequently results in resistance to app usage. Participants emphasised the necessity for user-friendly interfaces and effective onboarding strategies, with one remarking, “Simpler and faster interfaces are essential for engaging less tech-savvy users.” Additionally, the fast-paced schedules of users were identified as a barrier to learning and adopting new technology. To address this challenge, apps must prioritise simplicity and intuitive design, ensuring they do not require excessive time or effort from users (Tan et al., 2020).

Under the “Staff Integration Process” subtheme, participants addressed the essential role of training and support in enabling employees to utilise mobile apps effectively. One participant noted, “Without proper guidance and education, staff are less likely to utilize the app’s full potential, which can hinder its overall effectiveness.” Successful staff integration necessitates

careful planning, continuous management, and support to promote familiarity and proficiency with the app's features. This aligns with the broader literature (e.g., Ellabban & Abu-Rub, 2016), emphasising that technology adoption in the hospitality sector requires both internal buy-in and external user engagement.

Within the overarching theme of 'opportunities,' four subthemes have been identified. Figure 2 outlines the subthemes and key points. The "Revenue Enhancement Opportunities" subtheme emphasises the potential of mobile apps as significant instruments for increasing hotel revenues. By providing special events, room upgrades, and exclusive experiences directly through the app, hotels can establish additional income streams. A particularly effective strategy involves allowing guests to reserve in-house events, dining options, or local tours through the app, thereby enhancing convenience while simultaneously generating revenue. Moreover, mobile apps can promote local businesses, enabling hotels to earn commission-based income by referring guests to partner establishments. This integration fortifies local business networks and expands the hotel's revenue-generating capabilities.

The "Personalised Experiences" subtheme emphasises the essential role of guest data in creating tailored stays. Mobile apps empower hotels to utilise information from previous visits to customise future experiences, including room amenities and special requests. Guests can utilise the app to communicate their preferences, ensuring that services align with individual expectations. For instance, one participant highlighted how the app's capability to remind staff of past requests facilitated the delivery of highly customised services, thereby reinforcing guest loyalty and satisfaction. These personalised interactions enhance the guest experience and distinguish the hotel from its competitors.

Creating "Unforgettable Experiences" represents another significant opportunity identified. Mobile apps offer guests modern conveniences, such as the ability to manage room keys digitally, enhancing the arrival experience. Additionally, the capability to make in-room service requests through the app paves the way for unique, pre-arranged surprises tailored to individual preferences. An example of this includes personalising room amenities and experiences to align with guests' specific tastes, thereby leaving a lasting impression and promoting positive reviews. These initiatives transform routine stays into memorable journeys, ultimately encouraging repeat visits and fostering word-of-mouth recommendations.



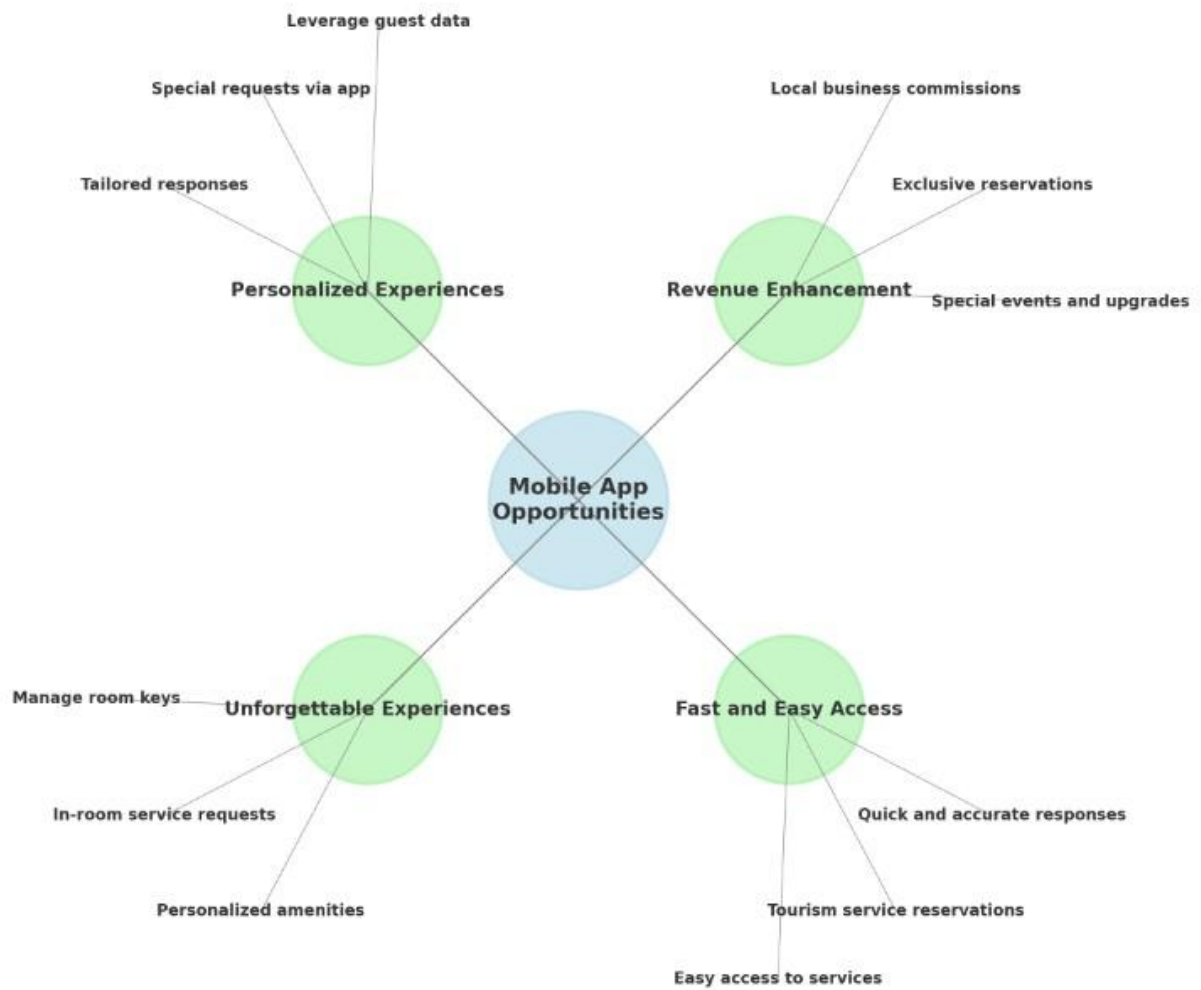


Figure 2. Main themes and subthemes of opportunities dimensions

Source: Own elaboration

The “Fast and Easy Access” subtheme underscores the significance of streamlined service delivery in enhancing guest satisfaction and optimising revenue potential. Through the application, guests can swiftly and efficiently order room service, make restaurant reservations, or schedule spa treatments. This seamless access to services minimises wait times and elevates the overall guest experience. Furthermore, by providing prompt and accurate options for in-house event reservations and tourist tours, hotels can increase tourism-related revenues while maintaining high levels of guest satisfaction. These features establish the mobile app as an essential tool in contemporary hospitality.

Under the overarching theme of ‘risks,’ eight subthemes have been identified. Figure 3 outlines the subthemes and key points. One significant issue is the “lack of traditional interactions,” as the heavy reliance on mobile apps may alienate certain customer groups, particularly those who value face-to-face communication. To mitigate this, it is essential to continuously evaluate staff communication and service quality to strike the right balance. If traditional interactions are reduced excessively, it could result in customer dissatisfaction, making the identification of solutions to restore these interactions crucial.

Another concern is “technological glitches and interruptions,” which can negatively impact customer experiences. In this context, it is essential to remain consistently prepared with backup systems and responsive support teams. Regular technical assessments and the identification of potential vulnerabilities are necessary to prevent disruptions and ensure smooth service delivery. The “impact of mobile app usage on customer preferences” significantly influences guest experiences. Guests exhibit diverse levels of comfort and preferences regarding mobile app utilisation. Some may encounter technical challenges or harbour concerns about the security of mobile applications. Additionally, a portion of guests still favours face-to-face communication. Therefore, hotels must take these varying preferences into account to ensure a positive experience for all guests.

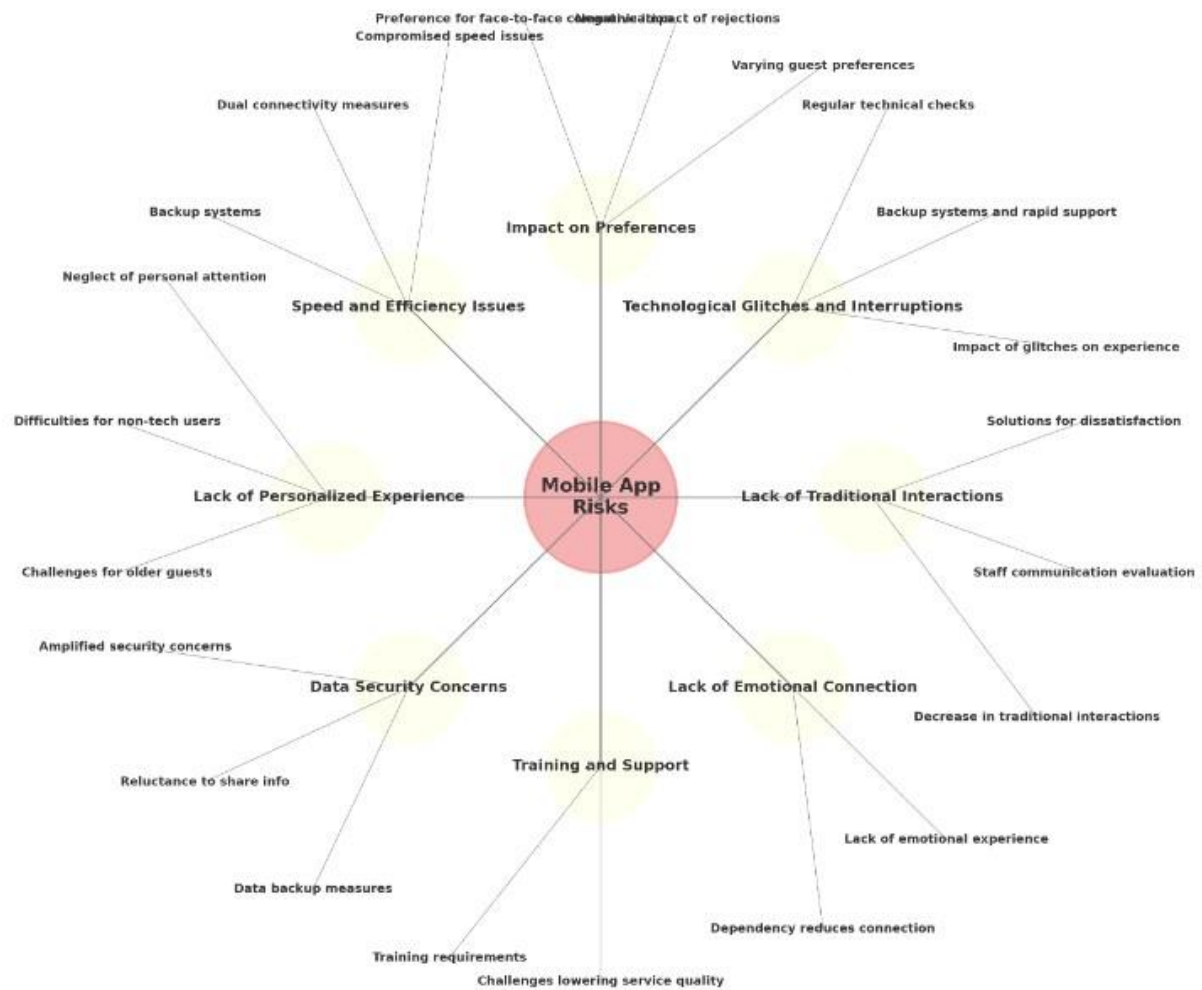


Figure 3. Main themes and subthemes of risks dimensions

Source: Own elaboration

Connectivity problems can lead to “speed and efficiency” issues that impact the functionality of mobile apps. To address these challenges, hotels should implement solutions such as dual internet connectivity and backup systems to ensure seamless operation, even in the event of network disruptions. The “lack of a personalised experience and human interaction” is a significant risk associated with an overreliance on mobile apps. For guests who may be less familiar with technology, such as older individuals, or those who prioritise personal attention, mobile apps may fall short of delivering the expected level of service. It is essential to address this concern to ensure that all guests receive the assistance they require.

“Data security and privacy” concerns are significantly heightened with the use of mobile apps. Guests may be hesitant to share personal information due to apprehensions regarding potential data breaches. To mitigate these concerns, hotels must implement robust data security measures and reassure guests about the safety of their personal information. The requirement for “technical training and support” is a critical consideration. As mobile apps continue to proliferate, hotel staff may require enhanced training and technical support to effectively address app-related challenges. Inadequate training can result in a decline in service quality, ultimately impacting the overall guest experience. The “lack of an emotional connection” may result from an overreliance on mobile apps. When excessive emphasis is placed on technology, guests may experience a sense of detachment from the hotel experience, which can impede the emotional connections that are often essential for a memorable stay.

Figure 4 presents a diagrammatic representation of the benefits, challenges, opportunities, and risks associated with mobile app technology in the hotel sector, as per participants’ responses.

## 5. Conclusion

The integration of mobile application technology in hotels is significantly transforming the hospitality industry (Buhalis et al., 2019), in line with the swift advancements of the digital age. The primary objective of this study is to analyse the benefits, challenges, opportunities, and associated risks of mobile application technology in hotels, as perceived by the participants.

Content analysis of participant responses reveals several benefits of mobile app technology for the hotel sector. These include enhanced personalisation and convenience for guests, improving operational efficiency and communication, and facilitating quicker check-in/check-out (Torres, 2018). The technology also supports faster, more personalised experiences and effective communication, leading to quicker resolutions of issues and stronger customer-provider interactions. These benefits focus on improving guest satisfaction and loyalty, aligning with findings from Kim (2016) on hotel tablet apps. However, while these findings align with prior research, there is an opportunity to enhance the theoretical discussion by contrasting a broader range of perspectives on technological adoption. For instance, while mobile apps enhance efficiency, they may also inadvertently undermine the human-centric

elements of hospitality, which have historically been vital to guest satisfaction. By incorporating insights from critical theories that examine the social and emotional trade-offs of automation in service industries, this research could provide a more comprehensive analysis of the dual implications of mobile technology.

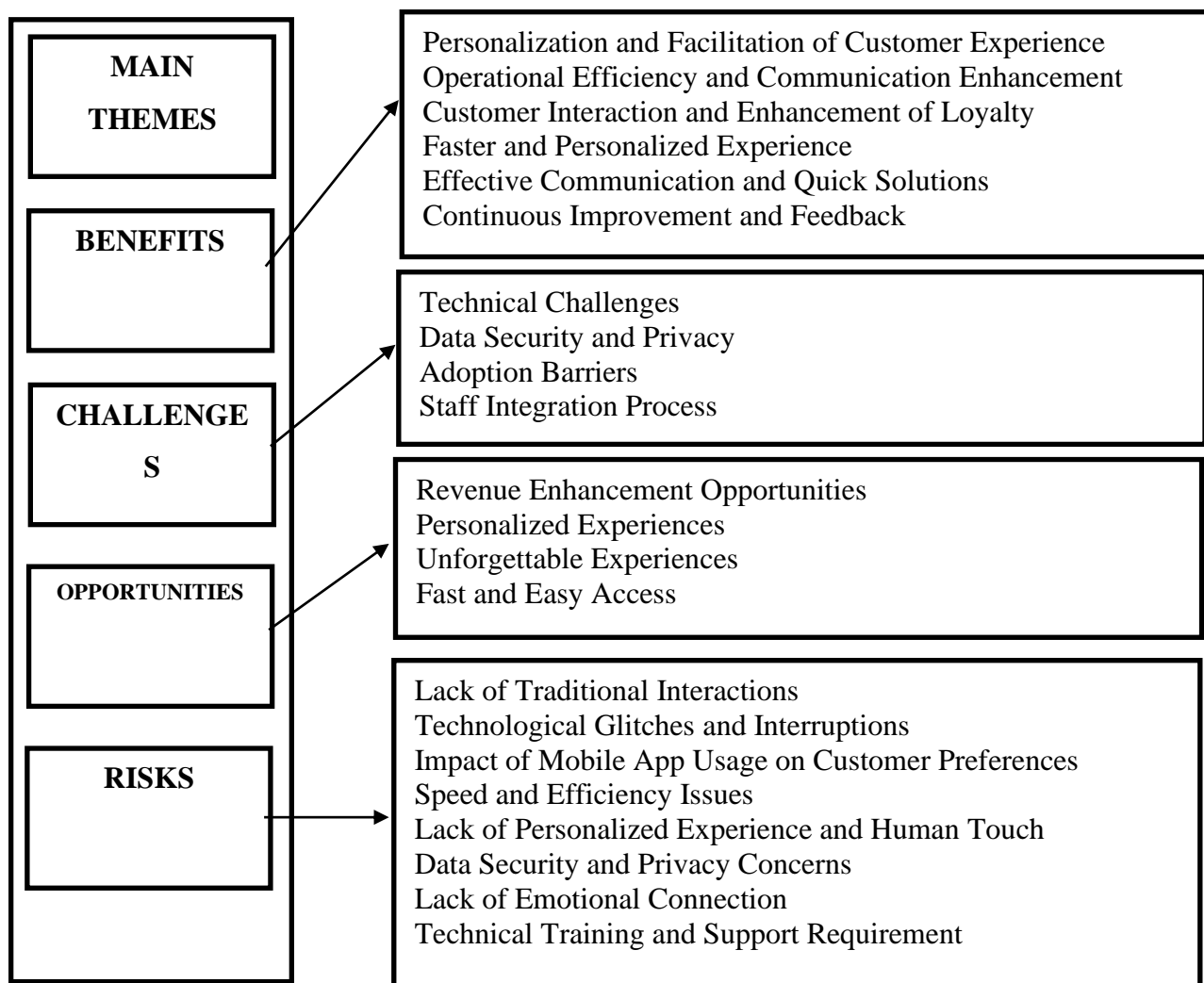


Figure 4: Benefits, challenges, opportunities, and risks of mobile app technology for hotels

Source: Own elaboration

The integration of mobile app technology presents several challenges, including technical issues such as software compatibility and data integration (Banafaa et al., 2023), as well as significant concerns regarding data security and privacy. Adoption barriers often stem from

differing levels of technological experience across age groups, necessitating that staff adapt to app usage. Furthermore, an overreliance on mobile apps may diminish traditional interactions, and technological glitches can adversely affect customer experiences. Additionally, the impact on customer preferences and the potential lack of emotional connection are critical risks to consider. These challenges and risks underscore the necessity for a balanced approach to technological integration. Hotel managers must prioritise operational efficiency and the preservation of the human elements of hospitality. Implementing hybrid services that combine digital convenience with personal interaction can effectively address the diverse needs of guests while ensuring a competitive advantage.

Practical implications for hotel managers, investors, and app developers are numerous. Hotel managers should prioritise leveraging mobile apps to enhance operational efficiency, including bookings and check-ins, while also investing in training programs to ensure staff proficiency in utilising these tools. Managers should implement comprehensive data security measures to safeguard guest privacy and foster trust. Investors may consider prioritising funding for projects that incorporate advanced yet user-friendly app designs, capable of addressing a diverse range of customer needs while upholding high operational standards. For app developers, the emphasis should be on innovating adaptable platforms that can be seamlessly integrated into various hotel infrastructures.

Recognising the limited availability of conventional interactions, it is essential to establish a harmonious balance for customers who may become overly reliant on mobile apps. Hotels should offer a comprehensive range of services that incorporate both digital and traditional interactions to accommodate diverse customer preferences. It is important to acknowledge that technological issues can adversely affect the guest experience. Therefore, hotels should be prepared for potential disruptions and implement effective resolution mechanisms. In addition to technological advancements, customer preferences and emotional connections are of significant importance. Hotel enterprises should aim to cultivate warm and meaningful relationships with their customers, leveraging technology as a supportive tool in this endeavour.

The present research article has several limitations. Firstly, the data has been obtained exclusively from 5-star hotels operating within Turkey. Consequently, the findings can only be generalised based on the experiences and perspectives gathered from this specific category of hotels. The data collection method utilised was a semi-structured interview approach.

While this method allows for a comprehensive understanding of participants' viewpoints, the predetermined nature of the questions may limit a more in-depth exploration of certain topics. Additionally, future research could consider employing longitudinal methodologies to examine how guest perceptions of mobile technologies evolve over time.

Future research efforts could enhance the generalisability of findings by expanding the sample to include hotels from various geographical regions and service levels. Comparative analyses across countries and cultures could reveal how mobile app adoption varies globally. Furthermore, investigating the impact of emerging technologies, such as artificial intelligence and virtual reality, on the hospitality sector could yield valuable insights into the next evolution of guest experience enhancements. Additionally, exploring unconventional perspectives, such as the role of ethics in guest data management and the potential environmental impacts of increased digitalisation, would provide a more comprehensive understanding of the broader implications of technological adoption in hospitality. By critically addressing these themes and expanding the theoretical foundation, this study establishes a framework for a more comprehensive understanding of mobile app technology in hotels. Its findings provide guidance for practitioners aiming to navigate the complexities of digital transformation within the hospitality industry.

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