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GoHoliday: Development of An Improvised Mobile Application for Boutique Hotels and Resorts

Iftiaj Alom[1], Ismail Ahmed Al-Qasem Al-Hadi[1*], Neesha Jothi[1] and Sook Fern Yeo[2,3]
[1] Institute of Computer Science and Digital Innovation, UCSI University, Kuala Lumpur, Malaysia
[2] Faculty of Business, Multimedia University, Melaka, Malaysia
[3] Department of Business Administration, Daffodil International University, Dhaka, Bangladesh
**Corresponding author: (ismailahmed@ucsiuniversity.edu.my, ORCiD: 0000-0002-9521-7645)*

Abstract - One of the main challenges boutique hotels and resorts face is the direct outreach to tourists and customers. As a result, these independent hotels often resort to online platforms such as Agoda and Airbnb to expand their customer base. However, this approach comes at the cost of losing revenue to Online Travel Agencies (OTAs) that solely focus on room sales, hindering the establishment of a strong brand image for boutique hotels and resorts. Considering the heavy reliance on OTAs, this paper focuses on the development of GoHoliday, a cross-platform mobile app prototype that aims to bridge the gap between boutique hotels and users. This mobile application seamlessly integrates a booking engine, an AI assistant for trip planning, and an experience-sharing platform, enhancing the app's capabilities alongside other features. By implementing the GoHoliday mobile application, boutique hotels can maximize their reach and establish a distinct brand identity by directly serving their valuable guests with more personalized arrangements.

Keywords— Boutique hotels, hotel brand application, OTA, travel technologies, AI tour guide

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I. INTRODUCTION

The travel and hospitality industry are constantly evolving. The well-established hotels offer a wide range of amenities and a corporate feel. While boutique hotels have a unique charm and character as boutique hotels and resorts are often located in unique and less commercialized locations and often have a strong connection to the local community and culture, which can provide guests with a more authentic and immersive travel experience. Unlike large hotel chains, boutique hotels enable guests to be more flexible and creative in terms of their offerings, allowing them to cater to the individual needs and preferences of their guests. However, that can be difficult to convey through traditional marketing channels. Besides, numerous small and medium-sized tourism businesses, including budget hotels, restaurants, and attractions, do not have their own website [1]. GoHoliday acts as a medium for boutique hotels and resorts to expand their market nationwide and globally. Thus, GoHoliday aims to empower boutique hotels and resorts to reach a larger

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audience through its in-app marketing campaign and give travelers access to a world of diverse and personalized options via mobile application.

II. LITERATURE REVIEW

The literature review explores the evolution of the hospitality industry and travel ecosystem in recent decades, with a specific focus on technological advancements and trends. Furthermore, this section presents a comparative analysis of existing systems, emphasizing their distinctive features.

A. Hospitality Industry and Trends

The hospitality sector encompasses a wide range of businesses and services associated with travel, tourism, and leisure activities [2]. Over the years, it has witnessed a transformation from ancient inns to contemporary hotels, resorts, restaurants, and more [3]. Factors such as globalization, the rise of online travel agencies, and the increasing middle-class population have fueled its rapid growth and technological advancements [4]. This sector plays a significant role in the global economy, contributing approximately 10% to the global GDP and generating numerous job opportunities worldwide [5]. In Malaysia, it accounted for 12.8% of the country's GDP in 2021 [6]. Despite its economic importance, boutique hotels encounter challenges such as reliance on online travel agencies and branding issues [7]. To remain competitive, they need to adapt to emerging trends and technologies, such as brand mobile applications that integrate Property Management Systems, Content Management Systems, and Booking Engines, in order to provide exceptional experiences for travelers.

B. Trends in the Hospitality Industry

The emergence of online reservation platforms in the 1990s marked a transformative shift in the way customers make bookings and payments for hospitality services [8]. This trend has continued to gain substantial momentum in recent years. However, boutique hotels and resorts encounter challenges as they compete with larger hotel chains that possess greater financial resources and well-established online visibility. This dynamic poses obstacles to their full utilization of online booking systems and limits their potential to reach a broader customer base, consequently impacting their ability to establish a strong brand image. The hospitality industry is characterized by intense competition. With the entry of numerous new hotels and resorts vying for tourists, the sector has become fiercely competitive [9]. Established hotels have undertaken efforts to differentiate themselves from their rivals, making it increasingly challenging for boutique hotels to attract guests. One of the primary hurdles faced by boutique hotels is the need to provide a distinctive and memorable experience that sets them apart from their competitors. Furthermore, these hotels must also contend with price competition, which can be particularly daunting in a market already saturated with budget-friendly options. Technology integration plays a pivotal role in enhancing the guest experience and improving operational efficiency within the hospitality sector. However, boutique hotels and resorts often face challenges when it comes to fully integrating advanced technologies like Content Management Systems and Channel Managers, primarily due to resource limitations and a lack of technical expertise. As a result, they may be unable to fully leverage systems such as channel managers, content management systems, and metasearch platforms, which have the potential to enhance their visibility and competitiveness in the market [10]. The emergence of hotel brand mobile applications has coincided with the widespread usage of smartphones and mobile devices. These apps have revolutionized how travelers access information and make bookings while on the move, providing personalized experiences and fostering improved guest engagement [11]. However, it is important to note that a significant portion of these applications are adopted and utilized by online travel agencies (OTAs) and large hotel chains. In contrast, boutique and independent hotels and resorts often encounter obstacles in developing their own branded mobile apps due to resource constraints, high development costs, limited technical expertise, and reliance on third-party platforms. To address these challenges and enhance brand identity and the guest experience, the implementation of a specialized application like GoHoliday can prove to be an asset for boutique hotels and resorts.

C. Travel Technology Ecosystem

The travel technology ecosystem is a complex system that encompasses various entities and individuals committed to improving the convenience, efficiency, and enjoyment of travel. This ecosystem encompasses a wide range of components, from global distribution systems and online travel agencies to mobile applications. In this section, we will delve into the intricacies of the travel ecosystem. An online travel agency (OTA) is a third-party booking platform that facilitates the sale of hotel rooms and earns a commission for each booking made through its website. OTAs function similarly to traditional travel agents, but with an online presence. In recent years, OTAs have gained

significant popularity due to their convenience and ease of use for travelers seeking to book hotel accommodations. However, it is important to note that OTAs can be costly for hotels, as they charge a commission on every booking made. Expedia and Priceline are two industry giants that dominate the global online hotel distribution market. Expedia operates with multiple brands, including Expedia, Hotels.com, Orbitz, Travelocity, Hotwire, and Wotif, while Priceline operates through platforms such as Booking.com, priceline.com, agoda.com, KAYAK, Rentalcars.com, and OpenTable. Among these, Booking.com stands out in terms of revenue and holds the leading position as the primary online platform for booking accommodation worldwide. It also commands a significant 62% market share as the top OTA in most European countries [12]. The hotel's official website plays a crucial role in marketing and promoting the establishment. It serves as a valuable resource for potential guests, offering comprehensive information about the hotel's amenities, rates, and location. Moreover, the website provides a convenient platform for guests to make direct bookings with the hotel [10]. Unfortunately, it has been observed that many boutique hotel websites suffer from inadequate maintenance and poor design, hindering their effectiveness [13]. An Internet Booking Engine (IBE) is a valuable tool that streamlines the online booking process for travelers. It empowers hotels to enhance their direct bookings via online channels, particularly through metasearch marketing. By utilizing an IBE, hotels can augment the number of direct bookings, supported by the growing adoption of IBEs either developed in-house or provided by connectivity providers. These solutions effectively promote and facilitate direct bookings. A Property Management System (PMS) is a software application that serves as a valuable tool for hotels in managing their day-to-day operations. PMSs typically encompass modules designed for various tasks, including guest reservations, check-in and check-out processes, housekeeping, and billing [10]. By leveraging PMSs, hotels can enhance operational efficiency, reduce costs, and provide a superior guest experience. However, it is worth noting that smaller hotels often still rely on traditional methods to manage their properties. In order to achieve seamless hotel operations, it is crucial for hoteliers to recognize the significance of implementing a PMS for effective hotel management [14]. A Channel Manager offers hoteliers a swift and convenient solution for managing room prices, availability, and restrictions across various online distribution platforms, including the hotel's official website and online travel agencies' websites. This invaluable tool assists hoteliers in effectively managing room availability, thereby preventing issues like overbooking [10]. The phrase "direct booking" refers to the process by which a tourist makes a reservation directly with a hotel instead of going through an online travel agency (OTA) or other intermediaries [15]. Direct reservations can be made via phone, email, or the hotel's official website, offering various advantages for both travelers and hotels. Direct bookings often result in cost savings for customers, granting them access to special deals and personalized care. Moreover, hotels benefit from direct reservations as they retain greater control over the guest experience and avoid paying commissions to intermediaries. Direct bookings foster a direct relationship between hotels and visitors, enhancing customer loyalty and encouraging repeat business. Metasearch is a booking platform that enables travelers to compare hotel room prices across various OTAs. It displays the prices of hotels from different OTA websites for easy comparison, as the room rates may vary among these platforms. A Hotel Brand Application is a specialized software designed to meet the specific needs of hotels and hotel chains. It integrates various aspects of hotel management into a single platform, including property management, booking, and reservation management, customer relationship management, and marketing and distribution management. The primary objectives of this application are to enhance direct reservations, simplify operations management, and streamline hotel processes. By adopting this technology, hotels can improve the guest experience, boost productivity, and achieve overall business success. Furthermore, the utilization of mobile hotel apps has been shown to positively impact brand awareness, customer engagement, and brand commitment, ultimately leading to increased brand loyalty [16]. In addition, many hotels and resorts have started incorporating value-added features into their hotel apps, such as mobile concierge services and mobile payments. Recently, Chatbots have frequently serving as virtual assistants in the travel industry, with a primary objective of aiding customers in booking flights, accommodations, destinations, recommendations, or contents that align with their interests [17]. This integration has gained significant prominence within the hotel sector as well, facilitating immediate and personalized communication with potential guests. Additionally, a more advanced AI chatbot has been patented to engage with users enabling users to engage with the chatbot through natural language input and employing suitable techniques for training the chatbot to generate responses [18]. These AI chatbot agents are designed to emulate lifelike human characters and express emotions [19]. Nowadays, AI chatbots have emerged

as indispensable assets in the travel industry, assuming pivotal roles in assisting travelers, addressing inquiries, and providing continuous support throughout their journeys. Their implementation in hotel operations has notably enhanced information accuracy and real-time updates, streamlining the provision of precise information, improving problem-solving capabilities, and enhancing overall customer communication quality [20]. Hence, AI chatbots have enabled the hospitality industry to transform its operations by reducing costs, increasing efficiency, and elevating service reliability and quality [21]. Moreover, they have the potential to boost direct reservations while decreasing the incidence of abandoned booking processes. Although negative consequences for human resources are expected, this technology mostly enhances tourism employees [22]. Nevertheless, the current online hotel booking applications have not fully utilized AI chatbots in their applications. There remains ample room for innovation and improvement in this domain.

D. Comparison of Existing Systems

Table 1 provides a comprehensive comparison of the features offered by four established hotel booking platforms, namely Airbnb, Agoda, TripAdvisor, and Booking.com, in relation to the proposed system of GoHoliday's dedicated mobile application catering to boutique hotels and resorts.

All the platforms require both hotels and guests to register with them. Additionally, only the proposed platform GoHoliday offers a brand page feature, which allows hotels to design a personalized page with detailed information about their properties. All platforms allow users to make reservations, complete payments, and track their bookings. They also provide notifications for users. Among the platforms, only GoHoliday offers social feed features, while Airbnb stands out with its in-app messaging capability.

After conducting a feature comparison between proposed GoHoliday, Airbnb, Agoda, TripAdvisor, and Booking.com, it is evident that GoHoliday differentiates itself from other hotel booking apps with its standout features, including a brand page and an Artificial Intelligence (AI) assistant. These unique offerings give GoHoliday a competitive edge in the market.

Table 1: Comparison between the existing platforms and the proposed platform

Features	**GoHoliday**	**Airbnb**	**Agoda**	**TripAdvisor**	**Booking.com**
Guest reg	√	√	√	√	√
Hotel reg	√	√	√	√	√
Brand page	√	×	×	×	×
Booking room	√	√	√	√	√
Payment	√	√	√	√	√
Track booking	√	√	√	√	√
Notification	√	√	√	√	√
Track and redeem voucher	√	√	√	√	√
AI Assistant (Adam)	√	×	×	×	×
Social feed	√	×	×	×	×
In-app message	×	√	√	×	×
Map	√	√	√	√	√

E. Summary of Literature Review

In this section, we will present a concise overview of several papers we have studied, highlighting the main issues addressed, key findings, and the advantages discussed. Table 2 provides a summarized representation of this information.

Table 2: Summary of literature review

Year	Journal Name	Title	Advantages	Problems	Research Findings
1993	Tourism Management	Computer reservation systems and public tourist offices	The financial motivations of tourism product vendors.	There is a potential risk that specific destinations and types of tourism products, particularly small and medium-sized enterprises (SMEs), may face increasing limitations in accessing the international market if current trends persist.	The present trends in computerized reservation services.
2012	International Conference on Computer & Information Science (ICCIS)	MyTourGuide .com: A Framework of a Location-Based services for tourism industry	MyTourGuide aims to provide comprehensive solutions throughout the entire tourist lifecycle, catering to the diverse needs of travelers.	Travelers encounter the challenge of dealing with excessive and overwhelming information due to the multitude of unfiltered tour information sources on the internet, lacking customization according to the user's preferences.	MyTourGuide offers a distinctive service for B2C customers, providing a Location-Based System within a mobile application for travelers. Additionally, it includes a trip planning and sharing module accessible through the MyTourGuide.com tourism web portal.
2013	International Journal of Contemporary Hospitality Management	Selling rooms online: the use of social media and online travel agents	The significance of social media in the context of online sales.	The problem lies in the fact that hospitality managers need to engage with social media to establish effective communication channels with tourists, but they often struggle to do so.	The findings indicate an ongoing struggle between achieving visibility and driving online sales in the digital domain. Moreover, there is a noticeable difference in the adoption of social media and online travel agency (OTA) websites among hospitality establishments utilizing online management tools.

2016	International Journal of Hospitality Management	Hotels' dependency on online intermediaries and their chosen distribution channel portfolios: three country insights	While traditional channels like walk-ins and telephone bookings continue to have a significant impact, approximately 20% of all bookings are now exclusively generated online.	In comparison to online travel agencies (OTAs) that hold a dominant position as booking channels, destination marketing organizations (DMOs) may face shortcomings in terms of competitive factors such as resources (e.g., finances, knowledge) and sales efficiency.	On average, 3.61 online travel agencies (OTAs) are used. With regards to OTA penetration
2018	Tourism Review	Hotels heavily depend on online travel agencies (OTAs) such as Booking.com and other hotel distribution channels.	Independent hotels experience a higher influx of guests from Booking.com compared to chain-affiliated hotels.	There is no significant disparity between 1-star and 2-star hotels. The findings affirm that hotels with higher ratings sell fewer rooms through Booking.com.	European hotels exhibit the highest reliance on Booking.com compared to other regions.
2020	International Journal of Advanced Research in Engineering and Technology	Modern Hotel Business Management Tools	Implementing advanced automation tools and utilizing them for a few months will demonstrate their effectiveness, leading to increased room bookings and the elimination of human errors in generating crucial reports.	Hotels frequently encounter confusion when deciding which technology to adopt.	By analyzing hotel data, identifying growth opportunities, and utilizing various demand forecasting models, it becomes possible to predict necessary price adjustments and optimize revenue management systems to maximize hotel profits.

2022	Journal of Trade Science	The impact of AI chatbot on customer willingness to pay: An empirical investigation in the hospitality industry.	Presents a framework for assessing how AI Chatbots affect actual customer behavior. This research employs customer data to evaluate how three chatbot aspects (Anonymity, prompt response, and convenience).	The research does not consider other factors that may influence customer behavior and satisfaction, such as chatbot personality, trust, privacy, and security.	The chatbot has had a substantial influence on guests' inclination to spend money on hotel services, with the most significant impact being attributed to swift response times during interactions.
2022	VNU Journal of Economics and Business	The Impact of AI Chatbot on Long-Term Relationships between Customers and Hotels.	Key factors influencing quality communication and the establishment of enduring relationships between customers and hotels in the context of AI Chatbots are anonymity, convenience, and problem-solving capabilities.	It does not consider the potential challenges and risks of chatbot implementation, such as ethical, legal, and social issues.	Identifies the indirect impact of the chatbot system on the long-term relationships with guests. These findings contribute to a deeper comprehension of how the chatbot system shapes customers' decision-making processes.
2023	International Journal of Scientif1ic Research in Engineering and Management	AI Based Chatbot to Answer FAQs.	Describes the design and implementation of the chatbot using tools such as Watson Discovery Service, Watson Assistant, and Node-Red.	This paper focuses on AI chatbots in banking, industry, education, and e-commerce.	The paper proposes a chatbot that can answer frequently asked questions in various domains, such as banking, industry, education, and e-commerce using artificial intelligence methods such as natural language processing and machine learning to understand user queries and generate appropriate responses.

2023	The Tourist Review	ChatGPT for tourism: applications, benefits and risks.	It considers both the benefits and risks of ChatGPT for tourism, such as improving customer service, productivity, efficiency, personalization, creativity, and innovation, as well as posing challenges for human resources, ethics, privacy, security, and quality.	It does not address the technical aspects or requirements of ChatGPT, such as how to train, fine-tune, or evaluate the model, or how to ensure its reliability and accuracy.	ChatGPT and similar models are poised to greatly influence tourism processes by streamlining customer service at the front and improving efficiency at the back of house. While potential negative effects on human resources are anticipated, this technology predominantly benefits tourism employees.

III. RESEARCH METHODOLOGY

The development of GoHoliday follows a well-defined knowledge engineering methodology. GoHoliday is a comprehensive system that integrates with the Content Management and Booking system. The knowledge engineering process involves multiple steps, starting from problem statement identification to the creation of a fully functional system. However, it is important to note that this study does not aim to fully develop and implement the entire system. Therefore, the knowledge engineering methodology has been specifically adapted for this study.

A. Comparative Analysis

The research will begin by examining the role of online travel agencies (OTAs) and their applications in the hotel industry on the Internet. The primary objective is to gain a comprehensive understanding of the existing techniques and applications available to users in the travel context. By studying these existing applications, new technologies and applications can be discovered to enhance the proposed idea.

A thorough comparison of various travel and hotel applications will be conducted, analyzing their features in detail. This analysis will facilitate the development of an improved mobile application specifically designed for boutique hotels and resorts. The technological platform plays a crucial role in building a capable system that can generate personalized travel plans and facilitate direct hotel bookings. Therefore, exploring the existing models will provide valuable insights for proposing an ideal model for the boutique hotel application within the proposed system.

The literature review encompasses an analysis of travel trends and travel technologies, which are frequently used to determine the appropriate technology to employ. This study will compare different models and suggest an optimal model for an enhanced mobile application solution for boutique hotels and resorts.

B. Requirement Gathering

In terms of data collection and requirement analysis, a combination of qualitative and quantitative techniques will be employed. Following the research methodology, an extensive examination of the travel industry, travel technologies, and their applications on the Internet will be conducted. Specifically, a comprehensive review and comparison of features will be carried out, focusing on OTA (Online Travel Agency) apps. Additionally, a survey is conducted with users to identify their specific needs. The data collection process encompasses two aspects: the perspective of hotels regarding their utilization of OTA apps and the perspective of users using these apps. To propose improved app modules for hotels and users, several criteria will be considered. Essentially, there are two methods for evaluating the daily operations of hotels and how users employ mobile apps for their hotel booking requirements.

C. Design and Analysis

Based on the findings of the requirements study, the initial design concept of the GoHoliday app begins as illustrated in Figure 1. This involves creating system modules, diagrams, and visual mock-ups to depict the app's layout, structure, and navigation. By establishing logical connections between various app components, such as user registration, booking functionality, AI assistant, and review systems, we aim to ensure a smooth and user-friendly experience for the users.

The proposed mobile application comprises two main modules: the Hotel Module and the User Module. GoHoliday targets two primary markets: boutique hotels and tourists. Independent hotels can leverage the platform to efficiently manage and promote their businesses by creating dedicated hotel pages on GoHoliday. The platform includes a content management module that allows hotels to maintain their brand pages. Moreover, hotels can advertise their latest promotions on GoHoliday. The primary goal of GoHoliday is to cater to boutique hotels, enabling them to provide personalized services and streamline the direct booking process for travelers.

The GoHoliday platform offers travelers comprehensive tour information throughout the entire tourism life cycle, from planning to reminders. Users can conveniently plan their trips within our application using our trip planning module. By inputting information such as preferred stay dates and the number of guests, the system suggests suitable destinations and displays them to users. Our AI assistant, Adam, powered by ChatGPT, assists users in planning activities and provides answers to their inquiries based on their input. This phase also includes a direct messaging and location module, providing users with insightful information about hotels.

Moreover, GoHoliday offers a booking engine service and an E-payment module. These features enable users to easily reserve rooms and make secure payments. Once a booking is completed, the itinerary displays all the relevant booking information. This streamlined process allows users to access tour information efficiently and accurately, addressing the issue of overwhelming information. Users can also share their trip experiences, memories, and photos through our reminiscing module, which includes a blog and an album. These modules are interconnected with the Social Feeds Module, promoting interaction among travelers and facilitating the retrieval and sharing of information.

Assistant Adam is a distinctive service provided by GoHoliday, serving as a personalized tour guide for users seeking to enhance their trips with creativity. Adam's functionality will be further enhanced through training the modules on specific datasets, enabling the provision of more refined and personalized information based on user profiles, hotel profiles, and locations. This module primarily assists users during the planning phase, allowing them to efficiently plan their staycations. Additionally, the map feature utilizes the Global Positioning System (GPS) embedded in users' smartphones to provide navigation to their chosen destinations.

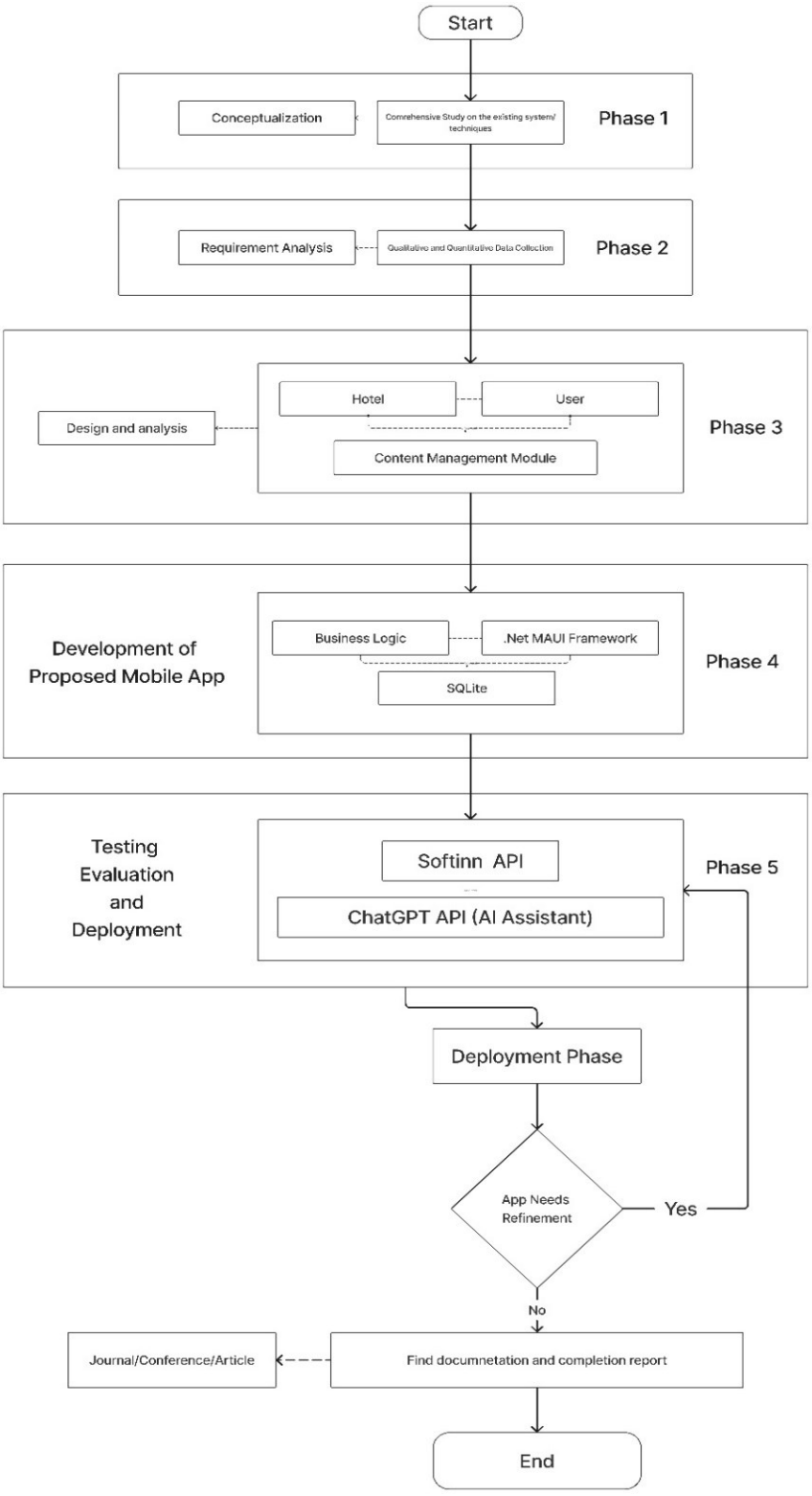

Figure 1: Overview of system module

D. Phase 4: Development of the proposed application

After gathering the data and understanding user requirements, the development of the GoHoliday Application commences with the creation of a prototype. The fundamental operation of any mobile application involves two essential components: the web service or server and a database.

The server serves as the primary source of information, supplied from a preexisting database. Within the server, crucial business operations, commonly referred to as "business logic," are executed. These operations define the behavior and functionalities of the application during its usage. The server retrieves data from the database and provides it to client applications upon request, ensuring seamless access to relevant information. The business logic implemented within the server governs the underlying algorithms and rules that dictate how the application functions, processes data, and performs various tasks. This integral interplay between the server, database, and business logic enables efficient and effective operations within the application while ensuring an optimal user experience.

The application will be developed using .NET MAUI, a versatile framework that enables cross-platform programming for both Android and iOS platforms. This framework, provided by Microsoft, offers various functionalities, including app design, to streamline the development process. The entire project will be implemented using .NET 6, a server and database-focused framework also offered by Microsoft. As for the database, SQLite will be used to store the data.

Additionally, for the prototype development, Softinn, a leading hotel tech company based in Melaka, will provide their Hotel Booking Engine (BE) API along with other essential API services. The integration of Softinn's Hotel BE API will enable seamless integration with booking systems, allowing for efficient handling of reservations and other essential hotel operations. By leveraging Softinn's API services, the prototype will be able to offer a comprehensive and robust solution tailored for boutique hotels and resorts.

To enhance the user experience, the app will incorporate a geolocation system utilizing the internal GPS capabilities of each mobile device. This feature will enable precise location tracking, providing valuable location-based services within the application.

Moreover, the GoHoliday application will feature an AI assistant named Adam, powered by the ChatGPT API. Integrating ChatGPT into GoHoliday applications via API involves essential steps. Firstly, API credentials are set up, and requests are made to the /v1/chat/completions endpoint with user messages and parameters. User inputs are captured and included in the payload. The generated message is extracted from the API response, and error handling is implemented. The conversation context is maintained by including history in requests. Messages are formatted and displayed appropriately. Leveraging advanced natural language processing capabilities, Adam will provide intelligent and interactive support to users, enhancing their engagement and overall satisfaction with the application.

IV. RESULTS AND DISCUSSIONS

Upon completion of the prototype stage, the application will be introduced to boutique hotel and resort owners for testing and evaluation. The evaluation process will involve comparing it against predefined performance criteria, including user-friendliness, perceived usefulness, and effective utilization of online presence to cultivate a strong brand image among customers. Additionally, a technology acceptance model (TAM) survey is conducted with 10 boutique hotels, to predict the perceived usefulness and perceived ease of use of the application. The survey results indicate that 8 out of 10 boutique hotels perceive it as highly important to establish a brand identity for their hotel and resorts using their own application. This finding underscores the growing recognition among boutique hoteliers of the role that a dedicated app can play in reinforcing their unique brand identity and distinguishing themselves from competitors. In terms of the adoption of the GoHoliday application, 5 boutique hotels expressed their willingness to consider using the app. This indicates a positive inclination towards embracing technological solutions to enhance customer experiences and streamline hotel operations. Additionally, 4 hotels displayed interest in using the app, indicating a potential market for the adoption of such applications in boutique hotels. However, 1 hotel expressed a lack of interest in utilizing the application.

A. Module Overview

The hotel module plays a central role in managing operational tasks and seamlessly integrates with the Booking Engine, hotel PMS, and CMS. These sub-modules are thoughtfully designed with human-computer interaction principles in mind, empowering hoteliers and providing them with greater control over the application. This design approach also facilitates enhanced customer engagement.

On the other hand, the User module follows a user-centric design approach, aiming to streamline the travel cycle from planning to cherishing memories. Figure 2 showcases the application's home page, which presents a comprehensive array of useful features and information. This page serves as a starting point for users to initiate new trip plans.

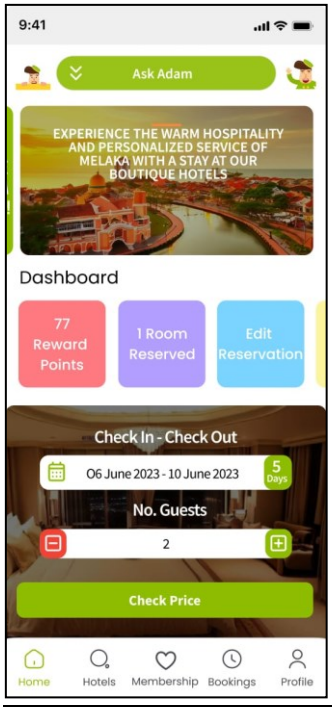

Figure 2: Home page

B. AI Assistant Adam

Figure 3 illustrates a conversation between the user and Adam, an intelligent AI-powered tour guide. Adam serves as a persona within the application, assisting travelers with trip planning and providing insightful information about various destinations. This module enables users to engage in conversations covering a wide range of topics and obtain answers to their inquiries. While other applications may also feature chatbots, their functionality is often limited to frequently asked questions (FAQs) only in most cases.

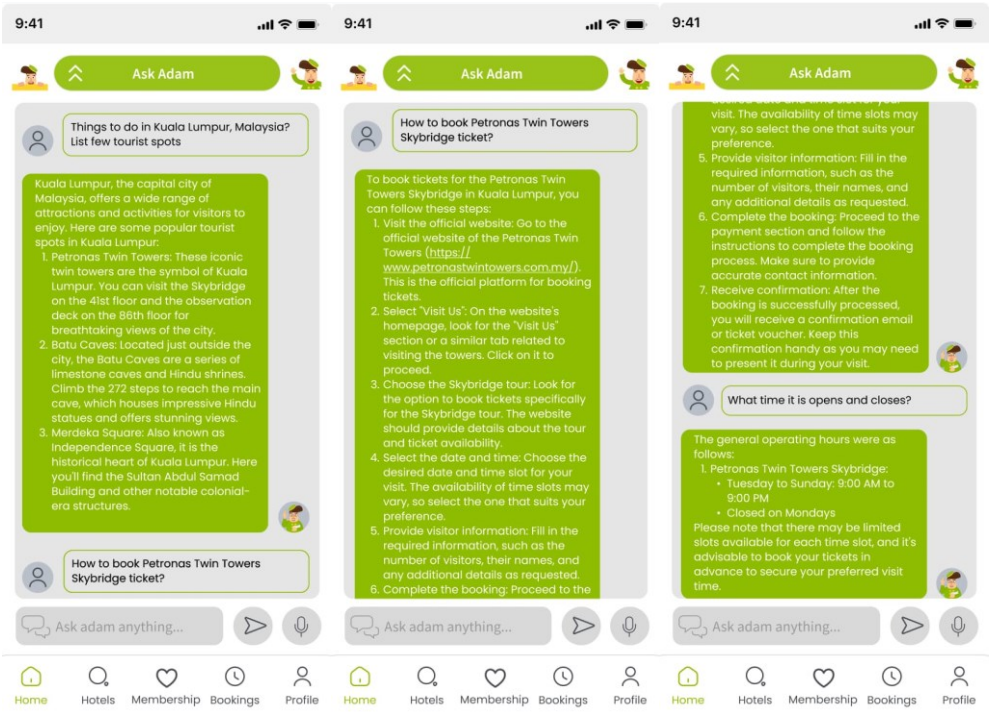

Figure 3: AI assistant Adam responses to user inquiries

C. Hotel Brand Page

The hotel brand page serves as a solution to empower boutique hotels and resorts to establish a strong brand image, utilizing a social media-inspired model that resonates with the daily usage patterns of millennials. Figure 4 showcases the brand page, which plays a pivotal role in enhancing customer engagement. It provides a platform for guests to share their experiences and actively participate in the hotel's community. Additionally, the brand page contributes to fostering customer loyalty by delivering a personalized experience that makes guests feel valued.

In addition to the mentioned benefits, hotel brand pages also provide guests with the opportunity to become members and receive exclusive offers and benefits. Furthermore, the page incorporates two additional sub-modules: Feed, Guest Experience, and Map Feature, which assist in locating hotels or resorts as shown in Figure 5.

In Figure 7, the Feed module enables hotels to instantly share updates with their members. This may include announcements regarding new arrivals, special events, or any other news that guests might find interesting. Conversely, the Guest Experience module, depicted in Figure 6, allows guests to share their post-stay experiences. This feature provides valuable insights for other guests, offering them a glimpse into the hotel experience and aiding the hotel in enhancing its offerings. By incorporating these features, hotel brand pages foster stronger relationships with guests and cultivate a more positive and engaging experience for all parties involved.

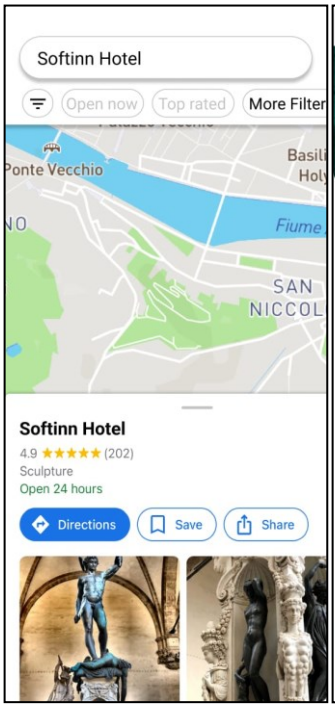

Figure 4: Map.

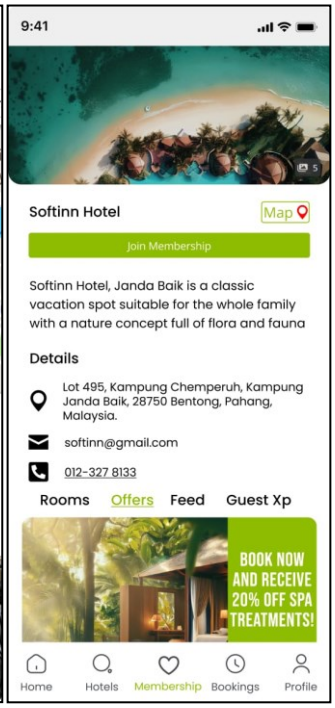

Figure 5: Hotel/resort brand page.

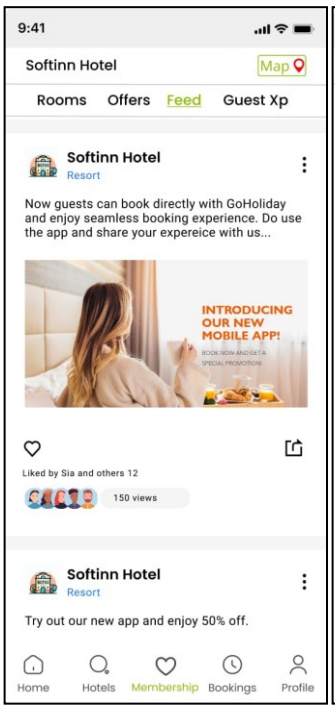

Figure 6: Guest experience page.

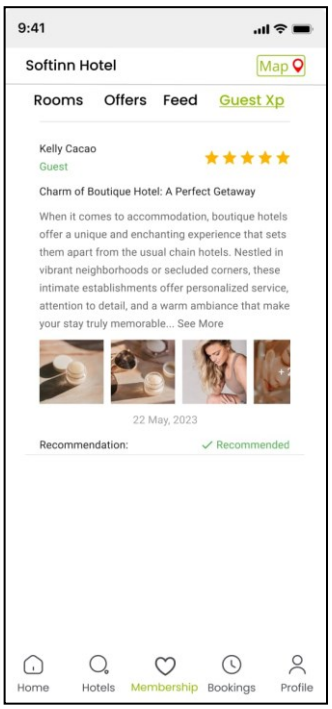

Figure 7**:** Feed page.

D. Booking System

The booking system module allows users to make room reservations based on their preferences. Figure 8 illustrates that the system seamlessly checks real-time room availability by integrating with the hotel's Property Management System (PMS). It displays only the available rooms, along with the latest prices. Additionally, the module provides comprehensive booking and room-related information, ensuring transparency and clarity for users, as depicted in Figure 9. Once a room is booked, Figure 10 displays the reservation module page.

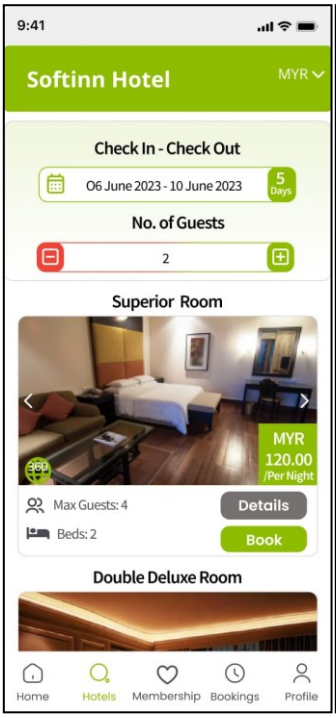

Figure 8: Room details.

Figure 9: Available room listing.

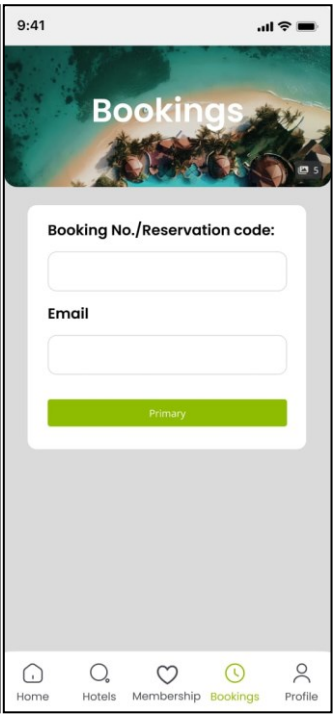

Figure 10: Check reservation page.

E. E-payment System

Finally, to enhance the convenience and safety of the booking process, a secure e-payment feature will be implemented. This will enable efficient and contactless transactions, providing users with a seamless payment experience. Figure 11 provides a glimpse of the e-payment module.

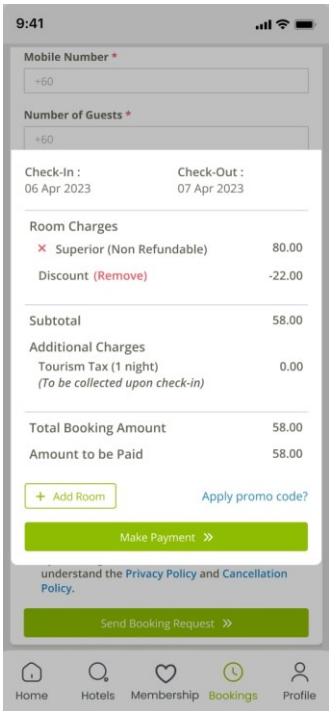

Figure 11: E-payment

V. CONCLUSION

This project aims to develop a high-quality mobile app prototype that meets the requirements of both boutique hotels and customers. It also addresses the challenges faced by boutique hotels in the rapidly evolving tourism industry and contributes to making a positive impact on the tourism sector. By providing a solution for boutique hotels and resorts, it aims to help them expand their reach, increase bookings, and establish a strong national and global brand identity while reducing reliance on Online Travel Agencies (OTA's). Additionally, the project recognizes the crucial role of technology and incorporates various modules into the GoHoliday app to offer a comprehensive hotel management solution.

As for future work, the plan includes leveraging machine learning techniques to provide more personalized recommendations to users. Moreover, the project aims to train Adam, the AI-powered tour guide, using specific datasets to enhance accuracy and provide tailored responses. Furthermore, there is a focus on improving the overall user interface (UI) to ensure it is more user-friendly and intuitive.

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