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Scheduling Events and Activities Based on Mobile Application: Case Study for Sultanate of Oman

Aaisha S. AlShibli[1], ImanAl-Maamari[2], Shaimaa Al Buraiki[3], Bedoor Alsenani[4]
[1] University of Technology and Applied Science, Sohar, Oman
* Corresponding author: Aaisha S. AlShibli[1], Aaisha.AlShibli@utas.edu.om

Abstract

When This research paper presents the development of a public service application designed to schedule proposed activities and events. It provides all people, especially tourists, with the timings of various activities and events in the country. It will significantly and noticeably increase the number of tourists, enabling people to take their annual vacation to coincide with the timings of these events. The application aims to simplify planning and organizing various events by providing users with an intuitive platform to view, schedule and manage upcoming activities. The application allows individuals and organizations to create, manage, and collaborate on scheduled events through customizable features and notifications. This mobile application will help gather and schedule activities and events proposed to be held at a specific time in Oman shortly. It integrates geolocation services, user preferences, and real-time data to personalize tourist event recommendations. This approach ensures that tourists receive suggestions based on location and interests, making event discovery more tailored and dynamic. The results suggest that such a service-oriented application could significantly improve how people organize and interact with future events. It provides professional scheduling, organization of events, and people engagement. Clinical Impact: The application has the potential to transform the way tourists interact with local events, thereby boosting local tourism and economy.

***Keywords**:* Oman tourism; Mobile application; E-marketing; Information system; event scheduling

1. Introduction

The daily activities are increasingly transitioning to electronic platforms, simplifying tasks across practical, educational, social, and recreational domains. Tourism keeps the economy humming and gets people talking and mingling and keeping things sustainable. It helps to bring different cultures together, create jobs, and give local

businesses a boost, tourism helps countries move forward. Moreover, it is not just about making money; it also gets folks chatting and appreciating each other's cultures. It joins people from all nations of life to share stories and experiences. Think about festivals, theatres, adventures, and cultural stuff—they are not just fun but key to keeping traditions alive and building a sense of community. With everything going digital, electronic platforms have become the go-to for making life easier. This whole digital thing is shaking up the tourism scene too. It is making it easier and more exciting for people to dive into tourism. Mobile applications significantly enhance tourism through personalized recommendations and provide real-time information and booking options. It offers many features to quickly support historical locations and information, including GPS navigation, offline access, and cultural support. Apps promote local events, boost engagement through interactive features, and ensure safety, enriching travel experience while supporting economic growth in tourism-dependent regions (Al-Shezawi et al., 2017; Al-Balushi et al., 2017). This project focuses on enhancing entertainment as a vital aspect of breaking the routine of daily life. Many people enjoy events like festivals, theaters, adventures, or cultural activities, while others prefer connecting with nature. Although Oman offers a wealth of such activities, a lack of centralized promotion and accessibility limits public awareness. To address this, we propose a mobile application consolidating all events and festivals across the Sultanate, enabling locals and tourists to easily discover and plan their activities. The application will categorize events into sections such as entertainment, adventures, and cultural activities, ensuring a personalized experience for users. It will also feature a reservation system for seamless bookings and allow event organizers to promote their offerings through paid advertisements. With roles designated for users, sub-administrators, and main administrators, the app will streamline event planning and management. The primary goal is to directly promote events, empowering families, tourists, and residents to organize their schedules efficiently with clear information about locations, timings, and types of events. This approach enhances engagement, raises awareness, and supports Oman's Vision 2040 by fostering festival tourism as a means of economic diversification. Tourists and locals alike can explore and participate in cultural and entertainment activities, elevating the vibrancy of Omani festivals while boosting the economy and showcasing the nation's rich heritage.

2. Literature Survey

The Sultanate of Oman is lively, bursting with culture and stunning landscapes. Something is always going on, but making the most of these events can be challenging. That is why we need a fresh way to discover what is happening. Let us talk about some systems that aim to do just that, with their ups and downs. Take TripAdvisor (or TripAdvisor), which has a ton of information on travel spots all over the globe (Filieri, et al., 2021). Reviews of hotels, restaurants, attractions, and any travel experience can be found. Most of this stuff comes straight from users, so it is more on-point and up to date than the old-school sources. TripAdvisor lets you compare hotel prices, flights, and other travel bits and bobs. Moreover, that is not all! TripAdvisor has some nifty tools for planning your adventures, like itineraries and budget trackers. They make planning more manageable, and you can connect with friends and family when planning trips. It is a great way to get tips and share your stories. TripAdvisor is a handy tool for planning your trips, but like anything else, it has its downsides. First off, sometimes, the info does not need to be spot-on. Most of it is good, but you might stumble upon stuff that must be more accurate. It is a brilliant idea to read those reviews carefully and do

a small quantity of your own digging before making any big decisions. Then there is the whole biased reviews thing. You know how it goes—some folks might be too close to the business or even get paid to write glowing reviews. So, keep an eye out for that when you are scrolling through. It is just part of the game. Another thing is that TripAdvisor has a narrow focus. It is all about hotels, restaurants, and attractions. However, it might not be your best bet if you seek information on transportation or the local culture (Yoo et al., 2016). Moreover, let us remember the overreliance on tech. TripAdvisor is awesome for planning but is not the be-all and end-of-all. You must mix in some of your research and planning to really nail down your travel plans. Oh, and watch out for scams! Yep, they happen. Fake reviews or unexpected charges can pop up for stuff you still need to book. So, just be cautious and protect yourself out there.

Dhofar Seasons, a nifty app by Morris (Morris M., 2021), is packed with perks that make exploring Dhofar super easy and convenient. First, it gives you all the details about Dhofar's tourist hotspots, events, and activities. It is like having an encyclopedia in your pocket! Plus, with interactive maps, you will not get lost wandering around. Moreover, it even speaks your multiple languages, actually—so more folks can join the fun. Let us talk about how this app jazzes up your travel plans with real-time updates on events and activities—so you will not miss a beat. Moreover, booking hotels and tours. It is like having a travel agent on your phone. The app will serve your needs for a smooth trip with handy insights and recommendations. Moreover, it saves content for offline access. So even if you are off the grid, you still have all the info you need. Another app created by Dhofar Municipality is handy. It's packed with reliable info, easy-to-use features, and gets updated regularly. But, like anything else, it's not perfect. It's mostly about the Khareef season and focuses a lot on Dhofar. However, it has limitations, including a focus on the Khareef season and reliance on internet connectivity (Newton L., 2019).

Visit Oman is a website designed to entice folks to explore the wonders of Oman (Alawadhi et al., 2022). It has some nifty features that make it stand out (Yousif et al, 2020). First, it is a one-stop shop for all your travel planning needs. Visit Oman makes it super easy to find flights, accommodation, tours, and other travel essentials. The app teams up with local travel agencies and tour operators, so you know you are getting advice from people who really know their stuff about Oman. Visit Oman offers a variety of tours and activities to suit all sorts of interests and budgets. The system has limitations: limited flight and accommodation options, potential bias favoring partners, and lack of booking capabilities, requiring users to book directly with providers and compare external options (Al- Al-Abri et al., 2015). TripIt is a website designed to attract visitors and streamline travel planning. It saves time by eliminating the need for managing multiple confirmations, reduces travel stress by organizing plans in one place, and offers personalized recommendations for efficient trip planning (Krishnamurthi et al., 2021; Widagdo et al., 2024). TripIt is a valuable tool for enhancing travellers' experience and ensuring a more organized and stress-free journey (Rosenbloom S., 2014). Tourism platforms like TripAdvisor, Dhofar Seasons, Visit Oman, and TripIt significantly enhance travel planning by offering comprehensive information, user-friendly tools, and personalized recommendations. They streamline the travel experience with features like itineraries, budget trackers, real-time updates, multilingual support, and offline access. Collaboration with local experts ensures reliable and culturally rich content, reducing stress for travelers. However, these systems face limitations, including potential biases in user-generated reviews, region-specific focuses, reliance on internet connectivity, and lack of direct booking capabilities.

Despite security risks like scams and fake reviews, these platforms play a crucial role in simplifying travel, fostering engagement, and boosting tourism.

The proposed mobile app develops tourism event management and discovery in Oman. It offers features like event searches, enabling direct bookings and enhancing tourists' experiences. It boosts visibility, attendance, and revenue for companies while streamlining communication with participants. The app is helping to strengthen tourism in Oman and attract more visitors, fostering cultural exchange. It also drives economic growth and connects businesses.

3. Risk Management

By adopting robust strategies of risk management, the probability and the potential threats impact will be minimized effectively. Key initiatives—such as collaborating with event organizers, conducting user evaluation, measuring performance, and monitoring negative feedback proactively—will support the application's functionality, market competitiveness, financial health, legal compliance, and overall reputation. Figure 1 shows the comparison of risk management based on different factors. Through active risk management and adaptability to unforeseen challenges, we can enhance the application's success and ensure it delivers maximum value to users and stakeholders alike.

Type	Risk	Risk Management
Technical risks:	• The application may not be developed on time or within budget or may not meet the needs of users. There is also a risk of having security vulnerabilities or technical glitches.	• To mitigate technical risks, the application should be developed by a qualified team using industry-standard best practices. The application should also be thoroughly tested before being released to the public.
Market risks:	• The application may not be popular with users, or it may face competition from other applications. There is also a risk that changes in the market, such as the emergence of new technologies, can make the application obsolete.	• To mitigate market risks, the application should be designed to meet the needs of a specific target market. The application should also be marketed effectively to potential users.
Financial risks:	• The application may not be profitable, or it may require more funding than initially expected.	• To mitigate financial risks, the application should be developed with a budget and we as developers should have a clear plan for monetization.
Legal and regulatory risks	• The application may violate intellectual property rights or other laws and regulations.	*To mitigate legal and regulatory risks, the application should be* • developed in consultation with a lawyer or other expert.
Reputational risks:	• The application may be poorly received by users or the media, which could damage the reputation of the developers and stakeholders.	• To mitigate reputational risk, the application must be designed and developed at a high level. We as developers should also respond to user feedback and address any

Figure 1 Risk & Risk Managment

4. System Analysis and Design

The proposed system is designed based on the Waterfall development lifecycle methodology. It starts with analysis of the system requirements and then planning phase to determine the functional and non-functional business processes.

After that the design phase, which includes different UML diagrams starting with use case diagram as shown in Figure 2. This diagram illustrates the functional requirements of SubAdmin actors within the system. Our application includes three primary actors: User, SubAdmin, and Admin. Figure 3 represents the Level 0 Data Flow Diagram. This overview provides a high-level summary of the process. Initially, the user logs in, triggering the display of the interface. The user then selects their desired events. Both user and event information are subsequently stored in the database.

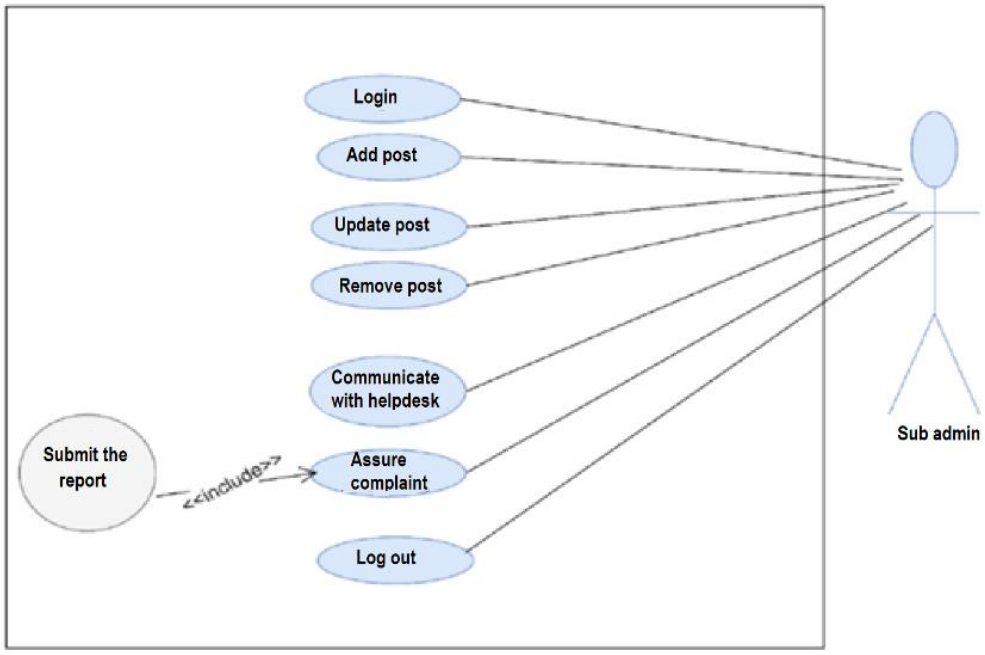

Figure 2 Use Case of proposed system

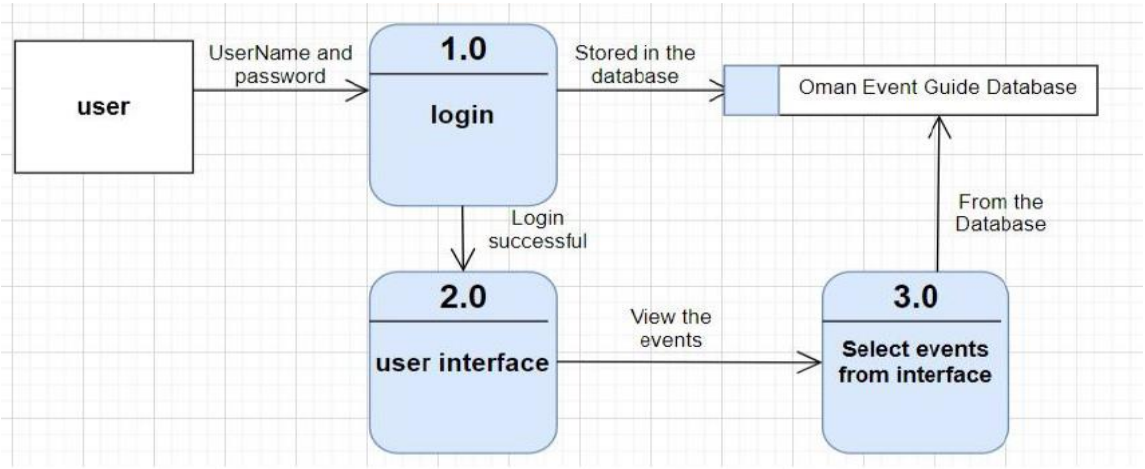

Figure 3 Data Flow Diagram

The class diagram is a fundamental component of object-oriented design that provides a visual representation of the classes, their attributes, methods, and the relationships among them, as shown in Figure 4. It enhances modularity and clarity and provides a structured approach toward incorporating multiple components into the proposed mobile application system. It underlines the responsibility of each class and enables developers to easily create, test, and deploy the proposed system.

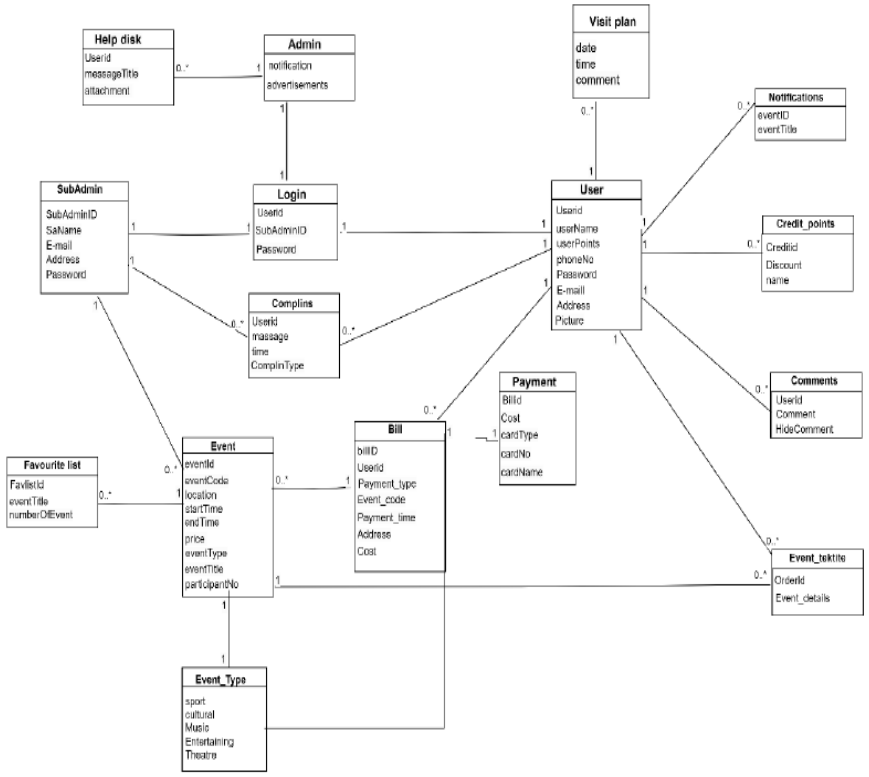

Figure 2 Class Diagram

5. System Implementation

The mobile application was designed with a user-friendly interface to ensure ease of use for tourists of all ages. The development process involved:

- Requirement Analysis: Gathering requirements from potential users through surveys and interviews.
- Design Phase: Creating wireframes and prototypes to visualize the app's interface.
- Development Phase: Using Agile methodology, the app was developed in iterative cycles, allowing for continuous testing and improvements.

The application includes the following key features:

- Geolocation Services: To provide real-time event recommendations based on the user's current location.
- User Preferences: Customizable settings to tailor event suggestions to individual interests.
- Real-Time Data Integration: Ensuring up-to-date information on local events, including timings, locations, and descriptions (Yousif & Saini, 2020).

The Graphical User Interface of our application will require the user to log in using username and password. If the user is new and does not have a username/password, user should register or sign up to the application first as amendatory operation. The details of the registration show in Figure 5. To simplify this operation, Google and Apple user account are utilized.

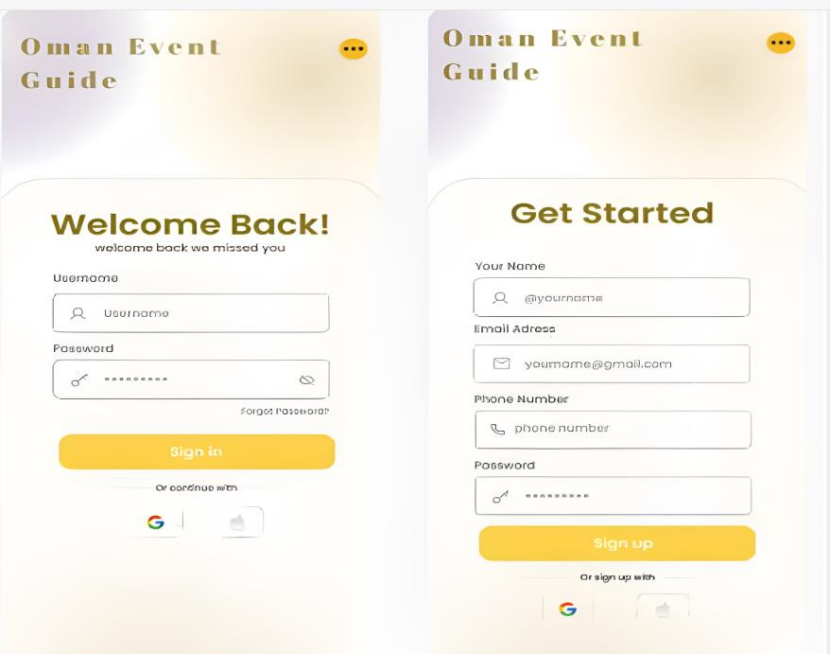

Figure 5 Registration Page

Figure 6 illustrates the application home page. The features included in the top page are notification messages, favorite accessed list and the search bar, which includes the rating code related to the user search. Also, it can identify the type of event, specifying whether it is free or ticketed. The features included in the bottom page are buttons specifying cultural type, events and entertainment. The interface displays a variety of events, with the latest updated events appearing at the top side of the page. Each event has a picture of a heart icon to be added to the favorites list and in order to share it with other friends, an arrow is used. The home page of Sub-Admin interface of the application illustrates in Figure 6. It shows that the latest updated events have been added by the actor Sub-Admin with additional icons of the events such as deleting and editing. Lots of details will appear once the user clicks on the event such as

time, date, type, free reservation or not, photo, location and summarization of the event. With all the information mentioned, if the user is interested in what is offered on the page, he can book for attending the event. Also, if the user would like to share their inexperience and knowledge by adding comments in a text box provided on the page as shown in Figure 7. The sub-admin is responsible for adding events to the application, which means that the page add-event will appear only for the sub-admin to add a particular event. The sub-admin should fill in all the required details such as the event's photo, title, time, date, type, location, summary, maximum allowed number, amount of money. There are two icons that appear on the map, which are notifications, and a list of favorite events. In order to make it easy for the user to navigate, there is a button for specifying the nearby events. Figure 8 illustrates a plan page visit, which has similar features such as notification and list of favorite events. In addition to new features such as the year, the calendar indicates the schedule of a particular event with more information like the exact timing. The is also a page for settings, which includes photo and user booking event. Throughout this page the user can update their reservation by, for example, changing the dates if anything suddenly happens as well as changing their details saved in the application like their data and language. Furthermore, a page for showing the tickets booked by the user appeared on the top with the required amount of money. Foe the payment, the barcode appeared beside the event.

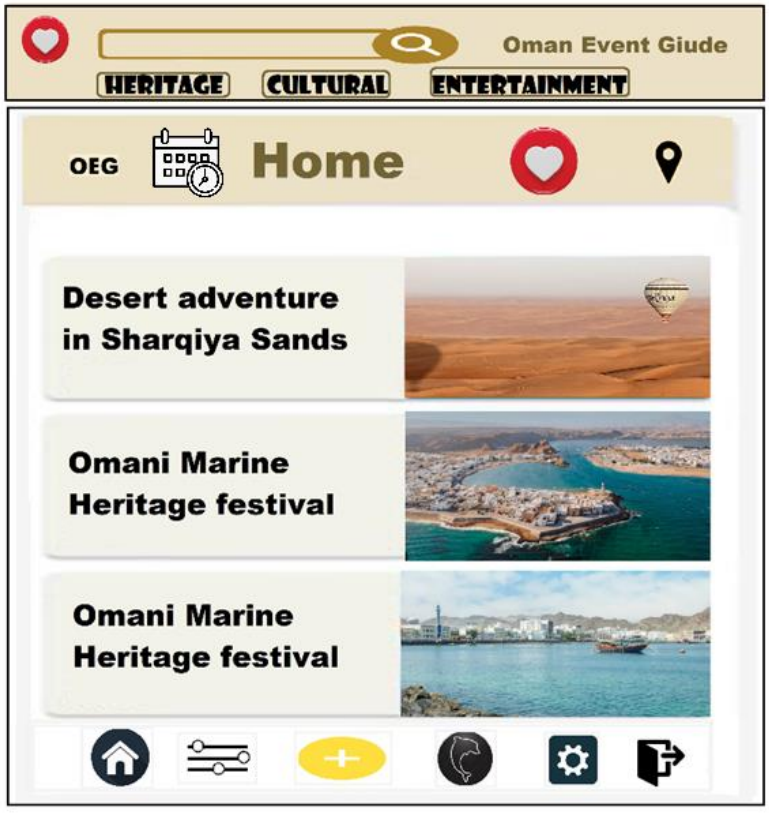

Figure 6 Home Page

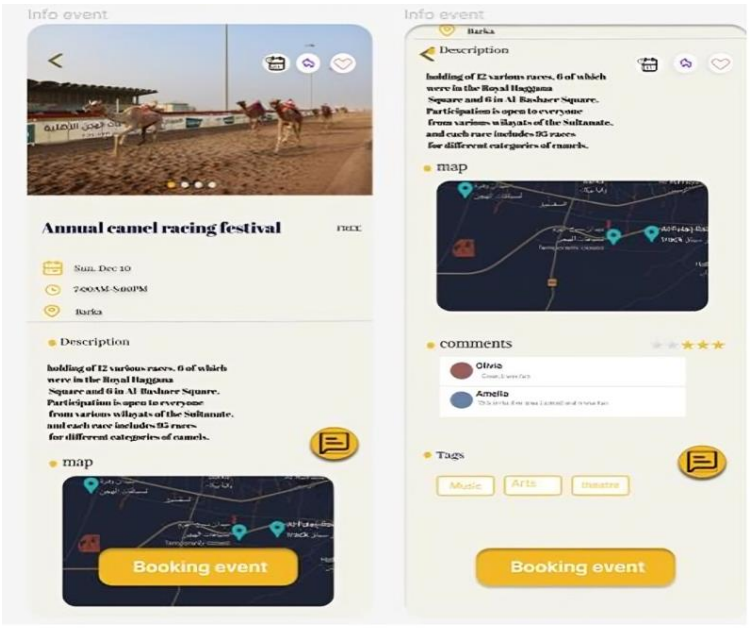

Figure 7 More Details

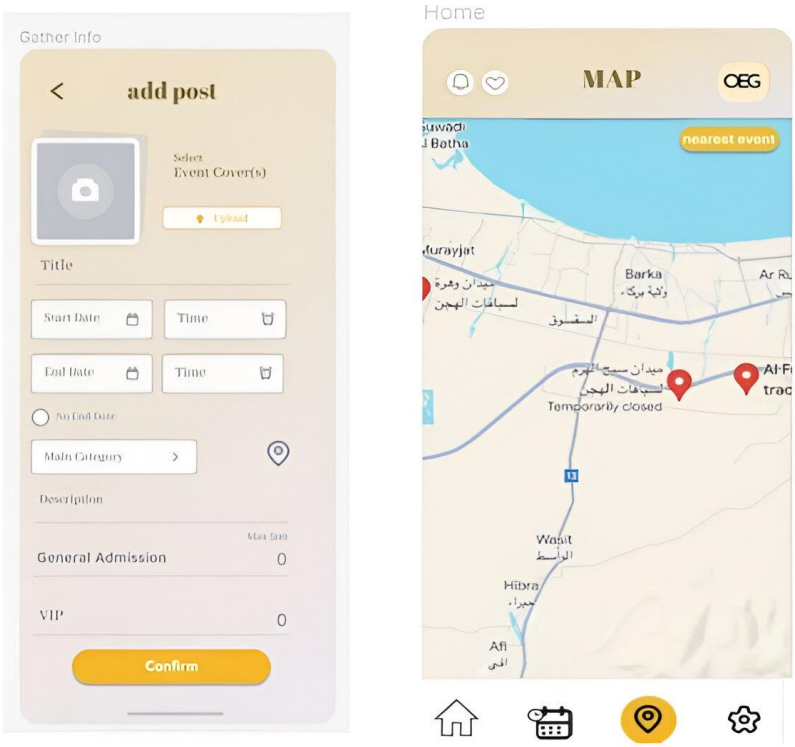

Figure 8 Add Post & Map

The application tested on a group of 20 Omani people. Then, feedback collected using a survey to evaluate the usability of the application with its impact on the attendance of the provided events using a well design questionnaire (Yousif et al, 2018). The testing phase revealed several positive outcomes:

- Increased Event Participation: Tourists using the app attended 30% more events compared to those who did not use the app.
- User Satisfaction showed in the following outlines: 85% of the users reported a higher level of satisfaction with their tourism experience due to the app's ease of use and the relevance of event suggestions.
- Engagement: Users spend an average of 15 minutes per day on the app, indicating a high level of engagement. Figure 8 illustrates the recorded results.

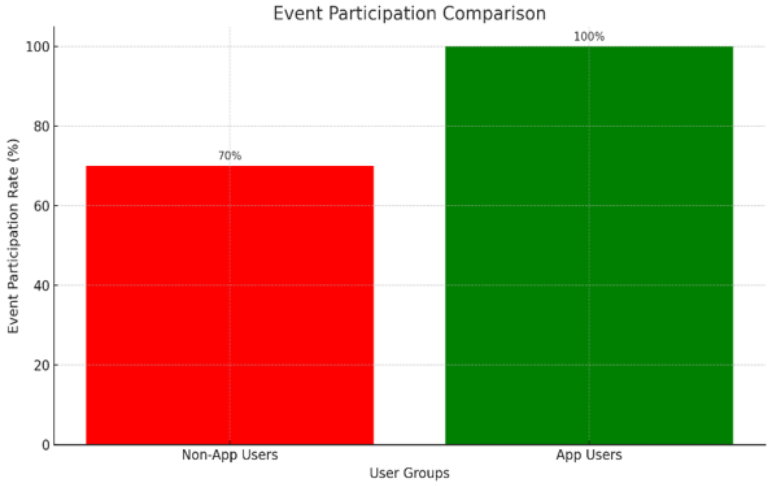

Figure 9. Event Participation Comparison

Figure 9 shows the user satisfaction rate, which is categorized by ratings into four scales: Excellent, Good, Average, and Poor, with their respective percentiles. Detailed analysis is as follows:

- High Satisfaction (Excellent + Good):

Excellent (45%): Almost half of the users rated their experience as excellent, indicating a strong positive response to the system or service.

- Good (40%): A large portion of users found the system satisfactory, though not exceptional.

Total High Satisfaction (Excellent + Good):

85% of the users were generally satisfied with the system, which is a strong indication of the success and effectiveness of the system. Neutral Satisfaction (Average): Average: 10% of the users felt the service could have been better and better. These users may have unmet expectations or found the experience adequate without exceeding expectations.

- Poor Satisfaction: Poor: Only 5% of the users rated the service as poor, indicating that dissatisfaction exists but is minimal.

The predominantly positive feedback (85%) indicates that the system effectively meets user expectations. The small percentage of fair and poor ratings (15%) points to areas that could be improved. Focusing on user input from these groups could help further fine-tune the system.

6. Conclusion

The findings demonstrate that mobile technology can play a vital role in enhancing the tourist experience, particularly by improving accessibility and engagement with local events. The ability to offer real-time, location-based event suggestions helps tourists feel more connected and involved in the local culture. Oman's historical tales, its present full of modern curiosities, and its future is witnessing a development ahead of actual time in terms of constructive ideas and creative technological development, such that the spread of smart applications and mobile applications has become one of the contemporary features of any application created to bring about a change for a better life. This application, which was discussed and described in this paper, is a gateway to making changes in the present of our country in terms of facilitating tourism services by providing events and their history to give an exciting character to the tourist in terms of activating the current events and activities that can be held in a manner consistent with the country's system, from announcing the establishment of festivals on all social media sites, but also planning for their occurrence in advance. Therefore, this application gave a clearer vision of what can happen in the future in this country. Many families plan outings and events before they happen. With this application, they can schedule events, activities and places to visit that suit the vacation times of working and studying individuals. In short, this application is unique in terms of setting the schedule of activities and events that may occur in the future while providing much other information, such as the locations of the agreed-upon events and activities and on what date so that the tourists and Omani can view them and book them on the desired date.

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Author contribution: All authors have contributed, read, and agreed to the published version of the manuscript results.

Conflict of interest: The authors declare no conflict of interest.

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