

A Web-Based Travel Package Management System Integrated with QR Code

Naemah Abdul Wahab^{1*}, Norhaslinda Jamil²

^{1,2}College of Computing, Informatics and Mathematics, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

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ABSTRACT

The tourism industry is associated with people travelling either domestically or abroad, for business, social, or recreational reasons. This industry integrates numerous services and activities such as tourism organization, marketing, hotel industry, transportation services, food and beverage activities, retail stores and various other activities under one umbrella. In addition to generating income and jobs, tourism is the best way to promote the nation's image. As the economy and living conditions have improved, so too has the tourist sector, and more people are turning to vacations as a way to alleviate stress and unwind. Currently, travel agencies handle a lot of data with low efficiency and a lot of mistakes. Therefore, this study developed a comprehensive integration of QR code for package travel management system that caters to users in Malaysia, offering functionalities such as itinerary customization, QR code generation and access to essential travel information. The development of this project adopts the Waterfall Methodology, encompassing phases such as planning, requirement analysis, design, implementation and testing. The application is crafted using the Visual Studio Code. The study conducted a User Acceptance Testing (UAT) using questionnaires to evaluate the system's effectiveness and user-friendliness to thirty respondents including family members of frequent travellers and randomly selected community members. Positive feedbacks with Perceived Ease of Use (PEU) scoring 3.6, Attitude of Using (ATT) at 3.7, Perceived Usefulness (PU) scoring 3.4, and Intention to Use (IU) obtaining 3.9, were gathered from the analysis and findings that emphasizing the QR code system's potential as a cost-effective and efficient solution for travellers to monitor and optimize their travel experiences. Future work involves adding maps for easy navigation and implementing augmented reality (AR) for virtual destination previews.

1. INTRODUCTION

The country's economic development greatly benefits from the tourism industry. Almost everyone goes on vacation and travel management systems play an important role in planning an organized and perfect trip.

^{1*} Corresponding author. *E-mail address:* naema586@uitm.edu.my
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Many businesses nowadays have progressed from manual systems to web-based or mobile applications. In research by Agbaegbu et al. (2019), the study reported that employing computerised methods outperforms manual ones in terms of speed. In addition, it can help users and travellers save time.

Aside from that, with the COVID-19 breakout in 2020, QR codes have also gained popularity. This is due to the fact that travellers can send digital content more easily and affordably by using the Quick Response (QR) code application rather than paying for printed pamphlets and handwritten content. Nevertheless, the use of QR codes in the tourism sector is still limited, particularly in terms of effectiveness, awareness, and consumer satisfaction (Azmadi et al., 2022).

Thus, the goal of this project is to provide a web-based travel package management system integrated with QR Code generation tool. This system caters to individuals who want to plan exciting and budget-friendly trips to various destinations in Malaysia offering a broad variety of activities, such as island hopping, shopping, history, adventure, art & design, and food & drink. Users can save time by thinking ahead and preparing activities they can undertake once they get in Malaysia by using this application system.

This project is also a significant attempt to reduce the amount of time tourists must wait in lengthy lines to register and to find interesting locations throughout Malaysia without having to use other websites. Additionally, since everything was done online, travellers don't even need to bother visiting the travel agency centre to register for their trip. It is intended that this system will offer a simple fix for every problem they encounter.

A user-friendly design makes it simple for users to make reservations by providing filters depending on their desired spending limit and activity category. By enabling users to store their favourite locations for later use, this method improves user convenience. In order to make an informed choice, users can also investigate the advantages of selecting a specific location. The booking procedure is expedited by the application's QR code creation function, which is enabled once the user submits their personal information.

The primary parts of this research are arranged as follows. The related works are included in section 2. Section 3 explained the methodology of the study. The findings and outcomes based on the research are covered in section 4. Section 5 concluded the paper.

2. RELATED WORK

Westcott and Anderson (2020) define tourism as a social, cultural, and economic phenomena in which people travel for leisure, business, or professional purposes to countries or places outside of their normal surroundings. These individuals are referred to as visitors (tourists or excursionists; residents or non-residents), and tourism is focused on the activities that some of them engage in that may require spending money on travel. By applying this definition, we can see that tourism encompasses not only the movement of people for various purposes (business or pleasure), but also the entire collection of services, engaged industries, and activities that make up the unique tourist experience.

Travel is the act of moving, whereas tourism is travel that is planned. There are a ton of other benefits to traveling. It can help travellers in broadening their perspectives and improving their communication abilities (Staff, 2023). Whether traveling domestically or overseas, tourists will discover the unique aspects of other civilizations. It's also claimed that travel improves one's health. It can lessen stress, strengthen the immune system, and elevate mood.

Even though technology has advanced over time, a lot of prospective travellers still get in touch with travel agencies for booking and administration. A travel agency acts as a middleman between people and

the travel industry. Put simply, it means that travel agents plan and coordinate the journey of their clients (Westcott & Anderson, 2020).

A web-based application is software that users can access online through a web browser. They can function on a range of devices and operating systems. They also offer centralized maintenance and updates, which removes the need for manual setup and guarantees that everyone has access to the most recent version. It is also scalability to accommodate increasing user needs (Henderson & Henderson, 2023). Therefore, the use of web-based application enables the Travel Package Management System to be accessed remotely by using a web browser and is reachable from anywhere in the world.

Despite the development of numerous travel apps throughout the years, there are many issues with the way it has been implemented. A poor search experience is one of the problems with travel applications (Chhun, n.d.). Travel applications were designed to be simple and quick to use, but because of shortcomings in the search function, customers frequently take too long to find destinations that fit them. Other than that, these platforms lack effective filtering mechanisms, users frequently have to spend a lot of time searching through multiple websites or applications to get relevant content. This emphasizes the necessity of a strategy that combines ease and customization in a seamless way. The suggested remedy for this recommends introducing a customisation tool to improve manual searching. The basic idea is to apply individualization, customisation, and adaptability to a vacation e-commerce website by introducing personalized components (Khai & Das, 2020).

The utilization of QR codes facilitates the easy viewing of travel information by users, providing a portable and practical option. In addition to expediting entrance procedures and giving visitors vital information, QR codes make it easier for visitors to navigate around nearby sites (Kallingal, 2021). According to Vu (2020), QR codes are currently used in tourism by many countries across the world, including tour itinerary guides via QR codes, destination information, hotel information, travel agencies, and so on. The usage of QR codes is becoming popular as a way to streamline the transmission of information to tourists through the use of information technology, while also protecting publications containing traditional material that has been printed.

People may rely on these QR codes to quickly and easily use their smartphones to look up information about neighbouring tourist attractions. But because of the QR code application's capabilities, ease of use, and trend, there was a longer way to use this technology in the future. It helped to develop destinations while also building tourism destination professionalism, creating the most destination content that travel agencies wanted to send to travellers, guiding destination awareness, and providing a quick and low-key way to promote destinations. QR codes can be used to display tours, services, and travel-related goods. Official websites can place QR codes with information about tourism marketing on them. Based on the issues outlined by previous researchers as discussed earlier in this section, therefore, this study will consider those issues and make improvement during the development of the Web-Based Travel Package Management System Integrated with QR Code.

3. METHODOLOGY

The Waterfall Model was the methodology employed in this study. It illustrates the course of action that a system developer should do within the designated project time limit. Additionally, it outlines each phase's methods, processes, and outcomes (Sharma, 2023). The five phases consist of Planning, Analysis, Design, Implementation, and Testing.

3.1 Planning

Planning is the initial stage of the process, which serves as a general framework for carrying out the entire project. Identifying the field of study, problem statement, objective, scope, and research significance are some of the actions that were carried out in this phase. In order to research this topic, it is also necessary to review publications and journals as general knowledge. An online library database can assist in obtaining information on prior study in addition to articles and journals.

3.2 Analysis

The Analysis phase is one of the important roles in the methodology stage, where all possible system requirements that have been developed are discussed. The developer needs to know what software and hardware should be used and adapted for developing a generate QR code for package travel management system. This phase is also important because, during this phase, the literature review is used to make a selection of the hardware and software requirements based on the project being made. After identifying software and hardware that meet sufficient specifications, the project can be designed and implemented.

3.3 Design

During the design phase, a number of tasks concerning the creation of the system's interface, contents, and database structures were completed. The suggested design was selected using the set of requirements that had been established in the previous step. The hardware and software utilized in the system determined how the system User Interface should look. Following this phase, ERD were established in order to accomplish the initial design of this project.

3.4 Implementation

In implementation phase, the web-based application was developed by using PHP scripting language as the server-side using Visual Studio Code as the software. As a result, the Web-Based Travel Package Management System was developed. After the web has been successfully established, the web application needs to be integrated with the QR Code application.

3.5 Testing

Testing phase is the final phase in this methodology. The testing is conducted to measure system effectiveness, satisfy requirements, and carry out usability testing. The Usability Acceptance Testing (UAT) was performed to 30 users among family members of frequent travelers and randomly selected community members to use the Web-Based Travel Package Management System Integrated with QR Code. Data was gathered using a quantitative research approach by giving respondents a survey questionnaire. The testing allows the participants to use and explore the system independently. Subsequently, users were required to answer a set of questionnaires that included multiple categories, including demographic information, user interface satisfaction, usefulness and ease of use, budget filtering features and usage of QR Code. Feedbacks from users will be refined and improved in the future deployment of this system.

4. RESULTS AND DISCUSSIONS

This section explained the User Interfaces and system testing of the Web-Based Travel Package Management System Integrated with QR Code.

4.1 User Interfaces of the Web-Based Package Travel Management System

Fig. 1 shows the main page of the system. It contained five tabs which are Home, Destination, Activities, Packages, and Profile Icon.

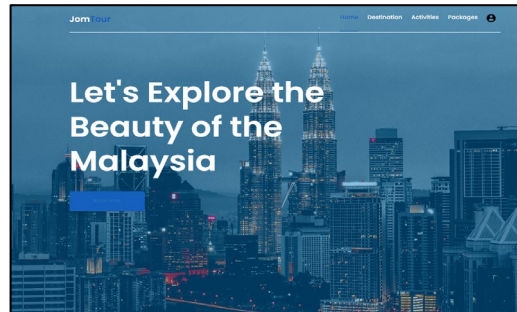


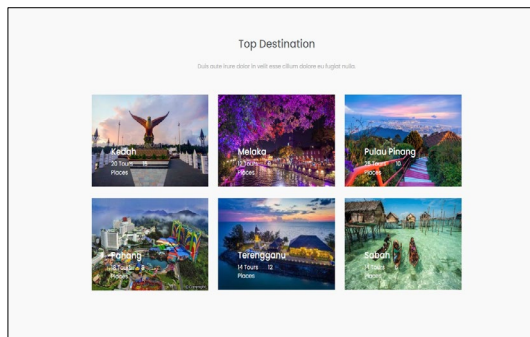
Fig. 1. Main Page of Web-Based Package Travel Management System Integrated with QR Code

4.1.1. Login and Sign-Up Page

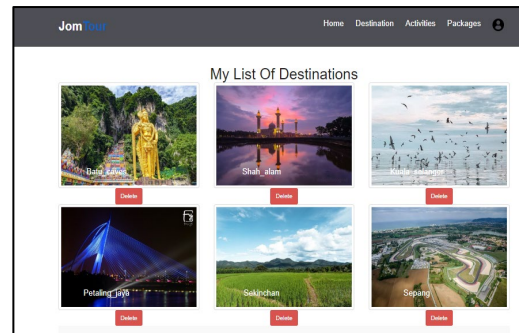
The Login page is the page where users who already have an account can log in to the package travel management system. They need to fill in their email and password to continue login activity. A Sign-up page is used for new users to create their account. They need to fill in their name, gender, email, password, retype password, and then click the “Sign Up” button to the website.

4.1.2. User Profile Page

When users click on the profile icon, their personal information such as email, name, gender, and password will appear. Users can upload their profile picture and also update, delete, save their personal profile using this button.



Destination Page



Save-to-List Page

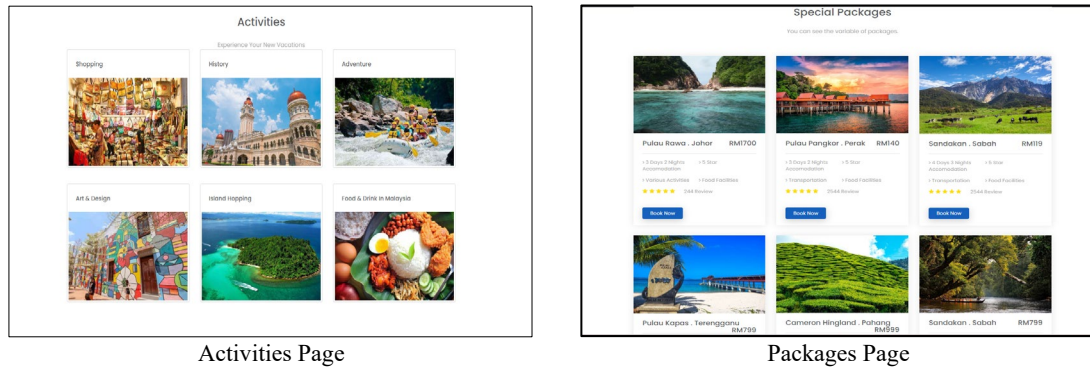


Fig. 2. (left, top) Destination Page (right, top) Save-to-List Page (left, bottom) Activities Page (right, bottom) Packages Page.

4.1.3. Destination and Save-to-List Page

The Destination page in Fig. 2 displayed the 6 destinations that attract tourists the most when traveling in Malaysia. Users can click on the image, and it will directly take them to a page based on the selected destination. Users can save the destination that they are interested in if they want to see the destination information later. There is also a delete button, which users can click on if they do not want to see the destination in their save-to-list.

4.1.4. Activities Page

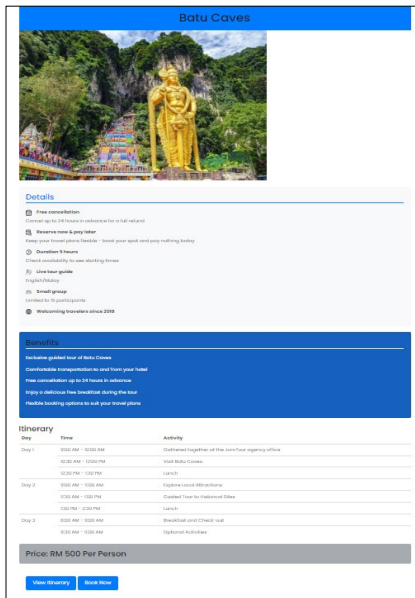
On the Activities page as seen in Fig. 2, users can click on their preferred category and be able to see interesting places based on the selected category. There are six categories listed: Shopping, History, Adventure, Art & design, Island-Hopping, and Food & Drink. Information about the place, such as operating hours and address, is also available.

4.1.5. Packages Page

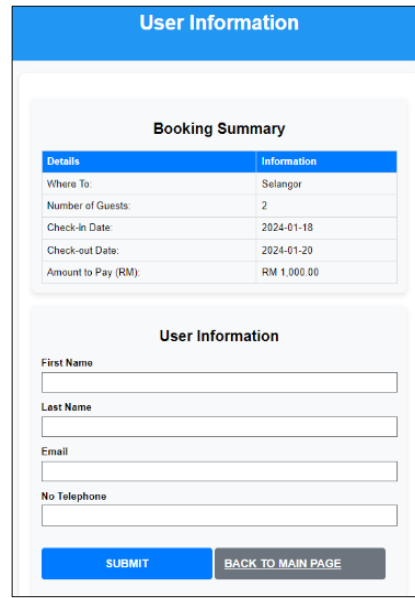
The Packages page as shown in Fig. 2, presented holiday packages offered for certain tourist destinations. Relevant information such as package price, the package duration, food options that come with the package, and ratings given by previous users who had booked the package are also listed here.

4.1.6. Booking Page

On the Activities page as depicted in Fig. 2, users can click on their preferred category and be able to see interesting places based on the selected category. There are six categories listed: Shopping, History, Adventure, Art & design, Island-Hopping, and Food & Drink. Information about the place, such as operating hours and address, is also available.



Booking Page

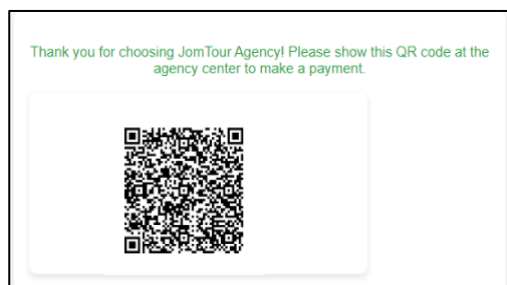


User Information Page for Booking

Fig. 3. (left) Booking Page (right) User Information Page for Booking

4.1.7. Integration of QR Code

In Fig. 3, booking information such as check-in and check-out dates, number of guests, places to visit, and the price to be paid by the user will be displayed for the user to check the correctness of the information. After reviewing, the user must fill in personal information such as name, email, and phone number before clicking the submit button. Then, the QR code will be generate as can be seen in Fig. 4. QR codes, when scanned, provide information including customer personal details such as name, contact information and travel dates, as well as destination information. This dynamic approach empowers users to share their travel plans with friends as well as sharing this booking information to the travel agency to make payment.



QR Code Page



Booking Information Displayed in QR Code

Fig. 4. (left) QR Code Page (right) Booking Information Displayed in QR Code

4.2 User Acceptance Testing (UAT)

An adequate sample size enables the researchers to report their results with an acceptable degree of confidence, reliable information, interpretable results, and minimizes research waste (Rashwan, 2018). Therefore, during User Acceptance Testing (UAT), 30 respondents, including family members of frequent travelers and randomly selected community members, participated in evaluating the system. The test included four key dimensions: Perceived Ease of Use (PEU), Attitude Toward Using (ATT), Perceived Usefulness (PU), and Intention to Use (IU). In the questionnaire, respondents are required to rate their responses on a scale between 1 to 5. A rating of 5 indicates strongly agree, while a rating of 1 indicates strongly disagree.

Table 1. Average Mean Scores for Each Category

Result	Category	Mean
1	Average mean PEU	3.6
2	Average mean ATT	3.7
3	Average mean PU	3.4
4	Average mean IU	3.9
Total Overall Mean		3.7

Based on Table 1, the averaged mean scores for Perceived Ease of Use (PEOU), Attitude of Using (ATT), Perceived Usefulness (PU), and Intention to Use (IU) for the Package Travel Management System indicate a positive overall user experience. With an average mean score of 3.6 for PEOU, users find the system intuitively usable. The ATT score of 3.7 reflects positive attitudes towards the system's flexibility and features. The PU mean score of 3.4 suggests users perceive the system as useful, particularly in feedback management. Notably, the high IU means score of 3.9 indicates a strong intention among users to recommend the system, showcasing its value and acceptability within the user community. The overall mean of 3.7 consolidates these positive individual scores, emphasizing the system's success in meeting user expectations as well as delivering a user-friendly and valuable travel management solution.

5. CONCLUSION

The Web-Based Travel Package Management System Integrated with QR Code stands out with its robust filtering features, providing users with a very effective and time-saving travel planning tool. With the help of the system, users can quickly browse through a variety of travel options, selecting specific criteria such as budget constraints and preferred destinations. This user-friendly feature guarantees that users are presented with a carefully selected variety of options that closely match their travel preferences and streamlined approach to travel planning, optimizing the overall user experience.

Furthermore, a significant benefit of the system is its easy incorporation of online booking features, which allow users to make travel reservations directly through the web-based platform. This feature provides eliminates the need for users to physically visit booking centres or travel agencies. With the convenience of online booking, users may now easily secure their travel arrangements from the comfort of their devices. This not only improves the user experience in general but also shows that package travel management has evolved to keep up with the needs of current travellers and the digital era.

The system's integration of QR codes represents a revolutionary change in the way travel-related data is handled. Nowadays, QR codes are widely used and function as flexible and dynamic tools within the system. They offer a paperless and environmentally responsible substitute by encapsulating a variety of

travel-related information. Through this integration, customers can easily access and share their travel information with only a simple scan, which not only streamlines accessibility to travel data but also improves portability. Managing travel information in a digitally connected world is made easy and efficient for consumers by using QR codes, which are a technologically advanced solution. The research contributions from this project create prospects for further research and developments in the area travel management system and contribute expanding knowledge in the field of technology-driven tourism industry.

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7. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

8. AUTHORS' CONTRIBUTIONS

Naemah Abdul Wahab: Conceptualisation, supervision, writing- review and editing, and validation;
Norhaslinda Jamil: Conceptualisation, methodology, formal analysis, investigation and writing-original draft.

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