Online Booking System for Marine Tourism in Pulau Perhentian, Terengganu, Malaysia

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Abstract: Online booking system is a web-based system that is designed for reservation management. The booking system is accepted by allowing potential customers to make bookings and payment for an activity or service through the website. This service is managed online, which significantly reduces staff's burden and eliminating any occurrence of double bookings. This paper presents the design of an online booking of room and ferry tickets for the marine tourism industry in Terengganu. This system provides facilities to customers to make the room and ferry ticket reservation online and print out their tickets themselves. Nowadays, companies are still using the manual system where the booking is done on paper and recorded using a manual filing system. The new system is needed to substitute the manual booking system to increase more tourists, both local and foreign, to travel in Malaysia. The Software Development Life Cycle (SDCL) and Waterfall Model are used in the software development processes which consist of 6 phases. The development of this system includes features such as user-friendly, data management, payment process and inventory management.

Keywords: Marine Tourism, Booking System, Web Development

I. INTRODUCTION

The evolutionary globalised world economies have created many prospects for businesses. Simultaneously, it also creates stiff competitions among businesses resulting in companies delving into reformed marketing strategies. The internet is one such avant-garde marketing strategy which many companies have adopted [1]. Global citizens consult the Internet daily. The abundant application of this amenity serves myriad purposes as it scaffolds the day-to-day activities in various sectors, particularly for those who are information hungry. For example, a travel ticket that is bought online can minimise the processing time and other expenses if the ticket were to be procured manually or in person [2].

The ferry industry is developing drastically at an alarming rate, and on a massive scale. It is often considered as a minute but substantial segment of the tourism industry, but this detail is inadequate in distinguishing essential qualities and characteristics that support the claim that ferry is an industry on its accord.

Basically, other companies use a manual system to manage their ticket sales which is based on paper to make booking and record all information using a manual filing system. Based on this situation, the problem will occur when the customers need to queue up at the counter and wait for a long time to purchase the ticket. The latter is compounded when the tickets are sold out while the customers are still queuing up. This incident leads to frustration and stress among the customers because they must wait for the next scheduled trip that might take a few hours. In this paper, an online booking system is designed to assist the customers in purchasing their ferry tickets and choosing the desired room after a virtual tour to guarantee them the accommodation. The system also facilitates convenient access to and recovery of information and reporting. The ferry tourism company would be more competitive in Terengganu if such system is adopted.

II. LITERATURE REVIEW

The Recommended System

The recommended mechanism is a web-based platform that permits clients to pose enquiries online and reserve services supplying the important particulars especially for ferry ticket and accommodation. It is an auto-generating mechanism for ticket booking. The application is designed to record all the bookings that have been made by customers.

The following are the recommendations by the proposed system:

a. Lay out the information about ferry ticket schedule or trip and accommodation.

b. The manual reservation system is substituted with an online booking system.

c. Administration can record all the bookings that have been made by the customers.

d. The system helps protect the customer information.

E-commerce

Technology and trust are two critical issues which may greatly affect customers' online purchasing behaviour [3]. One of the pertinent studies deals with electronic commerce trust [4]. In their study, trust was defined as a trustor's intention only in indefinite and perilous situations. E-commerce system is robust and one of the vital attributes is its use of urbanisation of information technology and network technology to manufacture the merchandise

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essential to the market in the swiftest manner possible. Consequently, a profound understanding about the customers' demands and appropriate customer response into the design of merchandise, services in providing customers with more tailored specifications will be the determinant of the success of e-commerce businesses in the indefinite market as dictated by the environment [5].

E-commerce is a new category of business which relies on contemporary information technology and network technology. It emphasizes the integration of a harmonised material flow, capital flow and information flow. E-commerce is grounded on the sustainability of the Internet. Netizens are the elementary platform on which electronic commerce software was developed. Determining the size of e-commerce market users is the premise of the electronic trading market [6]. E-commerce has impacted on almost all commercial activities such as gathering information, shopping, brokering, trading, banking, accounting, auditing, financing, auctioning, negotiating, collaborating, marketing, material supplying, training, partnering scheduling, manufacturing, distributing, servicing and retailing [7].

Online Payment

Online payment happens when the sellers and the buyers conduct the business on an Internet-based system. With the speedy growth of e-commerce, online payment is becoming ubiquitous which engendered the development of third-party payment platforms [8]. The bank and the third-party payment platform enable them to enjoy online fund settlement services.

Generally, the online payment can be divided into two types which are the mode based on the IBPG and the mode based on the third-party payment platform. The former works via a direct payment method, where the customer will be alerted about the online payment through the e-business system which is linked to the banking system. The latter involves the fund transfer from the buyer's accounts to the seller's via the third-party payment platform [9].

QR Code

A QR code as an invention by a Japanese company, Denso Wave. It is a 2-dimensional matrix code that has been initially used in tracking manufactured vehicle parts for almost two decades now. Recently, it essentially provides an affordable means to encrypt data such as URLs, e-mail addresses, texts, merchandise images among others [10].
The key benefit of QR codes is in its ease of use. All that a user is required to do is launch a QR reader app on a mobile device, point at the code and scan. The user will then be shown the encoded information or directed to the encoded information such as websites, e-mail address, floor map of the store showing the product location etc. [11]. The size of QR code is flexible without having to rely on the data storage.

Mobile tagging based on QR codes or similar approaches also offer techniques to increase the user-friendliness of mobile services [12].

Central Reservation System

A Central Reservation System (CRS) is a computerised system that saves and allocates information of a hotel, resort or other lodging facilities [18]. A CRS facilitate hoteliers by

handling all of their marketing done online and sales. This is done by uploading their rates and services to be conspicuous by sales channels [18]. The main modules in a CRS comprise content, information stored on a CRS and reporting.

Content comprises Reservations, Profiles, Groups and Blocks, Rate and Inventory Control, Administration, Global Distribution Interface, Web-based Interface. Information commonly stored in a CRS consists of Room Types, Rate plans architecture, Room rates and conditions (guarantee, deposit, customised cancellation rules, minimum length of stay, maximum length of stay, closed to arrivals, arrival not allowed, departure not allowed, room inventories, generic hotel information (address, phone number, fax number) and reservation information. The CRS Reporting module offers several standard reports. System reports may be created mechanically and may operate daily, weekly, monthly and yearly. It includes Expected Arrivals, Reservation, Property Forecast, Total Booking Activity, Stay Activity, Monthly Booking Activity, Daily Booking Activity and Property Details.

III. METHODOLOGY

This online booking system was developed using the System Development Life Cycle (SDCL) that consisted of the six phases which were planning, analysis, detailed system design, implementation, testing and deployment. The waterfall model was a chronological design process used in software development processes where the progress is seen as moving gradually downward like a waterfall [17]. Figure 1 below shows the System Development Life Cycle in Waterfall Model.
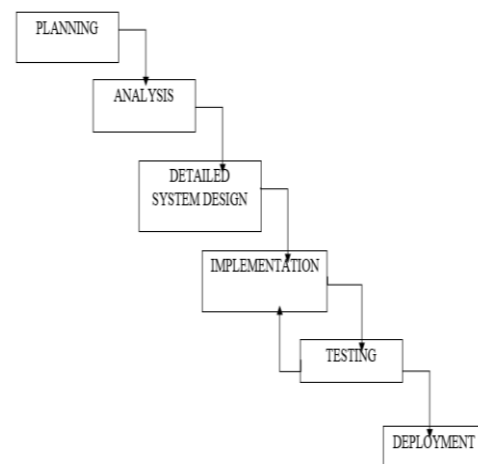

Fig. 1 System Development Life Cycle in Waterfall Model

In the planning phase, the objectives, scope of booking system and software requirements for developing this system were defined. The second phase was analysis. All the information required in the website system were analysed by a business analyst. The business analyst would analyse the

information based on the comments that were passed by the user in the similar system on the website. The third phase was design. In this phase, the Context Diagram was used to design the flow of the booking system and also to create the user interface design through the webpage. The fourth phase was implementation, which worked on coding of the booking system in the webpage. It ensured that the solution follow the design requirements. To guarantee that the program satisfies the functional necessities of the system and its design specifications, a series of tests was carried through the testing phase. This phase was necessary for ensuring that the program function correctly before the final system was deployed fully. The last phase was the deployment where the system was completely developed successfully and ready to launch on the website for the user. Figure 2 below shows the flow chart for user and administrator.
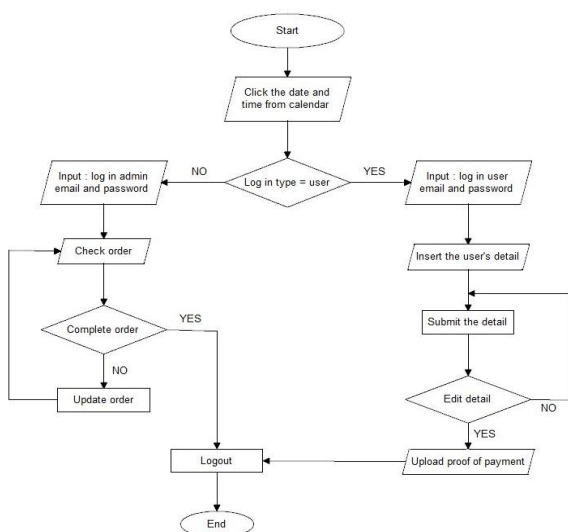

Fig. 2 Flowchart for User and Administrator

Macromedia Dreamweaver was deployed because it was user friendly with numerous characteristics. Dreamweaver allows users to build Web pages by dropping elements onto the page [13]. It provides transmission and harmonization of the features, the capacity to locate and substitute lines of text or code by search terms and regular expressions across the entire site and templating feature that allows single-source update of shared code and layout across entire sites without server-side scripting. The behavior panel also permits the application of basic JavaScript without any coding familiarity [14].

Microsoft internet explorer was the browser used for the project as it was free and comes with all Windows-based operating system. Once the browser was connected to a website, a document file was sent to the user's computer. The browser contained HTML commands where the system interoperated with and displayed the document as a web page. Adobe Flash was a multimedia platform used to add animation, video and interactivity to web pages [15].

User Interface Design

User interface design is a computer application which works on the visual element that focuses on the users' experience an interaction. In terms of satisfying users' demands, the goal of user interface design is to make the

users' exchanges as easy and competent as possible. A better user interface design is when the users feel attracted and can use the system easily. Bad interface affects the users' time, emotions and effort when using the system.

The webpage design helps the users gain access to the information that the website presents. Users are given higher priority before any building can be done. The size of the system and the general appearance has to be addressed well. There is an interface fabricated for the user and the administrator [16]. Figure 3 below exhibits the User Interface Design for online booking system.

Fig. 3 User Interface Design

Administrator Interface Design

The administrator interface has a log-in feature for him/her to gain access to the system. This administrator interface design consists of the logo, identification number, password, administrator contact info, login and sign up button. Administrator must login first to check the booking details before approving the booking. Figure 4 below shows the Administrator Interface Design.
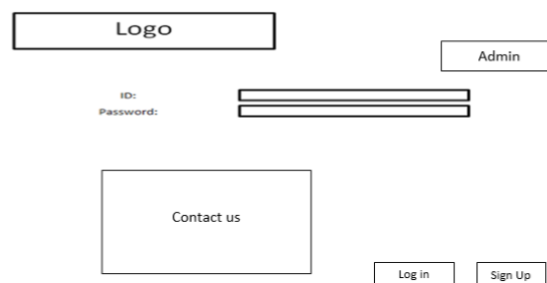

Fig. 4 Administrator Interface Design

Database Design

The database design, also known as database dictionary, describes the database tables and their properties. It helps in creating the database of the system and to ensure that the database meets the functional requirements of the system. This database includes the database fields and types of data. Table 1 below shows the Package detail of the online booking system.

Table. 1 Package Details

Field Name	Data Type	Field Size
Package ID	Integer	5
Package Details	VarChar	150

The Field Name column consists of Package ID and Package Details. The data type for package ID is integer where the field size is 5. The data type for number is called the integer number meanwhile for the Package Details, the data type is Varchar and the field size is 150. The combination of the number and words are called Varchar.

The Administrator detail includes of Admin ID, Admin Name and Password. The data type of Admin ID is integer and the field size is 5. The data type for Admin Name and Password is Varchar and the field size for Admin Name is 20 and 10 for Password. Table 2 below shows the Administrator details of the online booking system.

Table. 2 Administrator Details

Field Name	Data Type	Field Size
Admin ID	Integer	5
Admin Name	VarChar	20
Password	VarChar	10

The User detail includes of User ID, Username and Password. The data type of User ID is integer and the field size is 10. The data type for Username and Password are Varchar and the field size for Username is 30 and 15 for Password. Table 3 below shows the User details of the online booking system.

Table. 3 User Details

Field Name	Data Type	Field Size
User ID	Integer	10
User Name	VarChar	30
Password	VarChar	15

Creation of the Proposed System

User interface design or UI design refers to the visual aspect of the essentials that a user would possibly engage in in a web site, or technological product. The proposed user interface design includes use of colors, font type and size to facilitate reading.

To help users input data, text boxes and buttons are supplied. Labels are positioned next to the text boxes to help users determine the compulsory type of data for each box. The menus are on the top for users to identify the hidden items by clicking on the hyperlinks. The front view image of Holiday Island Travels & Tours in Pulau Perhentian, Terengganu is presented on the core page. On the bottom is shown the check availability button for user to get detailed information and make a reservation. Figure 5 below shows the main page of the proposed online booking system.

Fig. 5 Main User Interface

The Administrator page includes the username and password. Administrator needs to log into the system by keying in the username and password only. Administrator can click on the detail to see all the information about customer and list of reservation. Figure 6 below shows the Administrator Interface of the system and Figure 7 below shows the List of Reservation.
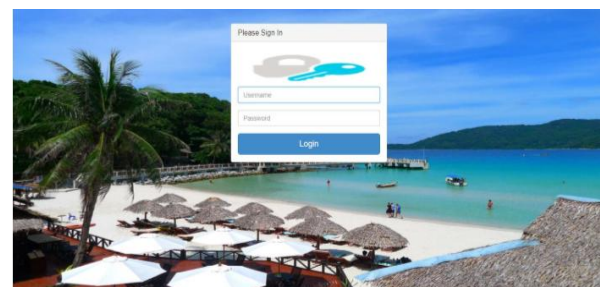

Fig. 6 Administrator Interface

Fig. 7 List of Reservation

Figure 8 below shows the Customer Reservation Details which include room type, check in and check out date, the number of days of customer's stay and the total price that customer needs to pay.
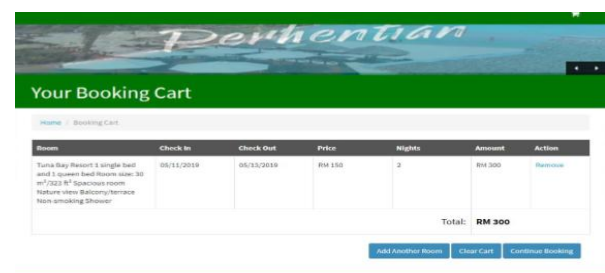

Fig. 8 Customer Reservation Details

After the customer has done the booking, the Holiday Island will give the details of the bills that customers need to pay. Customer can see the details about their reservation. Following the details of customer reservation, they can make payment online. Figure 9 below shows the Billing Details for Customer. The customer will receive the confirmation detail of the booking after the transaction of the payment is completed. Figure 10 below shows the confirmation detail of the reservation.
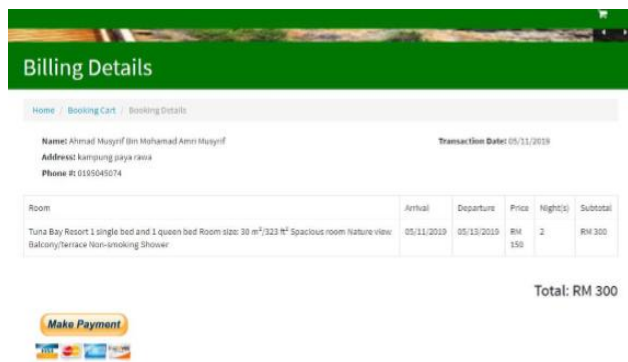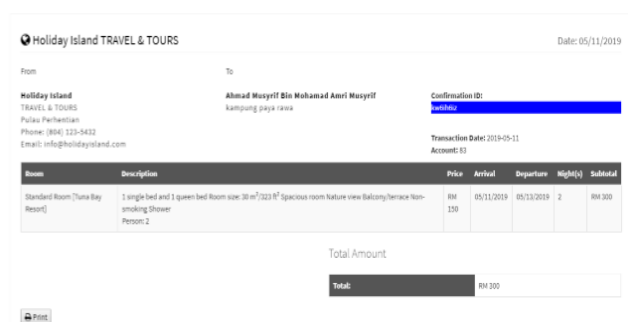

Fig. 9 Billing Details

Fig. 10 Confirmation Details

IV. RESULTS AND DISCUSSION

Implementation

The Hypertext Processor (PHP) is a common scripting language for general purposes which is appropriate for web development. It is ultimately a pre-processor that executes PHP commands in a text file and produces the desired HTML output file on a web browser [11]. A customer's Internet search engine forwards the HTTP request from the Contact Page. On clicking the button, the content of the fields is posted from the customer's browser as requested to the web server. On getting the request, the web server recovers the file. from its disk or memory and transfers it to the PHP, after which the HTML page is sent to the server [16].

Testing

Testing methodologies are crucial methods to assess the fitness of a particular product. The system normally operates according to its specification, without any unwanted side effects when used in ways beyond its design parameters and worst case will fail-safely. Types of different function testing that have been applied on the applications are as follows: -

A. *Unit Testing.* Coding in the implementation phase, Google Chrome is the platform or browser in which the codes were tested.

B. *Integration Testing.* Ensure that all different parts of the application are able to communicate to each other.

C. *Acceptance Testing.* Guarantee that all the system requirements have been fulfilled and the user has confirmed the functionality of a system after having met all the main criteria.

The test plan was carried out where the administrator and the customer tested the usability and functionality of the system. This system evaluation phase is important for ensuring that the program function correctly on both sides: the administrator and the customer before the final system is deployed in full and ready to launch in the web page. Table 4 displays the system assessment description for user (Administrator and Customer).

Table. 4 The System Assessment Result

User	System Description	Developer	Tester
Admin	Users can create the accommodation/trip schedule	Pass	Pass
	Users can update the accommodation/trip schedule status	Pass	Pass
	Users can view the booking details	Pass	Pass
	Users can print the report	Pass	Pass
Customer	Users can view the tickets/accommodation via online	Pass	Pass
	Users can reserve the tickets/accommodation via online	Pass	Pass
	Users can make the payment using the credit card	Pass	Pass
	Users can print the reservation items	Pass	Pass
	Users can edit their personal information	Pass	Pass

The online booking system booking was successfully programmed by using this trial login testing. The administrator could login correctly. This system could help the administrator log into the website. The administrator must key in the username and password. After successfully logged in, the administrator could edit, delete and update data customer.

V. CONCLUSION

The online booking system for marine tourism in Pulau Perhentian, Terengganu was created to substitute the manual booking procedure for the purchase of ferry ticket and reservation of rooms or other accommodation. The manual system requires the customers to queue up at the counter, subjecting to longer waiting time. The new system is also advantageous to the tourism operators as it enables them to have proper records of their customers' reservation. In addition, this system also helps to reduce the activities of touts during peak seasons. It is timely that tourist outlet operators mastered suitable online applications to boost their business. Future research is recommended to explore the application of this system in other areas involving services and merchandise to online customers as now is the era of the emergence of digital marketing. Business operators are thus encouraged to master the online applications for the ease and comfort of their customers.

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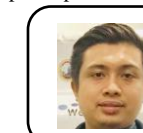
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