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Original Article

Design of Information System Model to Reservation Campus Bus

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Abstract **-** *The use of technology has reached the most stages in its use. Some uses of information technology support all aspects of life. An "X" university is a university that contributes to the use of information technology. University "X" applies all activities by utilizing information technology. One application is to make a concept for ordering student bus tickets; many students run out of seats because the bus seats are always full, and many students complain about this. From these problems, the university "X" designed a bus ticket booking system adjusted to the seat. The design of this bus ticket booking system uses a very good classical method, SDLC. The results of the design of this system have been applied, and the results of the questionnaire distributed to users state that they are satisfied with the existence of this system.*

Keywords **-** *Bus reservation, technology information, SDLC*

I. INTRODUCTION

The development of Information Technology is very rapid, triggering developments in other fields, one of them in the field of education. Currently, Information Technology is not only seen as a field of education, but more than that, Information Technology began to be developed to assist the development of the field of education itself. This is because the development of Information Technology in support of information exchange progress is increasingly dominant in today's society. Information Technology is expected to support the development of education alone, but more than that, Information Technology is expected to provide solutions to existing educational and information problems. The utilization of IT has now entered a very developing stage. The utilization of IT positively will give birth to the image of a qualified user and can work well in an organization or company, and utilization of IT is also used in transportation companies such as PT. Bus XYZ. Transportation has become a basic thing in human life, and it is based on human activities that require moving from one place to another. Humans prefer to use transportation for these needs to utilize more efficient time. The faster the population is directly proportional to the needs of citizens will be transported, Makes transportation a very promising business space. The proliferation of people in business to open a business in the field of transportation causes competition among service companies to get tighter, especially in the field of service to consumers. This utilization is considered important by the company because it can make the whole process of booking a bus ticket with seat selection itself is expected to be easier for the consumers. To not overcapacity in a bus departure or the seat has been in the message, the service user does not match the message on the day of his departure. This is quite risky because it will impact the quality of transportation services, resulting in decreased quality of service so that consumers fear more shifting to use other transportation services.

The rest of the paper is structured as follows: in section 2, we review the related works. In section 3, the proposed approach is presented. We present experiments and results with discussion in section 4. Finally, we conclude the paper and highlight the future work in section 5.

II. RELATED WORD

Booking tickets is a means that facilitate consumers in making purchases tickets online. By utilizing the so-called IT media as a website, information seekers can find something needed, such as ticket purchases at PT. XYZ. The process done in ordering tickets online is to register first [1], then consumers get the buyer's identity, such as username and password. After successful registration, the consumer can choose the seat following his wishes, and after that, consumers will get a message on the phone that states to make payment for the ticket [2]. The utilization of the internet and website produces good output for its users because the internet and website are communication networks without boundaries and space, giving facility and ease in completing work [3, 4, 10]. Ease in using internet media to positively impact its users and the factor belief between information giver and recipient information. If there is no trust factor, then all activities in delivering information will not be easily accepted. Trust is also an important factor in the ongoing sale and purchase of online transactions. Trust is essential and is created by direct interaction with the seller personally or, in general, creating relationships between consumers and vendors [5, 8]. In utilizing the online ticket booking system also by utilizing the application based on Android and iOS, but in this study, ticket bookings can still be opened online using mobile devices. By using mobile devices,

all activities can be easier for consumers to book tickets online without knowing the time and space limits. As in previous research, mobile commerce has emerged as a vital tool for many firms as smartphones evolve and gain popularity. It offers customers accessibility, enabling them to purchase products or services anytime and anywhere [6, 7, 9, 11, 12] in making the model of online bus ticket reservation using the concept of OOAD (Object Oriented Analysis Design), where the concept of OOAD is to emphasize the interaction made by users against the system [13]. OOAD model can be poured into a model called UML (Unified Modelling Language). The UML model used in this research is the use case diagram.

III. PROPOSED APPROACH

In this section, we present an approach to developing IT support. The proposed approach has two parts: the SDLC model and the proposed approach.

Fig. 1 SDCL Model

The SDLC model section is divided into five parts: requirement analysis, system design, system testing, implementation, and maintenance. Requirement analysis is the process of analyzing and gathering system requirements that follow the domain of behavior information, performance, and interface (interface) needed. These needs are documented and seen again with customers. The design system will translate requirements into a software design that can be estimated before coding is made. This process focuses on: data structures, software architectures, interface representations, and procedural details. The testing system is carried out on internal logic to ensure all statements have been tested in the testing system. Functional external testing to find errors and ensure that inputs will provide actual results as needed. Maintenance and software that has been delivered to customers will change. These changes can be an error because the software must adjust to the environment (new peripherals or operating systems) or because customers need functional development or performance.

A. Proposed Approach

As already explained, this research is done using the OOAD method with the UML model. In UML modeling, several steps must be done following the concept of the waterfall model, namely: 1) planning, 2) design, 3) coding, 4) Testing and Implementation, and 5) documentation. At the planning stage of this research, how many users are involved in the use of the system; from this study, there are 3 users, namely: consumers, admin, and leadership. In the activities undertaken by consumers, consumers can perform several activities such as: making a reservation ticket and doing confirmation tickets that have been purchased. In the admin activity, the admin can perform several activities such as: adding a seat, viewing the status of payments, and viewing sales reports, bus reports, and order reports. In the leadership activity, the leader can only see the sales report. Illustrations at this stage can be seen in Fig. 1; the design stage will be divided into 3 views for users, and each view will have different content. In the coding or programming stage, the bus ticket sales design uses PHP programming language, and its database is MySQL. The next step is the testing phase of the program, where the program will be tested whether it is following the needs of the users or not, and the last stage is the documentation of the research that has been done.

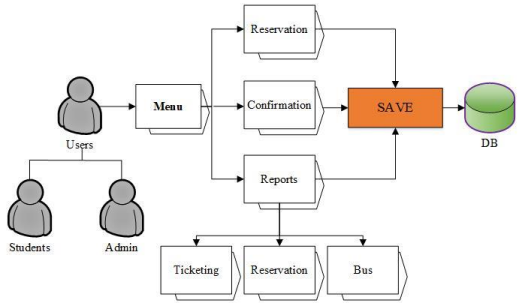

Fig. 2 The proposed approach

IV. TESTING AND IMPLEMENTATION

In this section, the results of the study will be explained. The results section of this study is divided into three, system testing, system implementation, and a comparison of the old system and new system.

A. System testing

The test conducted is black-box testing. In black-box testing, testing is only done by executing or executing units or modules, then observing whether the module results follow the desired procedure. Testing is done to determine the steps in conducting the test. Testing is done by running the ticketing application to support the operational part of the web browser. After the application is run, a series of function tests are performed on each application module, and if it is following the design, the testing is considered valid.

B. System implementation

This stage continues the fifth phase of SDLC activities, namely testing and implementation. This stage applies a system so that it is ready to operate. Things that need to be prepared include hardware and

Fig. 3 Home Admin

software specifications. After making the conceptual model, the next step is to see the results of the analysis made that has been adapted to the needs.

In the above view, it can be seen that the admin can do some activities such as see who the consumer who has made the purchase ticket confirmation, admin can also see dn add the number of seats on the bus, manage the user list and also admin can view reports, such as purchases report, reservation and report the number of seats on the bus.

Fig. 4 Confirmation of Ticketing

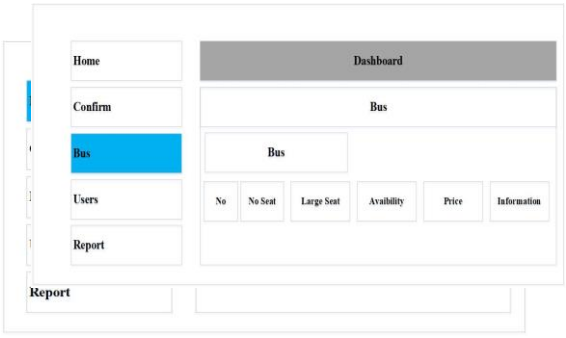

Fig. 5 Report of Ticketing

In the above view, it can be seen that the admin can see the consumer who has made the payment process after making a ticket purchase online. If within 3 hours the consumer does not make the payment process, then the order already done will be deleted automatically in the system. This method is done to avoid the accumulation of data orders that are not following the payment; if this is not done, then the bus company will suffer losses and many reservations, but the payment amount does not match the amount that makes reservations.

Admin can also manage the seating of a bus here, and the admin can specify seating no, the area of the seat and also the availability of seating, and the price of each seat; because the seats are in the front row, they will have a more price high compared to the seat in the middle of the back.

Admin and owner can view reports from ticket sales and reports from ticket bookings, and reports from the availability of the number of seats on the bus.

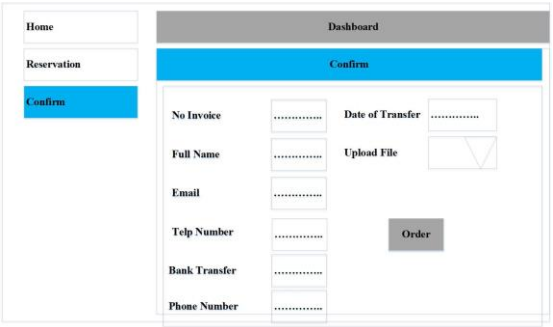

Fig. 6 Home of Consumer

On the consumer page, consumers can only do two activities only, which are to make reservations and also make payment confirmation. Activities on ticket booking can be seen in Figure 7, and the activity on the booking confirmation can be seen in Figure 8.

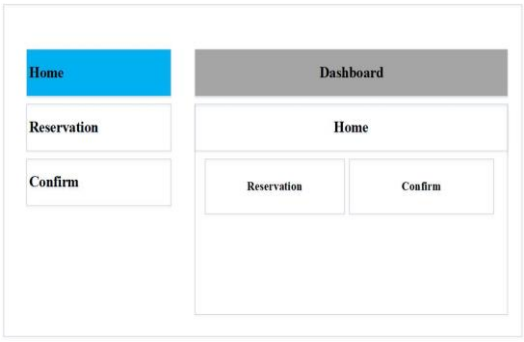

Fig. 7 Page of Ticketing Reservation

In the above figure, it can be explained that there are 3 statements on the seat status the red seat means the seat is already full or already filled by other

Fig. 8 Confirmation of Ticket

passengers if the picture of the blue seat means the seat is still empty or has not been purchased by other passengers and if the color of the green chair is the seat chosen by the passenger. After selecting the seat, passengers can fill in biodata such as full name, address, email, and no tel. Seating positions and ticket prices do not need to be filled because the seating position and price will automatically appear following the chosen seat.

After ordering and making payment, a consumer can enter no invoice, and automatically biodata from the consumer will appear; after appearing, the consumer is asked to upload proof of transfer already done, then press the order button and order finished.

V. CONCLUSION AND FUTURE WORK

Based on the description that has been explained, the ticket booking system is based online to facilitate consumers in purchasing bus tickets. The system can also easily view reports, ticket sales reports, the number of seats on the bus, and the reservation report. In the future, booking bus tickets based on this seat will be based on mobile applications such as Android and iOS because now many consumers are already using mobile-based Android and iOS.

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