Designing a Railway Ticket Ordering Information System at PT Hotel Murah Travelindo Jakarta With Waterfall Method

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Abstract— PT Hotel Murah Travelindo needs an information system that supports and provides satisfying services for customers. At this time PT. Hotel Murah Travelindo or commonly called Hotel Murah is one of the largest hotel providers in Indonesia that provides hotel bookings throughout Indonesia and Southeast Asia. The system at PT. Hotel Murah Travelindo has been computerized, starting from recording customer data that booked hotels, to storing other data related to the order process to making hotel vouchers, thus minimizing during the process of recording errors. Until now, the new Hotel Murah Travelindo provides hotel bookings online. PT. Hotel Murah Travelindo wants to develop train ticket reservations online. The design of this information system with waterfall method is the best solution to solve the problems that exist in purchasing train tickets that are always exhausted, and with a computerized system with mobile web apps can be achieved an activity that is effective and efficient in supporting the activities of this company.

Keywords— Designing Information Systems, Train Ticket Booking Systems

I. INTRODUCTION

However, websites or applications that primarily consume content can be successfully replaced with web apps.Therefore, web apps are viable substitutes for native apps in such use cases. In a context of a developing country such as Kenya, this means that using web apps for content consumption can drastically reduce issues such as high development costs and problems finding professional developers. Furthermore, with the ongoing development of a W3C device API to directly access hardware the limitation on using web apps for hardware intensive applications should be reduced in the future (Jobe, 2013).

In our view, mobile computing is the most important computing paradigm to influence and enhance modern e-services. The anytime and anywhere availability of services gives birth to a new generation of mobile e-services that can capitalize on the fact that a user is at a certain place at a certain time and from that information add value to the delivered service.

A broad spectrum of ongoing research and innovation activities within the area of mobile e-services.One important factor behind this trend is that the technological advancements and increased availability of new tools and emergent technologies have made a large set of e-services available in a mobile setting to large user groups. Another important factor is the willingness and preparedness from service providers to invest in new technology and new innovative solutions not only covering their own parts of the value chain, but to extend the coverage of their eservices to the entire process. A third important factor is the motivation from end-users actually using the new types of e-services delivered (Johansson & Anderson, 2015).

Improvement of customer service can be done in several ways, including providing certain facilities to customers or by providing information that is fast, accurate, and has a wide range. If in the past people always relied on travel agents or ticket agents at stations or business centers, now it can be done using the Online Travel Agent (OTA). Travel agents provide a variety of services to consumers including purchasing train tickets, flight tickets and hotel reservations.

The Railroad is land transportation that is still an option for many people because the price is affordable, capable of carrying large numbers of passengers, and the time that can be ascertained by a predetermined schedule between the departure schedule and the arrival schedule and with this relatively safe security.

PT. Hotel Murah Travelindo is in the stage of developing train ticket reservations online but is still under construction, here I will design a train ticket booking information system, actually many application services already have train ticket booking facilities online, but designing a train ticket booking system developed here also certainly has advantages compared to existing sites.

This ticket service information system is expected to be able to provide information to customers regarding departure schedules, fares, ticket collection points, up to seat bookings that can be chosen by the prospective passenger.

The purpose of this study is to design a train ticket service information system online in order to produce information that is fast, precise and accurate and makes a means of information for prospective passengers to make reservations and know the schedules, rates, and seats in the train to be ordered that are still available

II. LITERATURE REVIEW

A. Waterfall

The waterfall model is a waterfall model which provides a sequential or sequential software life-cycle approach starting from analysis, design, coding, testing, and support support (Rosa and Salahudin, 2015). This method is divided into several parts, namely:
1. Analysis of software requirements
   The process of gathering needs is done in an incentive to specify software requirements so that software can be understood such as booking train tickets needed by the user.
2. Design

Software design is planning in making a component or structure using Adobe Dreamweaver.
3. Testing
   Testing focuses on software in a logical and functional manner and ensures that all parts have been tested.
4. Support and Maintenance
   It is possible for software to change when it has been sent to the user. Changes can occur because of an error that appears and is not detected when testing or software must adapt to the new environment.

B. Basic Sistem Concepts

The system is a series consisting of two or more interconnected components and interacts with each other to achieve a goal where the normal system is divided into smaller sub-systems that support a larger system (Romney and Steinbart, 2015)

The elements contained in the system are called subsystems. These subsystems must be interconnected and interact through relevant communication so that the system can work effectively and efficiently.

Object-Oriented Programming (OOP) is a programming model based on the concept of objects, including data, often known as attributes and codes, in the form of procedures, often known as methods. A feature of an object is that object procedure can access and often modify data from interconnected objects. (W. Adhiwibowo, A. Daru, 2017).

C. Website

The World Wide Web (WWW) is an information access system on the internet commonly known as the web (Abdul Kadir, 2014). The web uses a protocol called HTTP (HyperText Transfer Protocol) that runs on TCP / IP (Transmission Control Protocol / Internet Protocol).

In terminology, a website is a collection of site pages, which are summarized in a domain or subdomain, which is located on the World Wide Web (WWW) on the Internet.

The web is a collection of documents that are widely spread on several computer servers that are located all over the world and are connected to a network through a network called the internet. Nearly 80% of internet services are websites.

D. Definition of Database

The database can be defined as a set of interconnected data groups that are organized in such a way that they can be reused quickly and easily (Hidayatullah and Jauhari, 2014).

The following are the terms used in the database (Enterprise, 2014):

1. Database: is a collection of tables containing related data.
2. Table: is a matrix containing data. Tables in the database look like simple spreadsheets.
3. Column: one column (data element) contains data with one type of the same.
4. Row: a line (input or data record) is a set of related data.
5. Redundancy: save data twice redundant to make the system run faster.
6. Primary Key: a key that is unique. A key value cannot be used twice in one table.
7. Foreign Key: is a link between two tables.
8. Compound Key: is a key consisting of several columns.
9. Index: is an index in a database that resembles an index in a book
10. Reference Integrity: used to ensure foreign values always refer to an existing line.

E. Entity Relationship Diagram (ERD)

Entity Relation Diagram (ERD) is a diagram that describes the relationship between tables with fields in it in a system database, a database contains at least a table with a or several fields (columns) in it (Pratama, 2014).

The most widely used database modeling is using Entity Reality Diagram (ERD). ERD is used for relational database modeling (Rosa and Shalahuddin, 2014).

F. Logical Relational Structure (LRS)

The Logical Record Structure (LRS) is formed by a number of record types (Tabrani, 2014). Some record types are described by rectangular boxes and with unique names. The difference between LRS and E-R diagram is the name of the record type outside the record type field box placed. LRS consists of links between record types. This link shows the direction of one type of record fields that are visible in the two record type links. LRS portrayals begin by using a model that is understood. Two methods can be used, starting with the relationship between the two models that can be converted to LRS, the other method starts with ERD Diagram and directly converts to LRS.

G. Unified Modeling Language (UML)

Unified Modeling Language (UML) is one standard language that is widely used in the industry to define requirements, make analysis and design, and describe architecture in object-oriented programming. UML is a visual language for modeling and communication about a system using diagrams and supporting texts.

UML arises because of the need for visual modeling to specify, describe, build, and document the software system.

UML only functions to do modeling. So, "the use of UML is not limited to a particular methodology, although in reality UML is most widely used in object-oriented methodologies" (Rosa A.S and M. Shalahudin, 2014).

III. PROPOSED METHOD

The Research method is an important step in this research, especially for system design. The method used in this study is.

A. Software Development Method

The software development method used is the waterfall model, also known as the waterfall method

B. Data collection techniques

Data collection techniques used in this study are:

1. Direct Observation (Observation)

A method used to find and collect data directly from the source by direct observation to the place of research objects at PT Hotel Murah Travelindo.

2. Interview

A data collection method by collecting data with a question and answer with the CEO of HotelMurah.com Mr. R. Ari Sudrajat regarding the information needed for writing material.

3. Heritage Study

The author also conducts library studies through the ebook page for study online and through the library

IV. RESULT AND DISCUSSION

A. Stage of System Design

1. Needs Analysis

Functional requirements analysis describes the process of activities that will be applied in a system and explains the requirements needed by the system so that the system can run well. The modeling stages in the analysis include use case diagram depictions and use case scenarios.

a. User Needs (User)

In designing a website-based ticket booking system there are two users who can interact with each other in a system environment, namely:

The customer (user), admin, and manager section. The three users have characteristics of interaction

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with different systems and have different information needs, such as the following:

1. Scenario for Customer Requirements (users)

   1) Log in or register
   2) Make an Order
   3) Make a payment
   4) Request for cancellation of train tickets

2. Admin Requirements Scenario

   1) Admin can manage order data
   2) Send vouchers
   3) Delivery of receipt
   4) Provide information regarding ticket cancellations
   5) Make a sales report

3. Requirement Manager Scenario

   1) The Manager receives sales reports from admin
   2) The Manager checks sales reports
   3) The Manager evaluates sales reports

b. System Requirements

1. Users must log in or register first to become a cheap hotel member by entering their username and password if they have registered, and if they have not registered they must fill in their personal data, each user's privacy is maintained.

2. Users must log out after completing booking tickets on the website.

B. *Diagram Design Use Case*

   The following Use Case Diagram on train ticket reservations
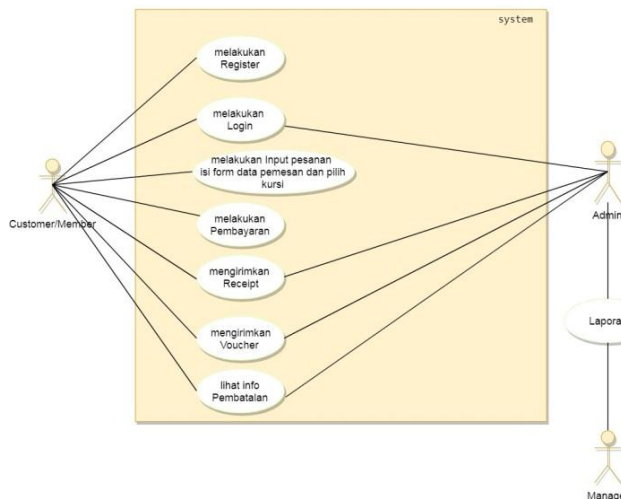
Fig. 1. Use Case Diagram

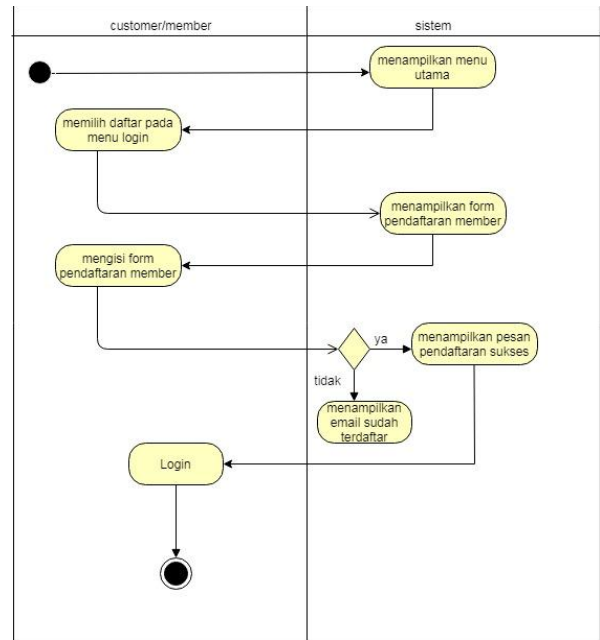C. *Activity Diagram*

1. Activity Registration Diagram

Fig. 2. Activity Registration Diagram
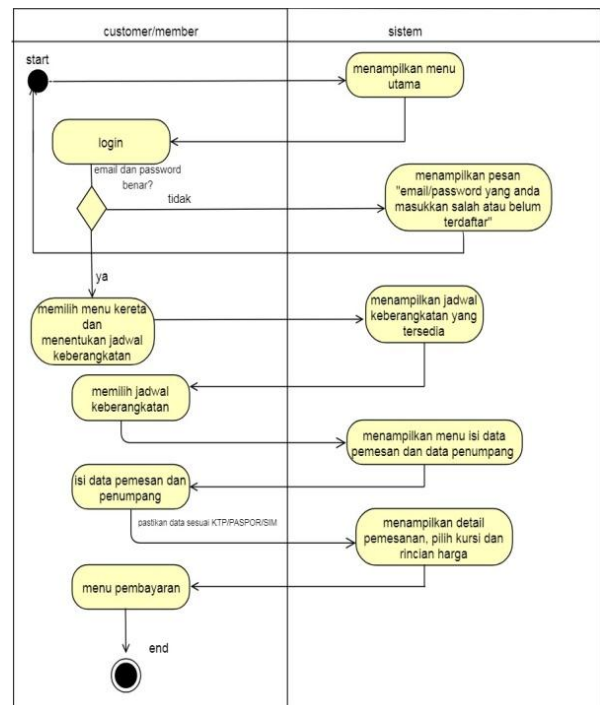
2. Activity Digram of Train Ticket Booking

Fig. 3. Activity Diagram of Train Ticket Booking
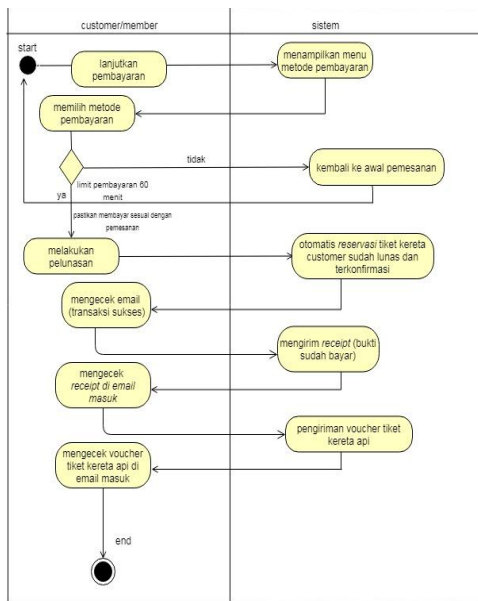
3. Activity Diagram Payment and Delivery Train vouchers

Fig. 4. Activity Diagram Payment and Delivery Train Vouchers
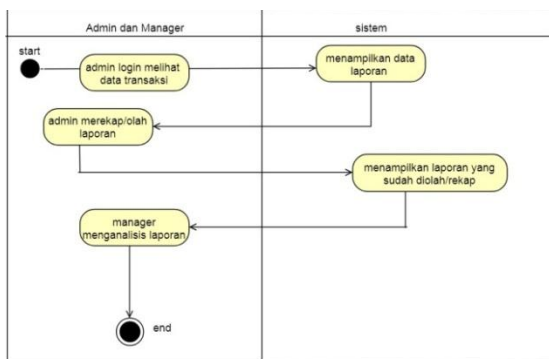
4. Activity Diagram Reports

Fig. 5. Activity Diagram Reports

D. Document Design

1) Design of Input Documents

a) Document Name : Ordering Data for Train Tickets
   Function   : To find out the order data for train tickets
   Source   : Customer
   Purpose   : Ordering Data File
   Media   : -
   Amount   : 1 page
   Frequency   : Every time you book a train ticket

b) Document Name : Data Member
   Function   : To find out the member data
   Source   : Customer

Purpose   : File Data Member
Media   : -
Amount   : 1 page
Frequency   : Each member registration or registration

2) Design of Output Documents

a) Document Name : Receipt
   Function   : for proof of transaction
   Source   : admin
   Purpose   : customer
   Media   : -
   Amount   : 1 page
   Frequency   : every time you make a payment

b) Document Name : train ticket voucher
   Function   : for checkin and boarding passes at the station
   Source   : admin
   Purpose   : customer
   Media   : -
   Amount   : 2 page
   Frequency   : Every time you make a payment

c) Document Name : Reports
   Function   : to find out the sales report
   Source   : admin
   Purpose   : manager
   Media   : -
   Amount   : 1 page
   Frequency   : every Months

E. Prototype Design

a) The interface of the main menu of train ticket booking for customer or admin access rights
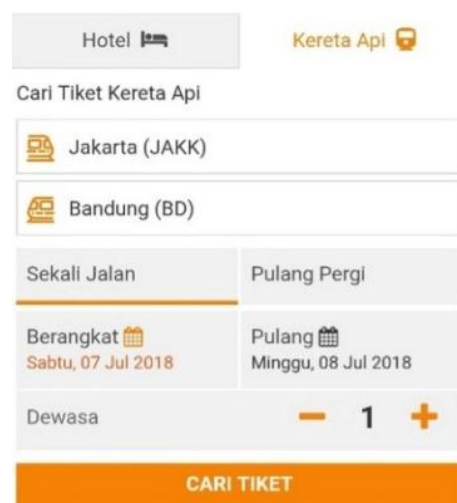

Fig. 6. Strart Up Menu

b) Interface for customer part access rights registration menu

Fig. 7. Registration Menu

c) Interface login menu for customer and admin section access rights

Fig. 8. Login Menu

d) Interface menu display route schedule that has been selected member access rights member and admin section

Fig. 9. Schedule Display

e) Display interface to fill order data and passenger data access rights for member and admin section

Fig.10. Display menu of order data contents

f) Interface display of passenger data contents menu

Fig.11. Display passenger data contents menu

g) Interface display order details, select seats, and price details for member and admin access rights
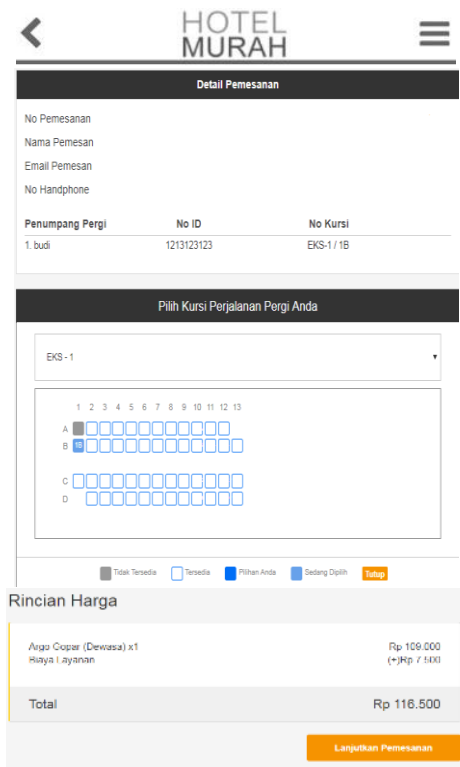

Fig.12. Display menu order details

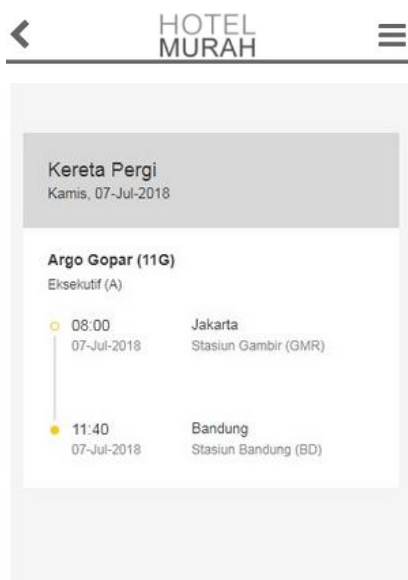g) Interface display the train ticket detail menu

Fig.13. Display train ticket detail menu

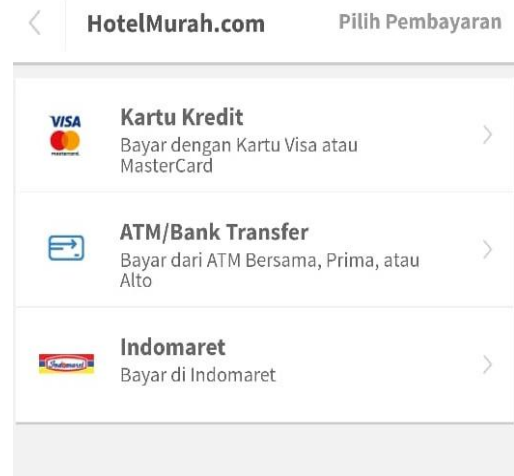*h)* Interface payment menu display, that is member chooses payment method for member and admin access rights

Fig.14. Display payment menu
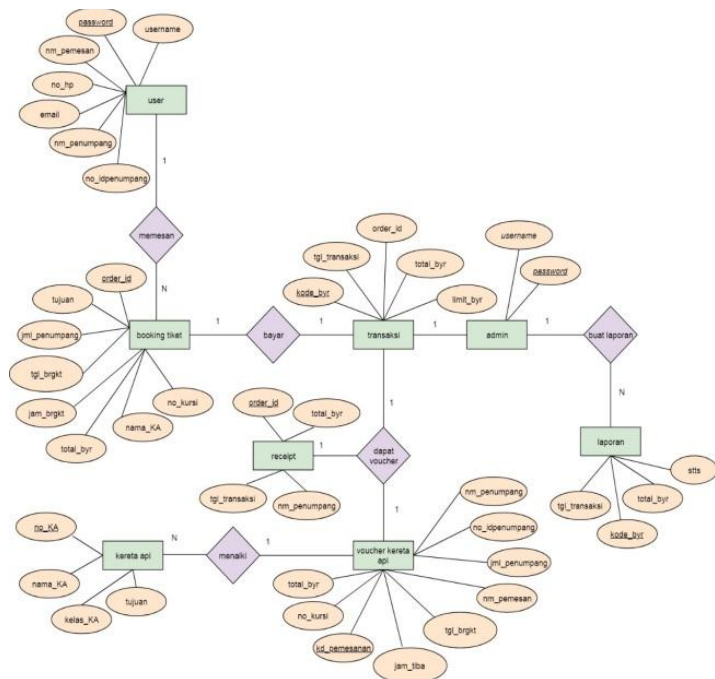
F. Database Design

a) ERD

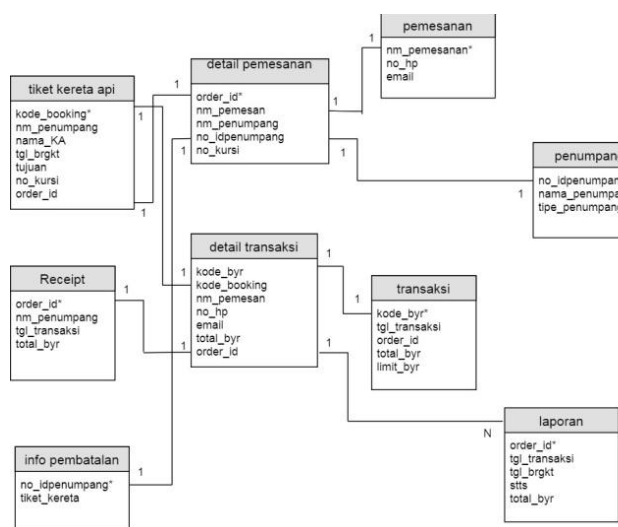Fig.15. ERD Train Ticket Booking

b) LRS

Fig.16. LRS Train Ticket Booking

V. CONCLUSION AND SUGGESTION

Based on the discussion that has been discussed, it can be concluded that the mobile ticket-based messaging information system provides information on departure schedules, ticket prices, train names, the time taken, train seat selection, so that both hotelmurah.com and customers can view the information. In order to be more developed in the marketing of hotelmurah.com products so that in the future hotelmurah.com can compete with other travel agent websites, and also known to the public in making hotel bookings, airplane tickets, and train tickets.

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