

WATERFALL MODEL IMPLEMENTATION IN INFORMATION SYSTEMS WEB BASED GOODS DELIVERY SERVICE

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Abstract: This study discusses the delivery information system for the minimarket 212 Mart. Minimarket 212 Mart is a modern retail business. The purpose of this research is to simplify and shorten the process of computerized goods distribution services to prevent data input errors, reduce disappointment due to customer service errors, expedite, and simplify service procedures between operational goods owners, and make it easier for the owner to receive a summary of shipping information. The research method used is the waterfall model. The problem with ordering goods is that customers are still using Whatsapp and those who order are still in the local area, not far from the mini market, thereby reducing sales. In addition, standard writing instruments are still used to record the delivery and receipt of goods. When delivering goods, customers buy directly from the convenience store, and it is difficult for customers to track the location of the goods ordered. Therefore, it must be built and designed with a software system that facilitates transportation registration, the processing of sales invoices, and the preparation of reports. Program design modeling applies to data flow diagrams and entity relationship diagrams. The software used is the PHP programming language and the MySQL database. The research artificial achieved are a web-based goods delivery service system that must overcome the problems that exist in goods delivery services at 212 Mart Serang-Banten Minimarket.

Keywords: Information System, Delivery Service, Waterfall, Web

Abstrak: Penelitian ini membahas sistem informasi pengiriman barang minimarket 212 Mart. Minimarket 212 Mart merupakan salah satu usaha ritel modern. Maksud dari riset ini adalah untuk mempermudah dan mempersingkat proses pelayanan pendistribusian barang secara terkomputerisasi untuk mencegah terjadinya kesalahan input data, mengurangi kekecewaan akibat kekeliruan pelayanan atas pelanggan dan meluncurkan serta mempermudah prosedur servis antar operasional pemilik barang serta memudahkan *owner* menerima ringkasan informasi pengiriman. Metode riset yang dipakai adalah model waterfall. Kendala pemesanan barang masih menggunakan Whatsapp, pelanggan yang memesan masih berada di area lokal yang tidak jauh dari mini market, sehingga mengurangi penjualan. Selain itu, alat tulis standar masih digunakan untuk mencatat pengiriman dan penerimaan barang. Saat mengirimkan barang, pelanggan membeli langsung dari minimarket, dan sulit bagi pelanggan untuk melacak lokasi barang yang dipesan. Oleh sebab itu, harus dibangun dan merancang sistem perangkat lunak yang memudahkan pendaftaran pengangkutan, pengerjaan faktur penjualan, dan penyusunan laporan. Pemodelan desain program menerapkan *Data Flow Diagram* dan *Entity Relationship Diagram*. Perangkat lunak yang dipergunakan adalah bahasa pemrograman PHP dan database MySQL. Artifisial penelitian yang dicapai merupakan sistem layanan pengiriman barang berbasis web yang harus melampaui permasalahan yang ada pada layanan pengiriman barang di minimarket 212 Mart Serang-Banten.

Kata kunci: Sistem Informasi, *Delivery Service*, Waterfall, Web

INTRODUCTION

The progress of the world of technology is currently very fast, reaching various fields; therefore, more and more companies are trying to develop their businesses, especially in industries that are closely related to information technology. People need to make decisions quickly and accurately, and there is a human need for a comfortable space that helps get work done.

With the existence of a computer as a data processor, all areas within a company or organization can be computerized, in this case the areas that are considered essential and prioritized because they can help the industry succeed in achieving its goals. Jobs that people do are more sensible, faster, and easier. Computers can also be linked to the internet to be accessible to the general public.

Currently, the development of web-based information systems is used as a facility to improve information in almost all sectors, both in the business world and in the world of industry and education. Using a web-based information system is an effective way to advertise [1]. The development of technology that continues to advance can help companies provide satisfying services to customers. The minimarket business in Indonesia is growing. A variety of sales, ranging from staples to fresh food, is the main attraction of every modern retail store. A mini market is a place to buy household needs and various other needs with a concept that is more affordable in terms of price and overall [2].

Minimarket 212 Mart is a modern retail store and is frequently visited by many people, especially on Jl.Raya

Waringin Kurung Komp. Griya Serdang Indah Blok M Serdang Village, Kramatwatu District Serang, Banten 42161. The problem with ordering goods is still using WhatsApp, where the customer wants to know the price and the product purchased must share pictures one by one and show the price to confirm the desired product. The purchase was precise and within budget, which can lead to difficulties when ordering. Customers who order are still in the surrounding area, not far from the minimarket, thereby reducing sales. In addition, standard paper products are still used to generate shipping and receiving reports. When implementing the delivery process, customers come to the minimarket and make purchases directly. Furthermore, consumers cannot monitor the existence of these goods. Therefore, there is an intention to create a web-based online computing system that should make it simple for customers to find information and allow customers to directly track goods that have been sent [3].

The research objectives that can be achieved are to expedite and accelerate the flow of goods distribution services in a computerized manner so as to avoid input errors, reduce dissatisfaction with the impact of service errors on customers, stimulate the service mechanism between goods, and make it easier for owners to receive recapitulations of delivery data reports. This research creates an application that can be used to make the delivery service of 212 Mart minimarket merchandise efficient and effective [4].

Previous research that raised the freight forwarding system was carried out by [5] creating a web-based goods delivery service application, which is created using a Data Flow Diagram

(DFD) design. The purpose of this study is to see what systems are used in processing company data in the field of transportation services and reducing barriers to the delivery of goods and services. The web application being worked on passes information about the passage of goods from one area to another so that service facilitators or goods owners can track this information, download the latest shipping information, evaluate information, load profiles, and provide other useful information to customers. Another Study was conducted with [6] the aim of providing goods delivery services within and outside the city. The waterfall model was the study methodology employed. When modeling programming with UML (Integrated Modeling Language). PHP and MySQL, Micro Dreamweaver are the applications utilized. The results of the study obtained were a web-based delivery system that was anticipated to be able to solve issues in shipping goods from the Vira Surya Utama Palembang company.

A. Definition of Delivery

Delivery service is a form of service that offers convenience in the form of a service unit to deliver customer orders to the location they choose [7]. Delivery service is an activity and service where consumers buy products delivered by the seller by using a telephone or internet connection, after which the ordered goods are delivered to the customers address without the need to meet in person [8].

B. Definition of Minimarket

It is a small shop or supermarket that sells mostly consumer goods and has a retail area of 100-1000 m² [9].

Convenience stores for daily needs are popular shopping destinations for those who want to do some shopping but don't have to go to the supermarket.

METHOD

A. Research Framework

The research framework is essentially a draft link between concepts that will be examined or assessed through the research carried out [10][11]. This research is motivated by the problems of the 212 Mart minimarket in the process of delivering goods. This problem is, of course, a problem because all the entities it contains are described below in a flowchart:

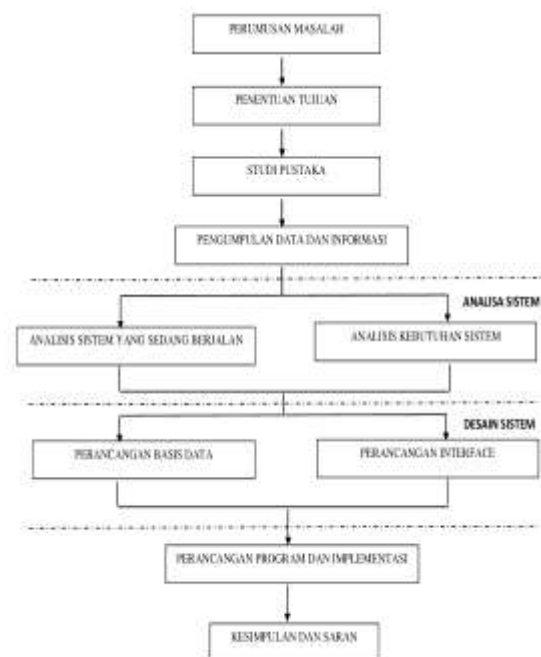


Image 1. Research Framework

B. Data Collection Methods

1. Observation

Collecting data in the research area and direct observation of how the goods delivery system is implemented at Minimart 212 Mart to get the information researchers

need, monitor all activities related to the mechanism of ordering, payment, and delivery up to the report process.

2. Interview

Question and answer activities carried out with Minimarket 212 Mart managers and personnel connected to the delivery process to collect information that cannot be obtained from observation data through this process, you can get detailed information about the company.

3. Documentation

Activities to explore information or views related to research by collecting information found in searches, scientific publications related to commodity delivery systems using the waterfall development method.

C. Waterfall Model

Waterfall is an SDLC model of waterfall, also referred to as a linear sequential model or part of the classical life cycle [12]. A sequential approach to the software life cycle is provided by the waterfall model. According to Limaye (2009), the waterfall model is a very simple software development model and is widely used in development method studies.

The form of the waterfall model is Image 2 :

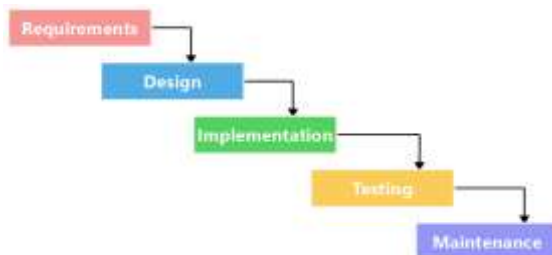


Image 2. Waterfall Model

1. Analysis of Needs (Requirements)

Requirements documentation techniques are worked on intensely to define software requirements in such a way that users can understand them.

2. Design

Software engineering is the design process in software production, including data structures, software engineering, user interface visualization, and coding techniques. In this phase, the specifications for the software from the needs analysis stage are converted into a design proposal to be implemented as a program in the next phase.

3. Implementation or code generation

Do the coding according to the problem being analyzed and planned. This program is converted into the PHP programming language.

4. Testing

The program is the subject of testing from a logical and practical point of view and assures that all components have been tested. This is done to minimize errors and ensure the output is realized as expected.

5. Maintenance

Software conservation is required, including SDLC (System Development Life Cycle) development.

RESULTS AND DISCUSSION

The outcome of this study is the implementation of a web-based system so that it can be used. After analyzing, designing, and coding using the PHP program and supported by the MySQL database, applications that have been completed are used by managers and customer areas, but the system must be tested before use, which means whether

the system is working properly, so that the purpose of working on the system is to transfer information that is useful and implemented [13][14].

Display on the Admin Website

1. Dashboard Page

The initial form view is the one an application administrator uses to respond to other forms.

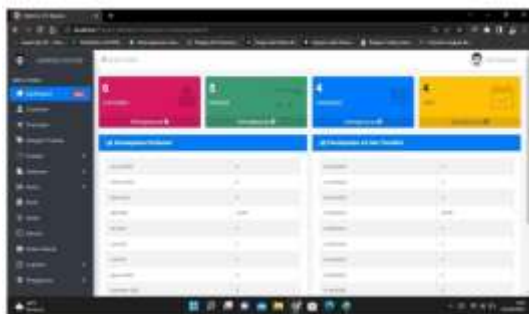


Image 3. Dashboard Page

2. Transaction Data Page

The transaction information page displays consumer purchase transaction data.

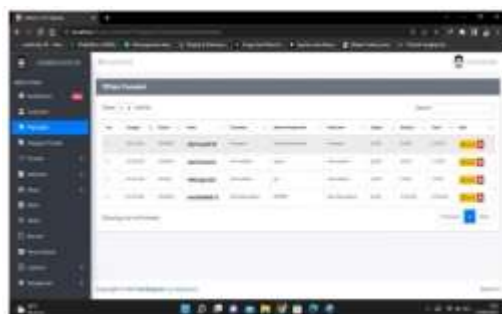


Image 4 . Transaction Data Page

3. Product Pages

Product menu form display used by system administrators to process product information.

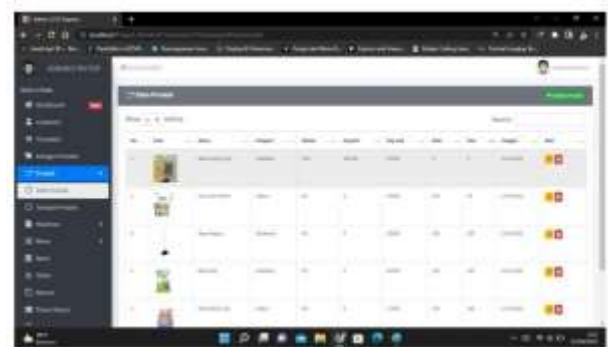


Image 5 . Product Pages

4. Transaction Report Page

The transaction report page display contains report data about the product ordered.

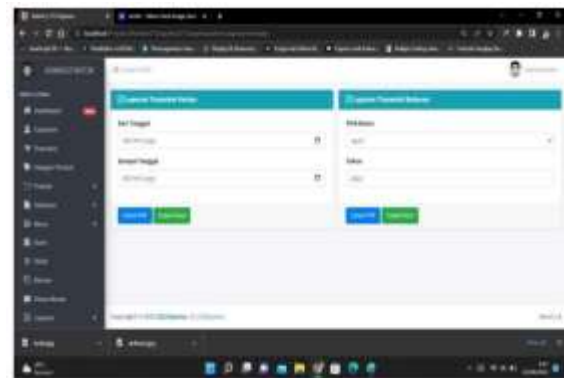


Image 6. Transaction Report Page

5. Shipping Cost Settings Page

Shipping fee setting menu form used by the admin to process shipping data.

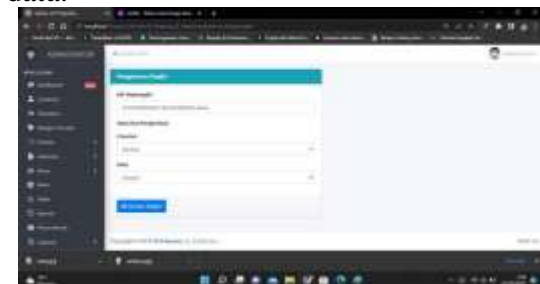


Image 7. Shipping Settings Page

Display on the customer website

1. Customer Login Page

Customers use the login page to access the website by entering their email address and password.

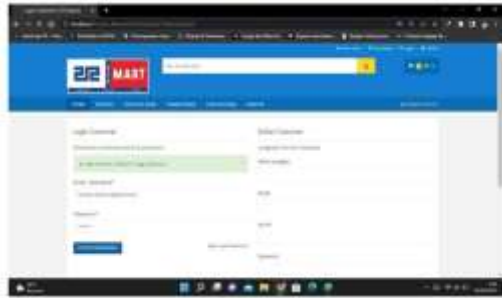
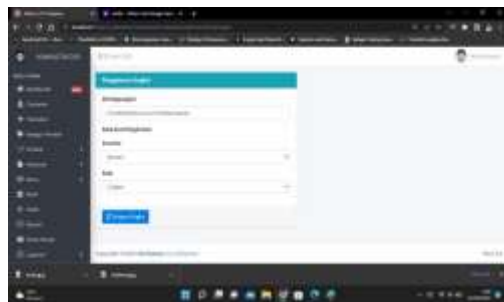


Image 8. Customer Login Page



Shipping fee setting menu form used by the admin to process shipping data.

Image 9. Shipping Settings Page

2. Customer Login Page

Customers use the login page to access the website by entering their email address and password.

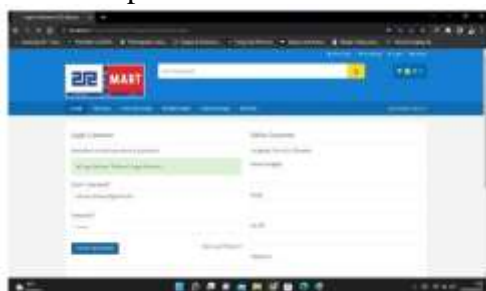


Image 10. Customer Login Page

3. Home page

The homepage is the first view that appears when opening a website. Customers can choose which menu they want to open.

tomers can choose which menu they want to open.



Image 11. Home Page

4. Product Pages

The product page display contains product types that customers can choose from.



Image 12. Product Pages

5. Postage Check Page

The postage check page contains information for entering courier data that will deliver the goods.

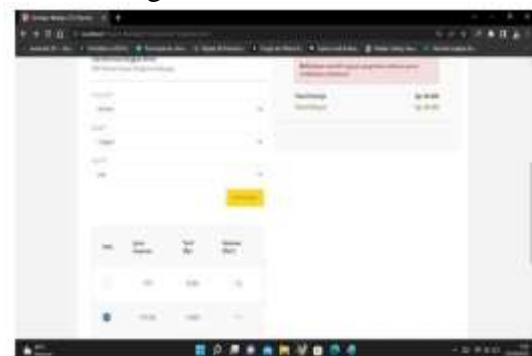


Image 13. Check Fee Page

6. Order and Payment Detail Pages

Menu with order and payment details.



Image 14. Order Details and Payment Pages

7. Order Status Page

The order status page is a page that shows the status of the delivery of goods.

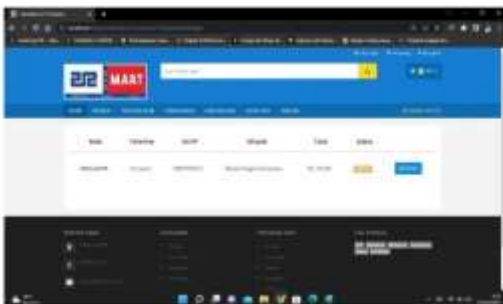


Image 15. Order Status Page

8. Report Page

Contains reporting information about the product ordered.



Image 16. Sales Report Page

9. QR Code Website Links



Image 17. QR Code Website Links

CONCLUSION

From this description, it can be concluded that the process of delivering goods is more efficient and effective, because it is computerized. Customers do not need to come to the store to order products because it can be done anywhere and anytime. With the existence of a web-based goods delivery service information system at the 212 Mart minimarket using the PHP programming language, this application is designed to develop a data flow diagram and entity relationship diagram system, and the waterfall system development method and MySQL database facilitate the presentation of information in the form of items that are fast, practical, and easy to understand. So that the manager and courier can properly prepare the goods needed by the customer according to the order because the product sent will not ignore the customer later.

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