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Mobile Based Coffee Powder Sales Information System in Pagaralam City

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ABSTRACT

The sales information system plays an important role in facilitating the exchange of information and meeting the needs of sellers and buyers. Pagar Alam is a city in South Sumatra Province located at the foot of Mount Dempo, with a strategic geographical position surrounded by mountains and hills. South Sumatra is known as the largest robusta coffee–producing province in Indonesia, supported by extensive plantation areas, high-quality production, and a large number of coffee farmers. However, the Pagar Alam Coffee Powder Shop still applies a conventional sales system that requires buyers to visit the store directly, making the sales process less effective and limiting market reach. In addition to selling ground coffee, the shop actively promotes coffee culture through coffee tasting events and educational activities. To address these challenges, this research aims to design a web-based sales information system that functions as both a sales support tool and a promotional medium. The system is developed as a mobile web optimized for smartphones and tablets, ensuring ease of access and user-friendly interaction. The development process adopts the Waterfall method, which provides a structured and systematic approach through sequential stages to produce an effective and reliable system.

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1. Introduction

The current information system is able to provide changes along with the progress of existing technology. The information system is the result of organizational success and is also able to realize activities carried out effectively and efficiently[1]. An information system is a combination of work procedures, people, information technology, and data that is organized to collect, store, process, and distribute information[2]. By utilizing existing human resources and technology, it can provide a competitive ability in the business world in today's era.

Information technology is developing so rapidly, that the need for information is urgently needed. Information technology has led to the role of computers being so necessary in various aspects of life. Currently, sales are mostly done through electronic media, in information technology there is something called a website [3]. The current website can also be used as a support to make it easier to sell and promote media, one of which is in terms of coffee sales. This mobile web is a version of the website that is optimized

to be displayed on mobile devices. The mobile web is designed to be easily accessible through a browser on a smartphone or tablet, taking into account smaller screen sizes and touch-based interactions[4].

A sales information system is a way for sellers to offer their products so that consumers become interested and buy the products offered. The sales information system allows the fulfillment of needs between sellers and buyers, in this case through the exchange of information and the interests of each related party.

Pagar Alam is one of the cities in South Sumatra Province, located at the foot of Mount Dempo so the geographical location of Pagar Alam is very strategic, surrounded by mountains and hills. Sum-Sel is the largest robusta coffee producing province in Indonesia. Sum-Sel has the characteristics of land area, coffee production, TM (Producing Plants), robusta area, and robusta coffee production, TBM (Unyielded Plants), TR (Damaged Plants) area, and high number of farmers[5].

Pagar Alam Coffee is one of the most demanded Besemah coffees Since a long time ago, this city has been a center for coffee plantations with production that could reach the Netherlands, because at that time the Queen of the Netherlands Yuliana liked the taste of this Besemah Coffee. The delicious taste of coffee is certainly produced from a supportive plantation environment [6]. Nature fences have enormous potential in the agriculture, plantation, and nature tourism sectors, most of its citizens earn a living as natural coffee farmers, and the experience in growing coffee has been inherited by their ancestors.

With this technology, the ordering and sales process can also increase, with an increase in orders and sales, as well as an increase in turnover obtained for the company. The buying and selling system using the internet helps sellers to market their products widely and facilitates interaction between sellers and buyers without being limited by space and time.

In the business field, the development of information technology has a significant impact on the growth of business activities, especially from the perspective of data management that supports business decision-making and in terms of improving services [7]. This helps a business person to expand their marketing and introduce their products to the public, one of which is using a website that can be accessed via the internet to deal with changes in the online business era that occurs at this time. Online sales have become rampant in the community because of their convenience and practicality. Potential buyers easily use online media to buy what they want without having to go to an outside store [8].

In Pagar Alam, a city in South Sumatra, there is a ground coffee shop that is the center of attention for coffee lovers. The store is known as "Pagar Alam Coffee," which offers a wide variety of high-quality robusta coffee. This coffee is produced from selected coffee beans that provide a distinctive taste and appetizing aroma. With traditional and modern processing.

In addition to selling ground coffee, this store is also active in promoting the culture of drinking coffee among the community. They often hold coffee tasting events, where visitors can taste various coffee variants while learning about the process of making coffee from beans to delicious brewing.

The sales system used by the Pagar Alam Powder Coffee Shop still uses a manual method because buyers are required to come directly to the store so that this method is less effective in selling coffee.

Based on the existing problems with utilizing current technology, the researcher proposes to create an information system for the sale of ground coffee as a medium for promotion and transactions based on mobile web.

The creation of this website-based information system is expected to solve the problem of the sales system that is still manual so that sales and existing systems become more structured. The creation of this information system will use the php programming language which makes the web appearance more dynamic[9].

2. Research Methods

2.1 Research Time and Place

The research was conducted over a period of three months, starting in November and continuing until January. This time frame was carefully determined to ensure that the research process could be carried out in a systematic and comprehensive manner. A three-month duration provided sufficient opportunity to collect accurate, valid, and in-depth data related to the research objectives, as well as to observe existing business processes and identify problems that occur in daily operational activities. In addition, the allotted time allowed the researcher to carry out each stage of the study properly, including preliminary observations, data collection, system analysis, design, implementation, and evaluation of the proposed solution.

The research location was a coffee powder shop located in Pagar Alam City, South Sumatra, which was selected based on its relevance to the research topic and the problems identified in the field. This shop represents a typical small-scale coffee business that still applies conventional sales and promotional methods, making it suitable as a case study for the development of a web-based sales information system.

Conducting the research directly at the business location enabled the researcher to gain a clear understanding of real conditions, workflows, and constraints faced by the business owner and customers.

During the research period, data were collected through direct observation, interviews with the shop owner and employees, and documentation of existing sales processes. These activities supported a thorough analysis and helped ensure that the proposed system was designed according to actual user needs. Figure 1 presents a map showing the location of the research site, providing a clear geographical context and supporting the validity of the study setting.

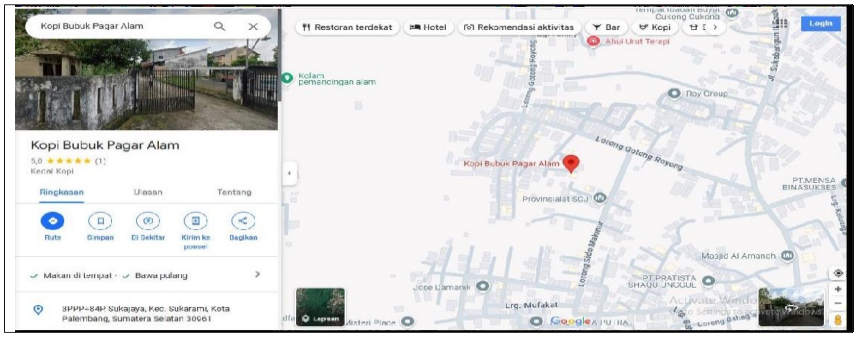

Figure 1. Research Place

2.2 Research Methods

The Cumulative Research Method is a research approach used to understand social phenomena, behaviors, and human experiences through the collection and analysis of descriptive and non-numerical data[18]. This method focuses on an in-depth understanding of the context, meaning, and perspective of an individual or group in a given situation. Qualitative research is often used in the social sciences, psychology, anthropology, and other fields that require a more complex understanding of human behavior

2.3 Data Collection Methods

In the discussion of the methodology of this research, there is a data collection technique, namely Literature study is a data collection technique that is carried out by studying and collecting information from reference sources of books, journals and other sources that are directly related to the discussion of this research.

2.4 System Development Methods

Information system development is often referred to as the system development process. System development can be defined as drafting a new system to replace the old system as a whole or improve an existing system. Many system development methods are available. System development is an old system that is processed in such a way or replaced to become a new system and undergo changes in a better and more useful direction.

The most well-known method is also called System Development Life Cycle (SDLC). SDLC is a common methodology used to develop information systems and has several models in the application of process stages, including the Sequential Model or Waterfall, Parallel Model, Iterative Model, Prototyping Model, RAD (Rapid Application Development) Model, Spiral Model, VShaped Model and Agile Development.

The system development model used by the author in this study is the waterfall model. The waterfall method is a systematic approach model that works in order with the existing stages. Figure 2 is the waterfall method.

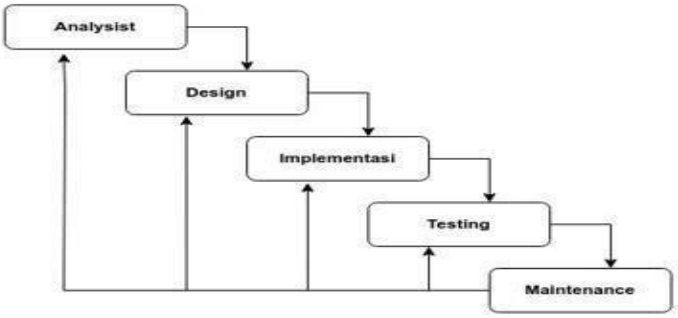

Figure 2 Waterfall Method

a. Analysis

The process of collecting needs is carried out intensively to specify the needs of the software so that the software can be understood as needed by the user. In this needs analysis, it aims to analyze the needs needed in the design both in the form of documents and other sources that can help in determining solutions to existing problems.

b. Design

Software design is a multi-step process that focuses on the design of software program creation including data structures, interface architecture, and coding procedures. In addition, design is also a flow of a detailed software and algorithm.

c. Implementation

At this stage the design must be translated into the software program codes. The result of this stage is a computer program according to the design that has been designed in the previous design stage.

d. Testing

Testing focuses on the software in terms of logic and functionality to ensure that all parts have been tested. This is done to minimize errors and ensure that the output produced is in accordance with what is cooled. Program testing is carried out using BlacBox Testing in the hope that the design that has been made can run according to desire.

e. Maintenance

The last stage, the support or maintenance stage, can repeat the development process starting from specification analysis to existing software changes.

2.5 Flowchart Running System

In Figure 3 below, it explains the process of buying Ground Coffee, which is by the way the buyer comes directly to the store, then the buyer chooses the Ground Coffee to be purchased, the buyer goes to the cashier to make the payment and it's done. In the payment system for Coffee Powder that is still calculated manually, this will make it difficult for the cashier to make transaction reports or sales reports.

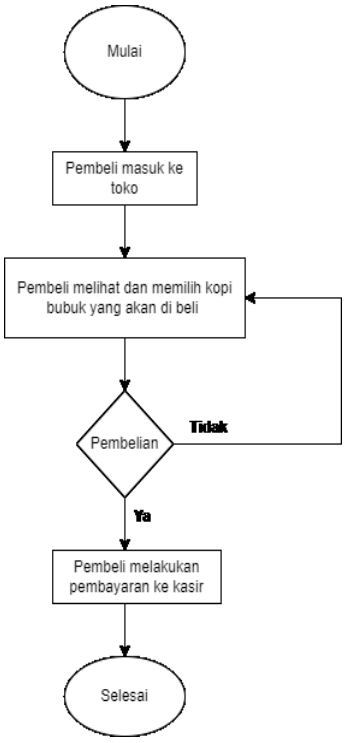

Figure 3. Flowchart of running systems

2.6 Submitted System Flowchart

In Figure 4, the proposed system is designed to make it easier for admins to make transaction reports and calculate the stock of ground coffee available in the store.

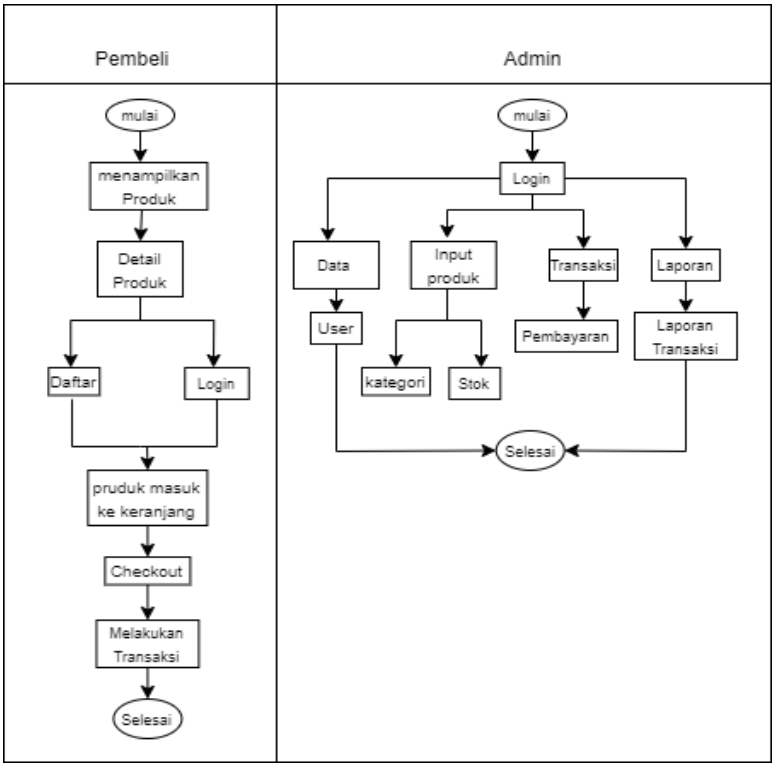

Figure 4. Submitted System Flowchart

2.7 System Planning

Design is a fundamental stage in the development of a product, application, or system, as it serves as the blueprint that guides the entire creation process. Design can be defined as the process of creating something new to fulfill specific needs or to solve particular problems faced by users. In a broader context, design does not only focus on visual appearance, but also emphasizes functionality, usability, efficiency, and effectiveness. A well-planned design ensures that the final product can deliver the expected outcomes and provide optimal benefits to its users.

A system, on the other hand, can be understood as a collection of components, devices, activities, or elements that are interconnected and interact with one another in an organized manner to achieve a common objective. These components do not operate independently; instead, they function as an integrated whole, where each part has a specific role and contributes to the overall performance of the system. The effectiveness of a system largely depends on how well its components are structured, coordinated, and managed.

Based on these definitions, system design can be interpreted as a structured and systematic process of developing new system specifications derived from a comprehensive analysis of user requirements. This process involves translating user needs into technical designs, defining system architecture, determining workflows, and specifying functional and non-functional requirements. In addition, system design also includes the refinement and improvement of existing system structures to enhance performance, reliability, and scalability. Through proper system design, potential problems can be anticipated early, development risks can be minimized, and the resulting system can operate efficiently, accurately, and in accordance with user expectations.

2.7.1 Use Case Diagram

The use case diagram in Figure 5 below explains the details of the use case in the Coffee Powder Sales information system that the author created. There are 2 actors who can access the created system:

1. Buyer

   Buyers have access to register, login, select products, purchase products and make payments.

2. Admin

   Admins have access to login, manage transactions, manage customer data, manage coffee stock category data and delivery.

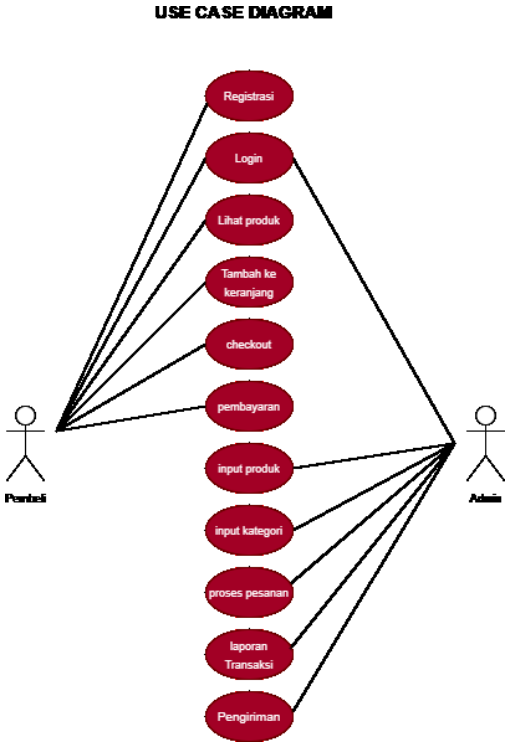

Figure 5 Use Case.

2.7.2 Buyer Activity Diagram

In Figure 6. The buyer user activity diagram below describes the flows that buyers can access. First, the buyer starts by accessing the website and viewing the product. The buyer signs in to verify their account. Then, the buyer selects the product and adds it to the cart. After that, then the buyer checks out and pays for the order. The system will process the payment, confirm the order, and send the order information to the buyer.

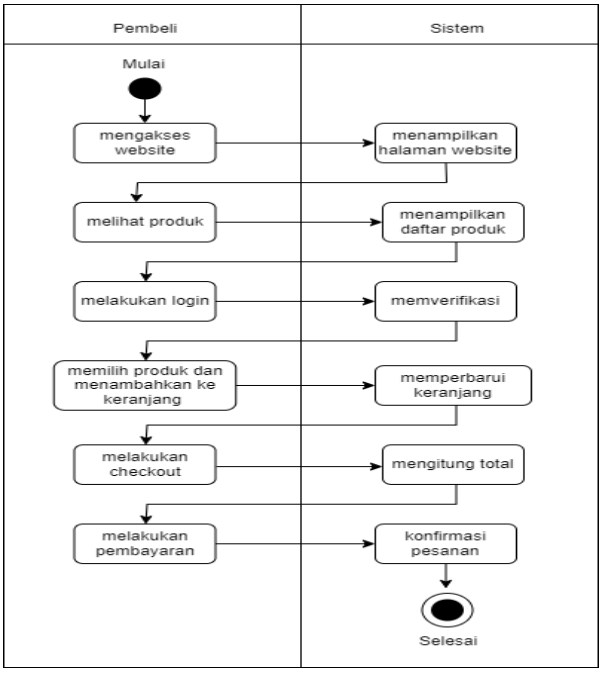

Figure 6. Activity diagram user

2.7.3 Activity Diagram Admin

In Figure 7. The admin activity diagram below describes the flow starting with the admin logging in and the system verifying. Then admins can access websites, manage products, manage transactions, confirm payments, and manage transaction reports. For each activity that the admin performs, the system will display the appropriate pages such as the website page, product list, transaction page, and transaction report page. Once the admin completes all the activities, the system will display the completed page.

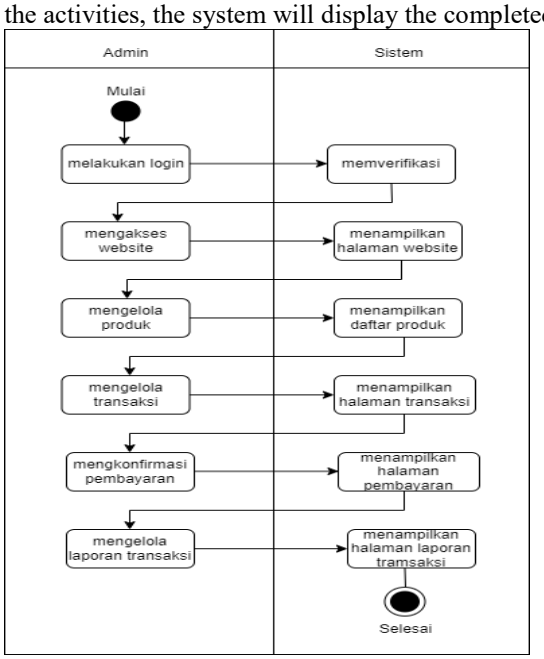

Figure 7. Activity diagram admin

2.8 Entity Relationship Diagram (ERD)

Figure 8. below explains the ERD which describes the structure of the website-based Coffee Powder Sales Information System. The ERD below shows the entities and attributes that are interconnected to run the overall functionality of the system.

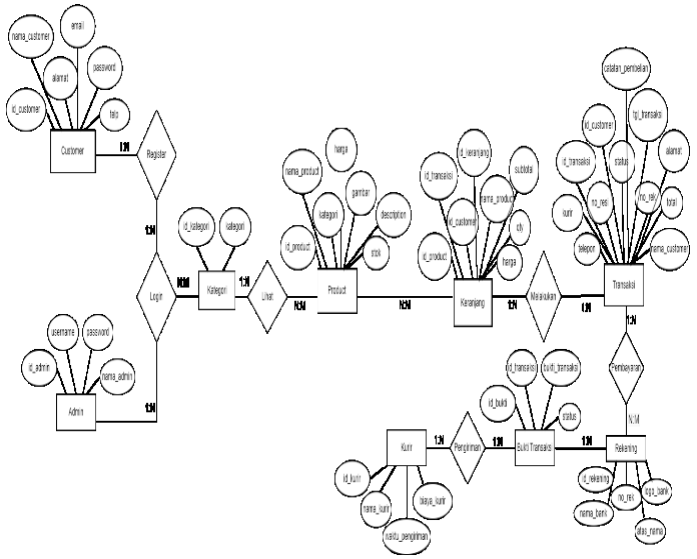

Figure 8. *ERD*

2.9 UI/UX design

The following is a website display design that will be made and explained one by one about the stages of how to design this *website*.

2.9.1 Home

In Figure 9. The main page below is a page that has 4 menus that have uses, namely the home, login, product, and about us pages

Figure 9. Home

2.9.2 Register Page

In Figure 10. This registration page functions for customers to register by filling in their full name, address, email, password and phone.

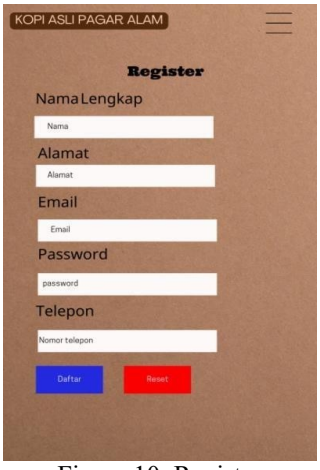

Figure 10. Register

2.9.3 Login Page

In Figure 11. This Login page functions for customers to log in after registering previously by filling in the email and password.

Figure 11. Login

2.9.4 Product Detail Page

In Figure 12. Product details on this page serves to view the details of each product and displays the description, quantity and price.

Figure 12. Product Details

2.9.5 Cart Pages

In Figure 13. This page cart serves to enter the products you want to buy into the cart page before making a payment.

Figure 13. Cart

2.9.6 Checkout Page

In Figure 14. Checkout after entering the product into the cart, the user will be directed to the checkout page to proceed with the payment by filling in the recipient's name, phone, purchase record, address, select the bank and select the courier

Figure 14. Checkout

2.9.7 Transaction Data Page

In Figure 15. The transaction details of this page serve as proof of payment and payment

information.

Figure 15. Transaction Details

3. Results and Discussion

3.1 Home Interface Design Results\

This stage describes the process of implementing a mobile web-based coffee powder sales information system. The system is built and designed to help admins make it easier to create sales reports and calculate purchases. The results of this software design are expected to help the work process to be more efficient and can reduce the possibility of calculation errors, and speed up the creation of reports. The designed system describes how each component of the system will work optimally, from managing transaction data to creating sales reports that are ready to be presented. This process will run following the planned steps and will then be described in the system flow.

3.1.1 Home

In Figure 16. The main page below is a page that has 4 menus that have uses, namely the home, login, product, and about us pages.

Figure 16. Home

3.1.2 Register Page

In Figure 17. This registration page functions for customers to register by filling in their full name, address, email, password and phone.

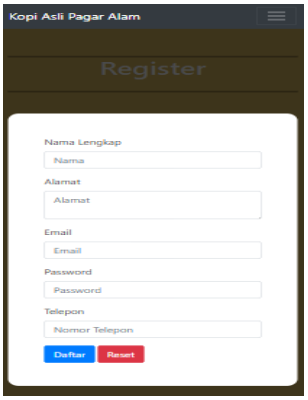

Figure 17. Register

3.1.3 Login Page

In Figure 18. This Login page functions for customers to log in after registering previously by filling in the email and password.

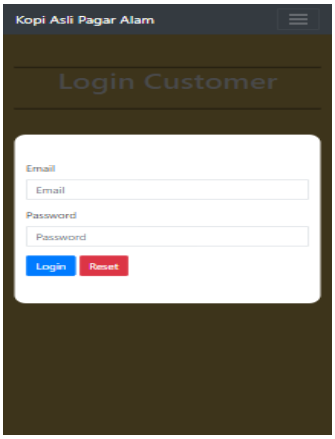

Figure 18 Login

3.1.4 Product Detail Page

In Figure 19. Product details on this page serves to view the details of each product and displays the descripction, quantity and price.

Figure 19. Product Details

3.1.5 Cart Pages

In Figure 20. This page cart serves to enter the products you want to buy into the cart page before making a payment.

Figure 20. Cart

3.1.6 Checkout Page

In Figure 21. Checkout After entering the product into the cart, the user will be directed to the checkout page to proceed with the payment by filling in the recipient's name, phone, purchase record, address, select bank and select courier.

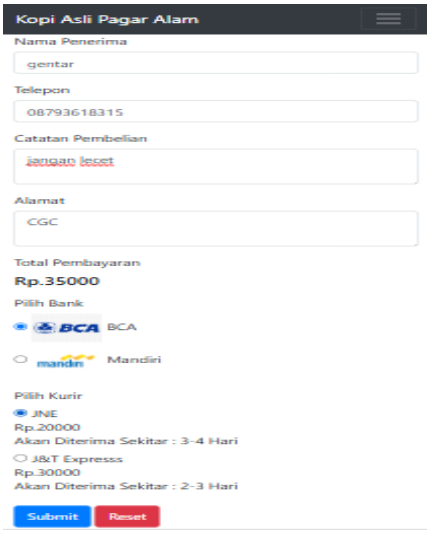

Figure 21. Checkout

3.1.7 Transaction Data Page

In Figure 22. The transaction data of this page serves to confirm and view payment details from customers.

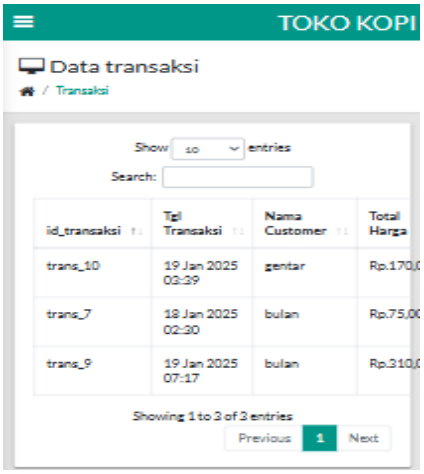

Figure 22. Transaction data

4 Conclusion

Based on the results of the research that has been conducted, it can be concluded that the mobile-based coffee powder sales information system in Pagaralam City can improve the sales process by providing convenience for sellers in managing data, as well as providing convenience for consumers to make purchases and make payments.

Suggestions

Advice for *developers* of mobile web-based coffee powder sales information systems is to add a promo feature. This feature is designed to provide attractive offers to consumers, so that it can increase buying interest.

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