Customer Relationship Management Strategy in Mobile-Based E-Commerce Platform Development to Increase Purchase Interest

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ABSTRACT

The demands of technological developments trigger every company to be able to increase competitive advantages in order to create a smooth business process. Customer satisfaction in comparing expectations before making a transaction with the service directly felt by a customer is one of the elements that affect how succesful. Therefore, this study develops and implements a mobile-based e-commerce system equipped with a customer relationship management feature that aims to increase the involvement of interest and product purchases at the Tarigan Clothing Store so that it can provide very significant additional value in a product marketing process. This mobile-based e-commerce information system application also utilizes javascript technology as its interface design. The use of javascript is considered to facilitate access to the latest features in the e-commerce application that is built because of the high existence of javascript which continues to develop according to technological advances. This mobile-based e-commerce application is expected to provide wider reach, convenience and become a more effective marketing tool for customers and Tarigan Clothing Store so that it can provide significant benefits for both parties and create a more comfortable and efficient shopping process.

Keywords: Customer Relationship Management; E-commerce; Mobile; Javascript; UML

1. INTRODUCTION

A business strategy triggers a very significant paradigm shift for business people, this change brings benefits, thereby generating interest in using an application. The role of science and technology has given rise to new industrialization in economic activities known as e-commerce. Technology can now make it easier to disseminate information and can develop e-commerce to all corners of the world. Now the term Internet of Things is the future of all mankind towards a society that is interconnected with each other. Activities that take place face to face have now been replaced by technology. At the product marketing level there is no longer a need for direct interaction between buyers and sellers. All products can now be highlighted directly using an e-commerce platform that relies on computer technology which can produce data mining with the best integration. Practical mobile-based shopping applications are now highly sought after by consumers because of their convenience, flexibility and accessibility.

Tarigan Clothes Shop is a shop that sells clothing ranging from adult to children's clothing. This shop, which is located at Gundaling I, Berastagi District, Karo Regency, North Sumatra, still uses manual methods in the process of buying and selling clothes [(Puspita Sari, Pudjiarti, & Susanti, 2020). Manual processes tend to be slower and more time consuming, especially in terms of processing orders, checking stock, and recording sales. This results in operational activities taking place inefficiently. Apart from that, customers switch to other stores because the explanation about products is not evenly distributed, making it difficult for customers to get the most up-to-date products (Al Mudzakir & Bakar, 2020). The main challenge faced by the Tarigan Clothing Store is maintaining buyer interest and increasing the effectiveness of interactions with customers. Without a computerized system, it can hinder a business's ability to analyze sales data, manual processes also cause customer inconvenience because errors often occur when carrying out buying and selling transactions or there is a shortage of stock which can trigger customer dissatisfaction.

After discussing the problems above, researchers need a mobile-based e-commerce information system used in the sales process at Tarigan clothing stores which is expected to provide a more immersive and interactive experience than websites or platforms that are still desktop-based. This e-commerce information system will be developed using

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customer relationship management (CRM) methods so that it has a significant effect on customer trust (Adrian, Ambarwari, & Lubis, 2020). It is hoped that this technology can help and become a solution to meet research needs and can help increase accuracy and efficiency as well as increase customer service satisfaction, thereby providing a greater competitive advantage.

Customer relationship management is believed to offer direct experience with customers which benefits clothing stores because it can increase sales and increase customer loyalty. Customer relationship management can also offer relationships such as collaborating with remote resellers to manage sales teams and facilitate conversations between buyers and stores. Tarigan clothing store utilizes customer relationship management as a business need very deftly because now it can be accessed via e-commerce platforms and mobile devices which enable practical and smooth management of customer data. With updated data, Tarigan clothing stores also offer more agile customer service and understand customer needs. Having an e-commerce platform that is easy to use and responsive can be critical to remaining relevant in a dynamic market.

Research (Khair, Rosalina, & S, 2021) is related to customer relationship management methods, namely designing e-commerce applications for the Cireng Bawel company. This research was carried out because of several problems such as protests by customers of Cireng Bawel products. They protested because the lack of detailed description of a product made it difficult for customers to order it. To assist in the research process, the author uses a customer relationship management method that is applied to e-commerce applications and is designed to foster customer loyalty and satisfaction with the Cireng Bawel company so that it can make it easier to manage customer data.

Similar research was carried out by (Asrul, Mashud, Qadri, Tamrin, & Ilham, 2023) which was carried out on the Arinda Collection because of the problems experienced, namely the difficulty in conveying product information because there was no website that stated the type of product. So far, Arinda Collection has only displayed posters on social media, but this method has many shortcomings and confuses customers. In an effort to solve this problem, the e-commerce information system built in this research uses a customer relationship management strategy, where the design uses UML.

Further research conducted by (Syahnita, Nofriadi, & Sudarmin, 2022) was carried out at the Umi Nala Shop Aneka Sebu store which sells children's games, household equipment and various gifts but the sales process still lacks facilities that help customers. The sales process also faces challenges in processing and storing customer information that has carried out shopping transactions. Based on this problem, to attract new customers, Umi Nala Shop Aneka Serbu uses a CRM strategy to help the sales and service system.

2. LITERATURE REVIEW

2.1 Customer Realtionship Management (CRM)

CRM is the Process of processing detailed information about individual customers and carefully managing all customers to maximize customer loyalty. Customer is every opportunity where a customer encounters a brand, product, information, actual experience to personal communication or casual observation. Customer Relationship Management (CRM) is the most important concept in modern marketing. In a broader sense, CRM is the entire process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction (Academic, 2023). CRM includes social networks, communications technology, communities, strategy, customer value, and relationships. Incorporating social networking features to analyze the SCRM behavior of recipients and users, as well as business customers involves customers to recognize engagement behavior and the company's ability to capture and pass value back to customers (Rusliyawati, Damayanti, & Prawira, 2020).

2.2 E-Commerce

E-commerce is the distribution, purchase, sale and marketing of goods and services through electronic systems such as television, the internet (World Wide Web), or other computer networks. E-commerce allows transactions between consumers and companies or between companies using computers as intermediaries. The use of e-commerce helps reduce administrative costs and business process cycle times, as well as improve relationships with business partners and customers. Business transactions carried out via the internet are also included in the e-commerce category, which involves selling products and services to consumers (Nurdiansyah, Suci Pratiwi, & Kaunaini, 2022).

2.3 Mobile Application

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Mobile application is the term for applications specifically designed to run on mobile devices such as smartphones or tablets. This application allows users to carry out various activities, ranging from entertainment, selling, studying, doing office work, browsing, and so on. Mobile applications are created specifically for certain mobile platforms such as iOS, Android, or Windows Mobile (Siswandi & Muhidin, 2022).

3. METHOD

3.1. Research Stages

In the research process, a research framework is used to collect, analyze and study data. This research involves a qualitative approach that can understand social phenomena in more depth by describing, interpreting and writing down a situation which will later be analyzed so that conclusions can be drawn from the problem being researched (Siahaan, Siregar, & Latiffani, 2023). Qualitative research methods are also often used in social sciences, anthropology, and sociology whose aims focus on understanding humans and society. The following is a research framework used to create a study achievement:
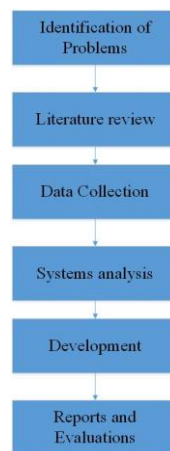

Fig. 1 Research Framework

3.2. Data Collection Strategy

a. **Observation**, a systematic approach is known as observation that directly observes an object and phenomenon being discussed. In this study, the observation process was carried out at the Tarigan Clothing Shop located at Gundaling I, Berastagi District, Karo Regency, North Sumatra 22153.

b. **Interview**, the method used in this research involves direct communication between researchers and shop owners (Babar & Saitakela, 2019). The researcher asked several questions to the shop owner with the aim of digging up information in more depth so as to enable the researcher to understand the problems that existed in the clothing shop.

c. **Literature review**, studying problems related to research. This process is carried out by reviewing books and scientific works according to the information needed (Syaputri, Samsudin, & Ikhwan, 2022). Previous research sources were used as a reference in developing this research which came from a scientific work entitled Design and Implementation of Web-Based Customer Relationship Management (Case study: Ladya Clothes Shop) which was published in the SYSTEMATICS Journal Ilmiah Journal Volume 2 Number 1 April 2020 Edition (1- 11) from Tohirin Al Mudzakir and Abu Bakar.

3.3. System Development Methods

System development is utilized by providing a structure that regulates, manages a software project which is carried out systematically so that it can produce a high quality system and meet user needs. By implementing waterfall, the e-commerce information system is built through stages in accordance with the specifications of user needs starting from requirements, design, implementation, verification and maintenance (Abdul Wahid, 2020).
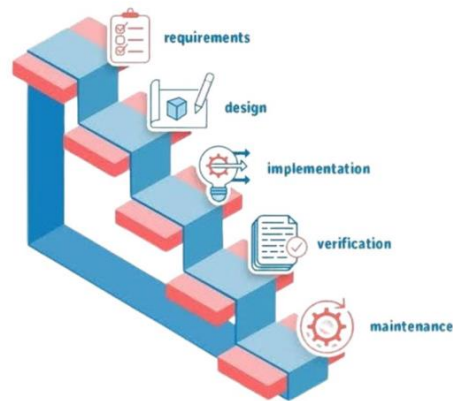
* Corresponding author

Fig. 2 Waterfall Method

There are several main steps in the linear waterfall application development model:

a. **Requirement**, namely the system development stage that seeks to understand the program that collects data through a process of interviews, direct observation and surveys.

b. **Design**, namely designing application architecture based on needs. At this stage, it starts with designing the concept and creating the application from start to finish. Then the teaching materials are designed to create a suitable learning environment so that the assessment runs well and the objectives can be achieved (Wicaksono, Putra, & Hikmahwan, 2022).

c. **Implementation**, namely the process of coding an application based on design and carrying out tests on the application created to collect results that will be used to evaluate, correct and correct errors in order to improve the learning application that has been built.

d. **Verification**, the system is tested to ensure whether the system meets the requirements in whole or in part. System testing (specific code modules), unit testing (system reacting on specific modules) and test taking (on behalf of the customer) (Wahid Abdul, 2020)

e. **Maintenance**, the system is maintained to ensure that the application can function properly.

A company's customer relationship management (CRM) strategy combines internal operational processes with an external network with the aim of encouraging sales growth (Hikmatillah, 2022), so that it can help manage the types and needs of customers easily (Oktaviani, Hasanah, & Mahmudati, 2022) and increase operational efficiency for customers effectively to create customer satisfaction. Customer relationship management helps businesses to provide direct services (Avisya, 2023). Customer relationship management is used to identify customer requirements and desires (Beni Frandian, Yudhanata, Samsudin, & Suendri, 2022) and can help in the company's automation process by marketing products, selling products, and providing services to customers. Customer relationship management in e-commerce is also used to build and maintain customer relationships using a network based on the actions of a developing company (Ramadhani, Syafwan, & Latiffani, 2022).

4. RESULT AND DISCUSSION

This research utilizes customer relationship management (CRM) with the aim of increasing interaction with customers so that it can support business growth. By analyzing customer data to meet customer needs and preferences, it allows stores to be able to provide more responsive service. The following is a flowchart display of the e-commerce information system at the Tarigan Clothing Store:
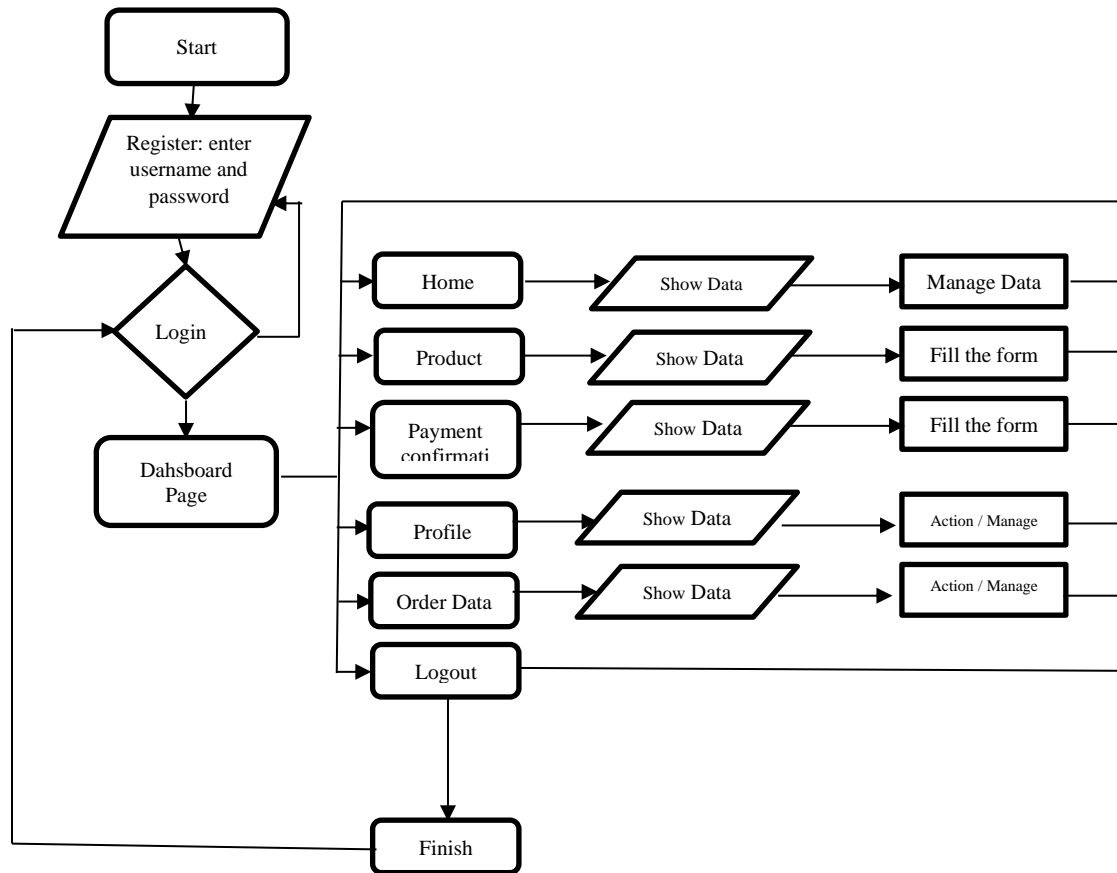
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Fig. 3 System Flowchart

4.1. System Design

Integrated model language (UML) is a standard used to provide visualization, design and document a software system. The following are the results of the Tarigan Clothing Store E-commerce modeling using a CRM strategy:

a. Use Case Diagram

In the Tarigan Clothes Shop application there are two actors who play a role in it, namely the user and the manager. By logging in first, each actor has unique access rights listed below:
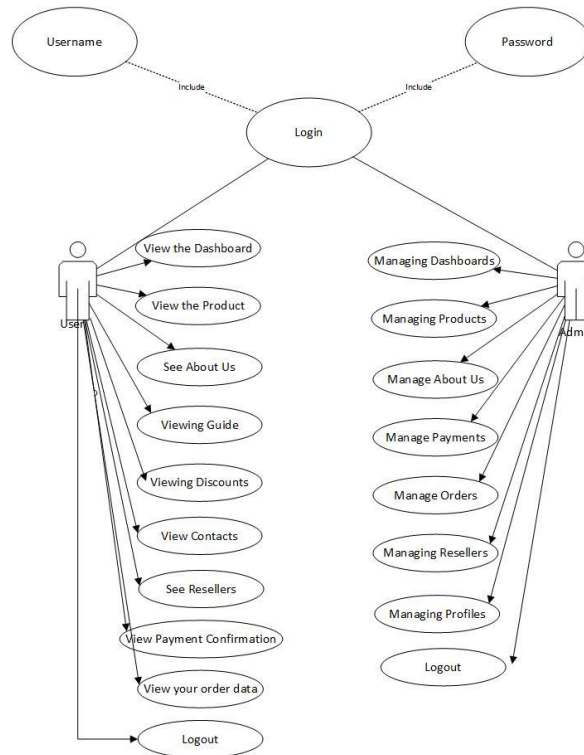
Fig. 4 Use Case Diagram

b. Activity Diagram

Shows the flow of processes that occur sequentially which provides a clear visual representation of how the workflow takes place so as to facilitate understanding between application users. Shows what activities are carried out by the user on the application dashboard, starting from the time the user logs in to the account. On the dashboard there is a product display, about us, guide, promotional discounts, contact us, and resellers.
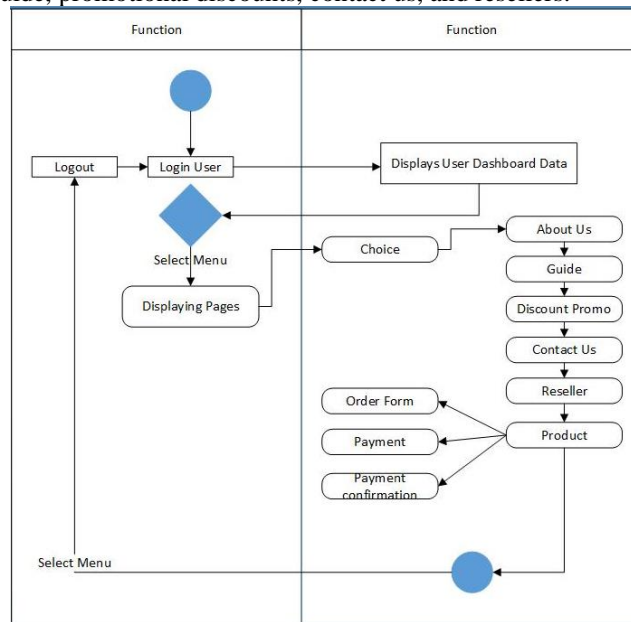

Fig. 5 Activity Diagram

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c. Class Diagram

A process known as a class diagram shows the static structure of a system. Its use is seen from the condition of the data and the relationship between each table which is connected to each other and stored together.
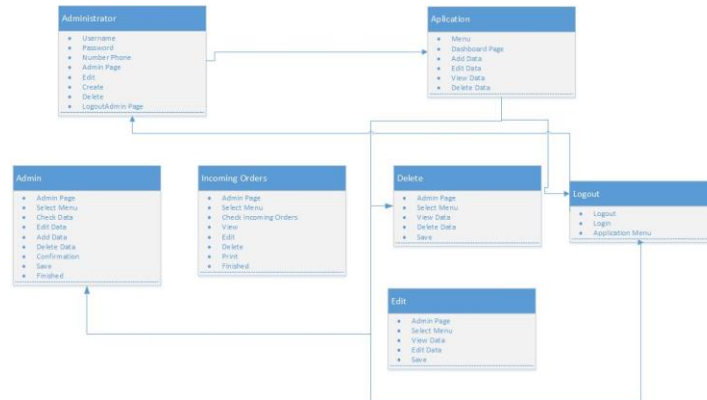

Fig. 6 Class Diagram

4.2. System Implementation

After designing the system using unified modeling language (UML), the system implementation stage must be carried out At this implementation stage, the results of the system designed using a mobile application are discussed. The following process is carried out to implement this system:
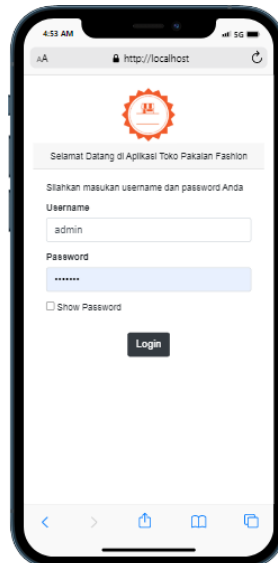
a. Menu Login

Fig. 7 Login Menu

Login is the first step when opening the Tarigan Clothing Store E-Commerce Application. This page contains a security system containing a username and password that can be accessed by the admin. By logging in only verified users can access information and features of the application.

b. Application Dashboard
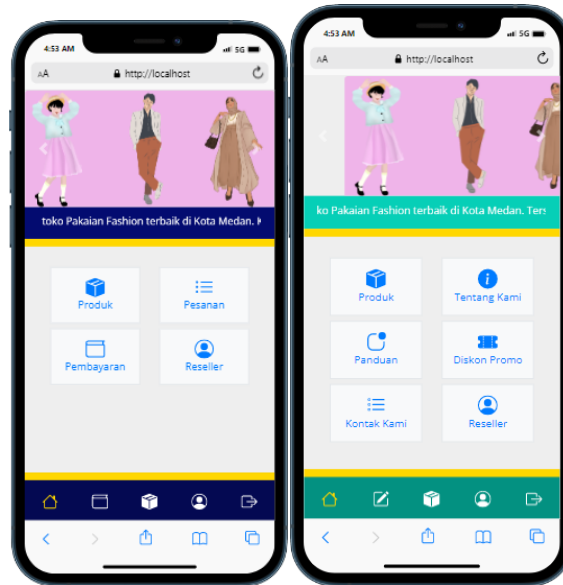
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Fig. 8 Dashboard

The application dashboard is designed to provide easy access to provide information about user needs in the application such as products, guides, contact us, about us, promo discounts, and resellers.
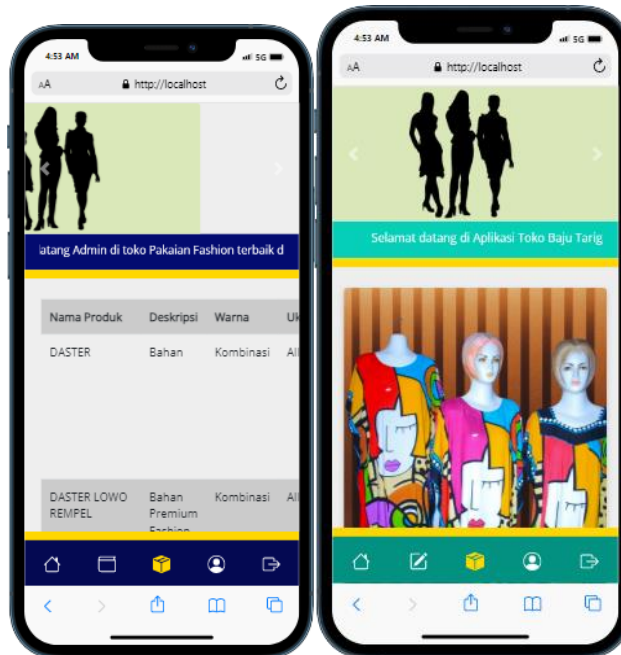
c. Product List

Fig. 9 Product List

The Product List contains the product name, description, color, and size. Products that have been added can be managed by the admin by adding, deleting and editing.

d. Order Menu and Payment Confirmation
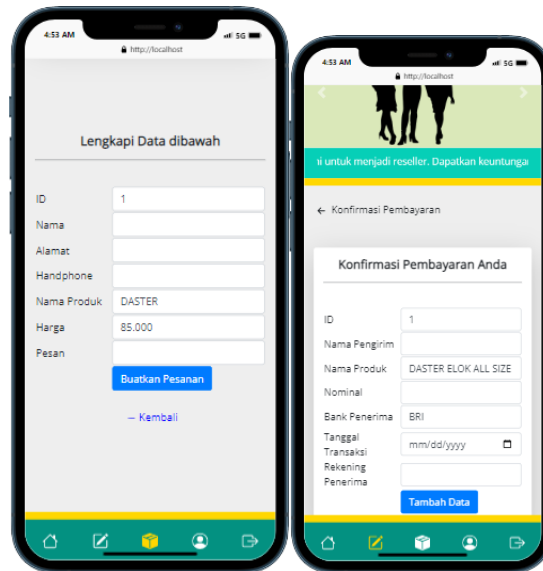 * Corresponding author

Fig. 10 Order Menu and Payment Conirmation

In the order menu, the user fills in the order form which contains ID, name, address, cellphone, name of the product ordered. Then the user can place an order by tapping the "Make Order" button. To process product orders, users can make payment transactions via transfer to the available shop account and fill in the delivery identity.

e. Customer Reviews and Item Location Check

Fig. 11 Customer Reviews and Check the Location of Goods
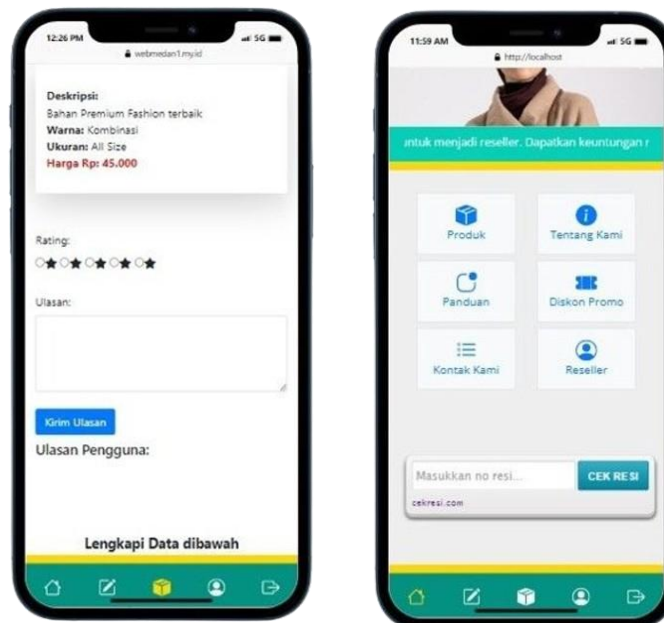
In Reviews, customers can provide a review of the service in the shopping process that has been carried out and customers can also provide a rating by entering the service value in the available stars. Customers can track the whereabouts of goods by entering the delivery receipt number and then the location of the customer's goods will appear.
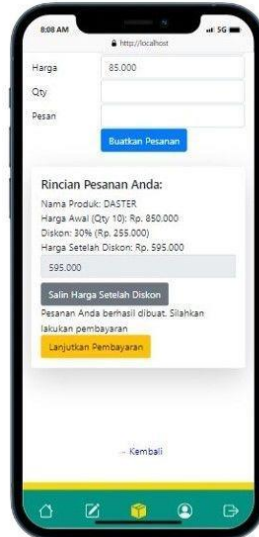
 * Corresponding author

f. Promo Discount

Fig. 12 Promo Discount

In the promotional discount, a discount of up to 30% will be given when the purchase reaches IDR 500,000.-.

4.3. System Testing

Steps taken to ensure the system is of good quality and runs well so that it meets applicable needs and standards by conducting system testing so that feasibility can be determined (Syaputri et al., 2022) a running system. This system is tested using black box testing which focuses on software functionality (M Fahri Aditya Nasution, Suendri, & Muliani Harahap, 2023) which is where the tester inputs and checks the output produced by the system.

Table 1
Blacbox Testing

Testing	Expected Realization	Test result	Results
Menu Login	Enter Username and Password	Login Successfully	Appropriate
Dashboard	Click Dashboard	Successfully Access Dashboard	Appropriate
Product List	Click Product List	Successfully Access Product List	Appropriate
Booking	Click Place Order Click Payment	Successfully Access Order	Appropriate
Payment confirmation		Successful Payment Access	Appropriate
Promo Discount	Click Promo Discount	Successfully Access Promo Discount	Appropriate
Reviews and Ratings	Enter Reviews and Ratings	Successfully Entered Review	Appropriate
Check Item	Enter the Delivery Receipt Number	Checking the location of goods	Appropriate

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Location

5. CONCLUSION

Personalizing the user experience through the use of customer data enables the platform to provide relevant product recommendations and personalized offers, thereby enhancing customer satisfaction and purchase interest. Effective communication facilitated by CRM allows for timely notifications, emails, and in-app messages about promotions, discounts, or new product launches, encouraging customers to make purchases. Implementing loyalty programs integrated with CRM provides incentives for repeat purchases, such as points accumulation, exclusive offers, and special discounts for loyal customers, thus increasing customer retention. CRM's ability to conduct deep analyses of customer behavior, purchasing trends, and feedback helps identify areas for improvement and develop more effective marketing strategies. Enhanced customer service through CRM, with tracking of customer interaction history, enables quicker and more accurate service, boosting customer satisfaction and prompting repeat purchases. Finally, CRM fosters long-term customer relationships by managing data and continuous interactions, which build trust and loyalty towards the platform. By integrating CRM strategies into a mobile-based e-commerce platform, companies can improve user experience, build customer loyalty, and ultimately increase customer purchase interest..

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