

Business Model Canvas for Usability Testing of E-Commerce Website Design Using SEO On-Page Technique

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Abstrak— Advances in information technology have had a tremendous impact on all of the professions today. All buying and selling activities, including selling baby products, have become easier with digital technology, namely the marketplace. Until now, the marketplace business only uses a physical storefront and marketplace to offer their wares. However, there are still obstacles such as the lack of product information obtained by customers due to decreased sales, a wide range of promotions due to lower-income, and discounts when using the marketplace due to lower marketplace revenue. Based on the problems mentioned above, an e-commerce website is needed to solve the problem in the Mimimama store. This e-commerce website is built with the WordPress Content Management System (CMS), and the Business Model Canvas (BMC) method is used to analyze the business model. Designs are built using the Unified Modeling Language (UML), and websites are tested using Usability Testing to ensure the functionality works properly. After the website is built, SEO is applied using On-Page SEO to optimize website pages. Google easily indexes them and is easy to find by customers using certain keywords. The development of an e-commerce website provides answers to make it easier for customers to access information, expand marketing reach, and allow Mimimama to focus more on building the Mimimama store brand.

Keywords— E-commerce, Business Model Canvas, Usability Testing, SEO On-Page.

I. INTRODUCTION

Because of the rapid technology advancements, buying and selling activities are no longer limited to face-to-face interactions. The use of digital technology makes all selling and shopping processes easier. One of the most popular buying and selling activities is through e-commerce. E-Commerce is a process of buying and selling various products electronically from one company to another using a computer as an intermediary for business transactions [1]. E-Commerce can be defined as buying and selling activities carried out via the internet. E-commerce (Electronic Commerce) uses digital processing information and communication technology in conducting business transactions to create, change, and redefine the relationship between sellers and buyers [2]. Using e-commerce can be used to assist business people in developing their business, such as making it easier for customers to make transactions, wider marketing reach, and making it easier to provide product-related information to customers.

The marketplace business is rapidly expanding, and market segment opportunities are becoming increasingly lucrative, allowing customers to prioritize the needs of their children by providing the highest quality products, followed by an increasing number of middle-class customers who are known to enjoy shopping. The Mimimama Store marketplace is the subject of the research that is the center of the discussion. The marketplace is a store that is engaged in selling baby products such as bathing needs, food needs, and milk for toddlers to teenagers, and diapers for toddlers to the elderly. Until now, the Mimimama store marketplace in

selling its products only uses physical stores and marketplaces, but problems still occur. Customers often cancel purchases due to a lack of product information received by customers. In addition, the store experienced a decrease in the number of customers due to the lack of a wide range of promotions. Gain from sales of products through the marketplace was not optimal for their pieces of 1.5% of each transaction (source: interview a by owner marketplace Mimimama). Therefore Mimimama store requires website e-commerce as a medium of online sales to increase sales, d ith using e-commerce at the Mimimama store can make it easier for customers to find product information anywhere and anytime that can be accessed by customers, and increase sales at the Mimimama store.

Previous research discussed applying an e-commerce information system for baby clothes and equipment to create a website to make it easier for customers as an alternative media to conduct sales transactions and assist employees in managing stock [3]. Research to solve problems that occur such as recording transactions that are still manual and product promotion has not been maximized by building online sales using the PHP programming language and MySQL database [4]. The research is building an online sales website using the WordPress CMS. The purpose of the research is to make it easier for customers to buy products sold in stores and provide up-to-date information about the latest products, besides that it also provides the necessary reports [5]. This research aims to find out how to use the website for users, but there are still some things that need further improvement and development to meet customer needs regarding products and product promotions [6]. Research to solve the problems that

occur is to determine the effectiveness of marketplace advertising on television to the people of Jakarta by using the Customer Response Index (CRI) method and this type of research using descriptive research with a qualitative approach [7].

Based on literature studies on several of these studies, however, no research uses a software development model to create an E-Commerce Website Design marketplace using the Business Model Canvas. The evaluation is carried out using Usability Testing and for the SEO strategy using the SEO On-Page Technique.

II. RESEARCH METHODOLOGY

The stages of research carried out in the discussion of this paper refer to Figure 1. The researcher's research steps were initiated by identifying problems and collecting data with methods such as interviews, observations, documentation techniques, and literature studies. The next step is doing business modeling using BMC. Then proceed to analysis and design using UML diagrams such as activity diagrams, use case diagrams, component diagrams, sequence diagrams, and design websites using WordPress CMS. After the website is designed, then proceed with the use of SEO. The last step is to test the website designed using usability testing.

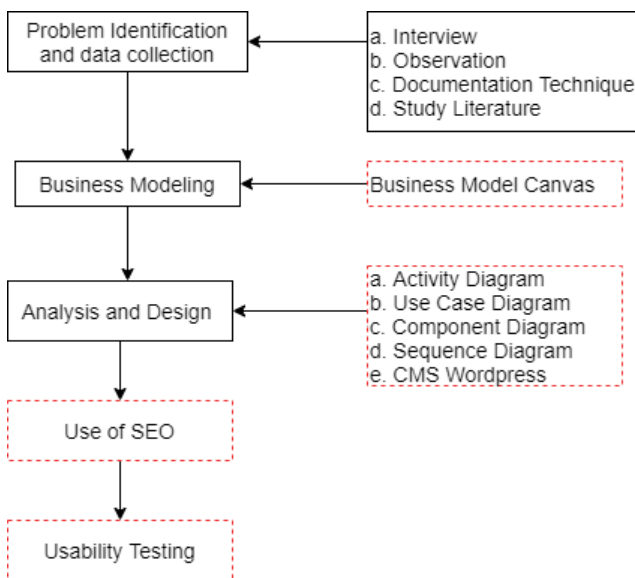


Figure 1. Research steps

A. Problem Identification and Data Collection

Data collection methods used are interviews, observation, documentation techniques, and literature studies. The interview technique is by conducting direct questions and answers with the Mimimama shop owner. In addition to conducting interviews, direct observations were also made on the course of business processes at the Mimimama store: the marketing process, ordering, delivery, payment, and returning goods. After that, the documentation technique is carried out by collecting ongoing transaction reports. Finally, the researcher also conducted a literature study by studying and

reading online journals related to research and other references.

B. Business Modeling

Business modeling is using BMC. BMC is a business model that describes the rationale for how an organization delivers, creates, and captures a value described on a piece of paper. The description is divided into nine elements: the customer segment, value proposition, channel, customer relationship, revenue stream, key resources, key activities, key partners, and cost structure [8]. The Business Model Canvas uses nine elements, namely:

- The value proposition is the value advantage of a product offered by the marketplace.
- Customer segments are a way to determine the customer segmentation that will be a business target by the marketplace.
- Customer relationship is a way that is done by the marketplace to attract new customers and retain old customers.
- Channels are media used to convey value propositions to customers in the marketplace.
- Key activities are activities carried out by the marketplace in creating a value proposition.
- Key partnerships are partners or partners who support the activities of a business in the marketplace.
- Key resources are resources used by the marketplace in running their business.
- Revenue Streams are the revenue earned by the marketplace from customers.
- The cost structure is the cost incurred by the marketplace to carry out its business activities.

C. Analysis and Design

In this analysis and design stage, the researcher uses the Unified Modeling Language (UML). UML is one of the standard languages widely used in the industry to define requirements, make analysis and design, and describe the architecture in object-oriented programming objects [9] [10].

UML diagrams used by researchers such as activity diagrams used to describe the proposed business process, then use case diagrams used to describe the functional system, then component diagrams used to describe software architecture and infrastructure such as plug-ins used in CMS, and sequences. Diagrams are used to describe in detail the messages between system users and the system. Furthermore, in designing the website, the researcher uses CMS Wordpress. CMS Wordpress is one of the platforms that can be used to build a professional online shop, all that is needed to be prepared is a domain name for the website, hosting, and also a template for the online shop [11]. Wordpress is a platform for blogs that is very popular and easy to use [12].

D. Use of SEO

Search Engine Optimization (SEO) is a series of techniques carried out so that information seeker can easily find websites through search engines, in this case, Google [13].

After using a CMS, the next step is to use SEO. SEO is a strategy or way to optimize and increase traffic to a website through the Google search engine using certain keywords.

There are two SEO techniques, namely On-Page and Off-Page SEO. On-Page SEO is an activity carried out on website pages. Search engines can easily index the keywords on the website, and Off-Page SEO is an activity to increase traffic on factors outside the website in influencing rankings. Website according to the targeted keywords [14]. The SEO technique used in this research is to use On-Page SEO techniques, namely by optimizing the website so that it is of high quality and easy to find by users and makes the website look SEO-friendly. The use of SEO on a website is very important because it can improve marketing and the best way to build brand awareness is by increasing the quality of SEO.

E. Usability Testing

One way to evaluate a product is to use usability testing techniques. Usability testing is a technique used to evaluate a product or system where the process of testing the system or product involves direct testing of user representatives [15].

The test carried out in this research is to assess whether the interface of this website is easy to use or not. The user testing technique is used in conducting this test, namely by observing random participants to run certain pages. The pages that you want to test are the registration page, order page, and payment.

III. RESULT AND DISCUSSION

A. Business Model Canvas (BMC)

Key Partnership <ul style="list-style-type: none"> - Supplier - Courier - Hosting and domain provider 	Key Activities <ul style="list-style-type: none"> - Purchase product - Selling products online - Product packaging and shipment 	Value Propositions <ul style="list-style-type: none"> - Providing products for babies and elderly diapers. - Selling various brands of dairy products and diapers. - Diapers with various sizes from S to XXL. - Return Sales. - Fast shipment. 	Customer Relationships <ul style="list-style-type: none"> - Promotion product - Discounts - Customer Reviews - Chat customer service 	Customer Segments <ul style="list-style-type: none"> - Toddlers and children - Elderly over the age of more than 60 years
Key Resources <ul style="list-style-type: none"> - Store - Employee - Website Admin - Website 			Channels <ul style="list-style-type: none"> - Store - Instagram - Whatsapp - Shopee - Website 	
Cost Structure <ul style="list-style-type: none"> - Salary - Purchase a product - Rent a space - Electricity - Admin fee for the website - Fees for hosting and domain 			Revenue Stream <ul style="list-style-type: none"> - Product sales 	

Figure 2. Business model canvas

Figure 2 is the Business Model Canvas for the Mimimama shop created by the researcher. The following is an explanation of the nine elements of the Business Model Canvas, namely:

1) *Value Propositions*: Value propositions in the marketplace provide products for babies and elderly diapers, selling various brands of dairy products and diapers, diapers with various sizes from sizes S to XXL, return sales, and fast delivery.

2) *Customer Segments*: Customs segments in the marketplace to determine customer segmentation are toddlers and children and the elderly over the age of 60 years.

3) *Customer Relationship*: Customer relationship in the marketplace to attract new customers and retain old customers is to hold product promotions, price discounts, customer reviews, and customer service chats.

4) *Channels*: The channels used in the marketplace to deliver value propositions are shops, Instagram, WhatsApp, shopee marketplace, and websites.

5) *Key Activities*: Key activities carried out by the marketplace to create value propositions are purchasing products from suppliers, selling products online, packaging, and product delivery.

6) *Key Partnership*: Key partnerships in the marketplace to support its business activities are suppliers, couriers for product delivery, and hosting and domain service providers as online sales media.

7) *Key Resources*: Key resources in the marketplace are physical stores that require employees to run their business, website admins are in charge of managing products on e-commerce websites, and websites that are used for online sales.

8) *Revenue Streams*: The income obtained by the marketplace from customers is obtained from the sale of baby products.

9) *Cost Structure*: The costs incurred by the marketplace in carrying out its business activities are employee salaries, product purchase costs, space rental costs, electricity costs, website admin fees, and hosting and domain costs.

B. Analysis and Design

a) Activity Diagram

Activity diagrams describe the workflow or activities of a system or business process, or menu in the software [16]. The registration process, as shown in Figure 3, the process of adding products, as shown in Figure 4, the product ordering process, as shown in Figure 5, the product payment process, as shown in Figure 4 as shown in Figure 6, the product delivery process, as shown in Figure 7, are all included in the activity diagram created by the researcher to describe the proposed business process at the Mimimama store. Figure 3 is a registration activity diagram; prospective customers who want to buy products in the Mimimama marketplace must register first by accessing the Mimimama marketplace website, then the system will display the main website page. The customer clicks on the account image, selects the create account menu, and then displays the create form. Accounts and customers fill in the data correctly. After filling in the data, the customer clicks the register button, and then the system checks whether the form is appropriate or not. If it is appropriate, then the system saves the data and sends a successful notification. If it does not match, then the customer must fill in the data correctly.

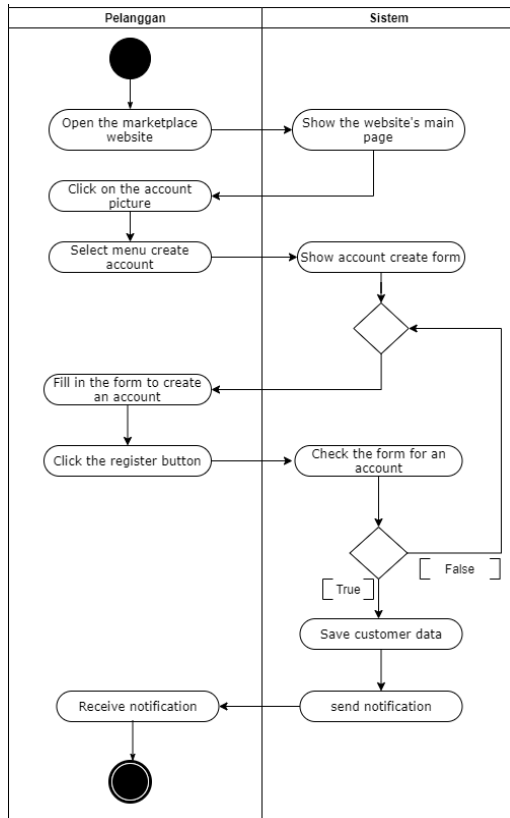


Figure 3. Activity diagram of the registration process

Figure 4 is an activity diagram for adding a product, and the admin enters the back-end page of the website, then selects the product menu, then selects the add product menu. The system will display the add new product form. The admin fills out the form to add a new product and does the SEO settings, the system will automatically save the add product form data, and then the admin clicks the publish button, the system will publish the new product data.

Figure 5 is an activity diagram for product ordering. Customers who want to order products must open the Mimimama marketplace website and log in first. The customer selects a product category, and the system displays the products being sold. The customer selects the product he wants to order, sees product details, selects product variations, determines the number of products he wants to order. If you have finished selecting the product, the customer clicks add to cart button, and then the order is saved into the cart then the system calculates the temporary total shopping. If you want to continue shopping, the customer can update the product and add the product as desired. If the customer does not want to add the product, the customer can directly checkout by clicking proceed to checkout then the system will display the checkout page. On the checkout page, the customer must fill out the order form. After that, click place order, and the system processes the order made by the customer. Next, the system sends an order invoice e-mail notification to the customer and admin, then the customer and admin will receive the notification.

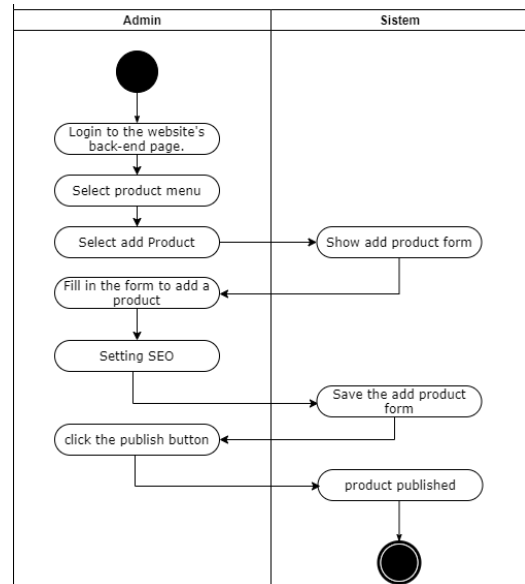


Figure 4. Activity diagram add product

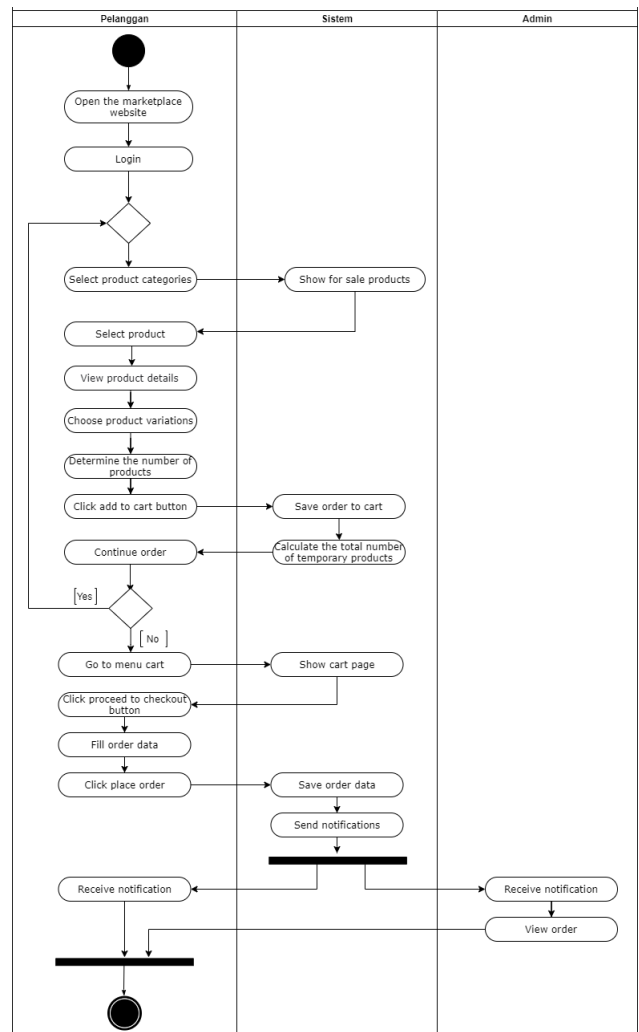


Figure 5. Activity diagram of product ordering

Figure 6 is an activity diagram for product payments. The customer makes a payment according to the total purchase. Then the customer enters the Mimimama marketplace website then the customer selects the confirm payment menu then the system will display the verify payment form. The customer inputs the confirmed payment form. After the data is filled in is correct, the customer clicks the submit button. The system will send a confirmation e-mail notification of payment to the customer. The admin will receive a payment notification and then check the payment if it has been received. The admin will change the order status and if it has not been received the admin will wait for payment for 1 x 24 hours. If you have paid, the system will send a notification payment e-mail is received. The customer receives an e-mail notification of payment received if you have not paid, then the order is automatically canceled.

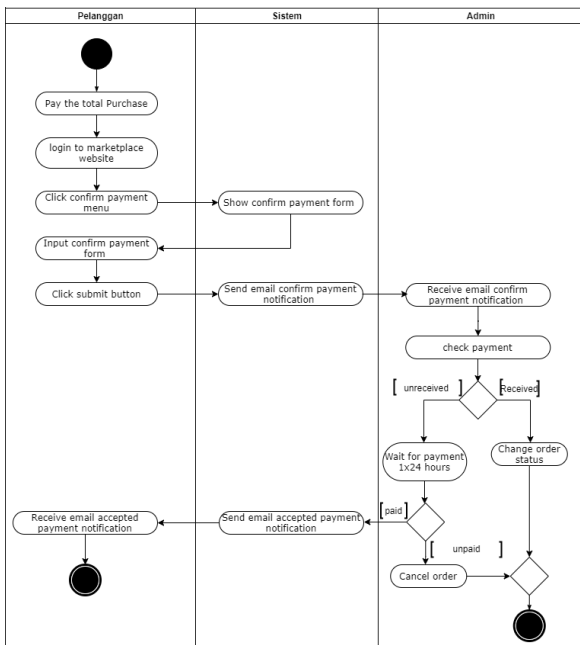


Figure 6. Activity diagram payment

Figure 7 is a product delivery activity diagram. The admin receives a receipt from the expedition, then the admin enters the back-end page, then inputs the receipt number and sends a receipt number note to the customer. The customer receives a receipt number note, and the system will display a receipt number note. Next, the admin will check the order by checking the receipt, if it hasn't been received, the admin will check again, and if it has been received, the admin will change the status of the order complete. The system will display the status of the order complete, then the customer receives the product, then writes a product review, and sends a product review. After that, the admin will receive product reviews.

Figure 8 is a sales report activity diagram. The admin enters the back-end website page, selects the analytics menu, and selects the product menu. The system will display sales reports per product on the Mimimama marketplace.

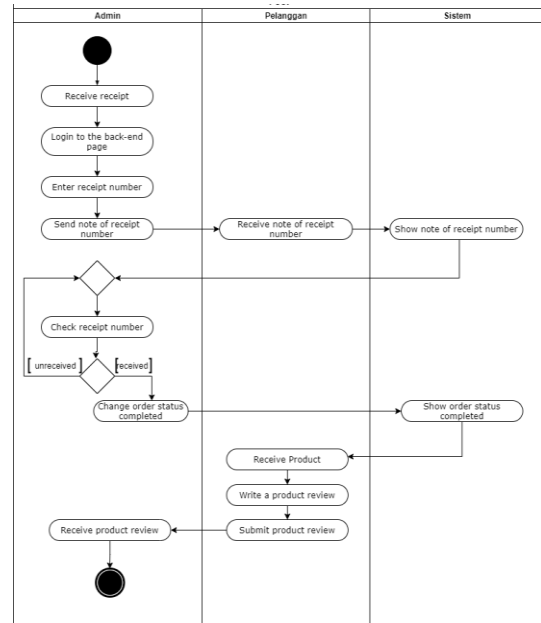


Figure 7. Activity diagram of product shipment

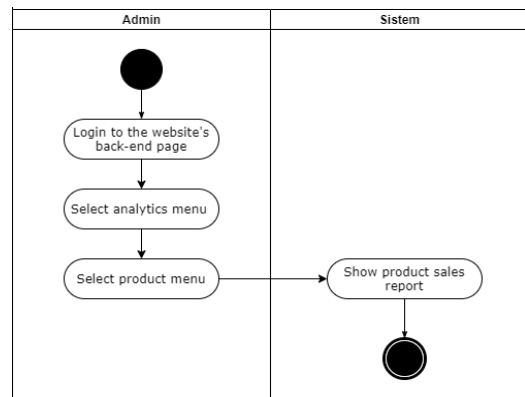


Figure 8. Activity diagram sales report

Figure 9 is a revenue report activity diagram. The admin enters the back-end website page then selects the analytics menu then selects the revenue menu, and then the system will display the revenue report on the Mimimama marketplace.

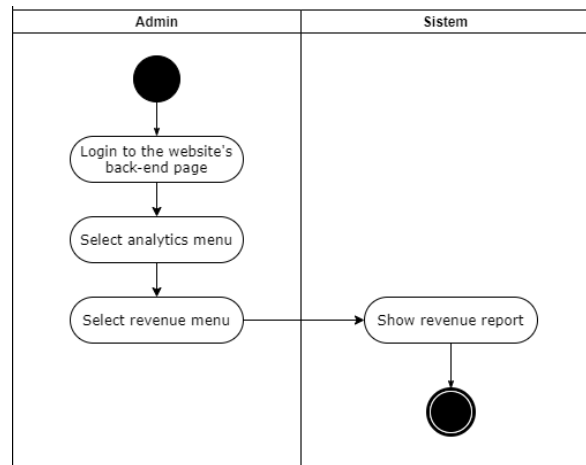


Figure 9. Activity diagram revenue report

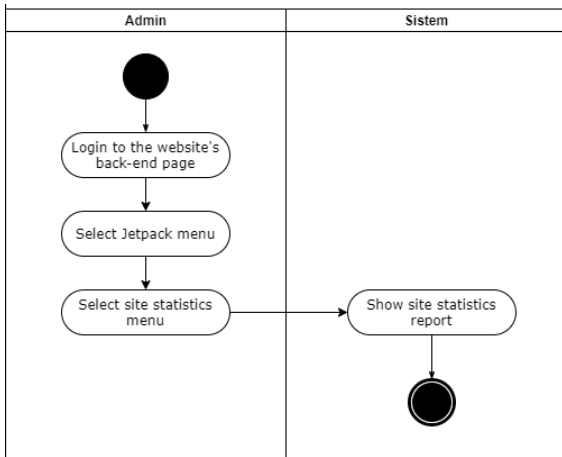


Figure 10. Activity diagram website traffic report

Figure 10 is an activity diagram for website traffic reports. The admin enters the back-end website page then selects the analytics menu then selects the site statistics menu, and then the system will display site statistics reports on the Mimimama marketplace.

b) Use Case Diagram

Use Case is a series or description of groups that are interrelated and form a regular system carried out or supervised by an actor. Use Cases are used to shape the behavior of objects in a fashion and are realized by a collaborator, generally. Use cases are depicted by an ellipse with a solid line, usually containing a name. Use cases describe system processes [17].

The use case diagram created by the marketplace uses two user use cases: the customer and admin users. Figure 11 is a business model that will be made at the Mimimama store based on its business processes.

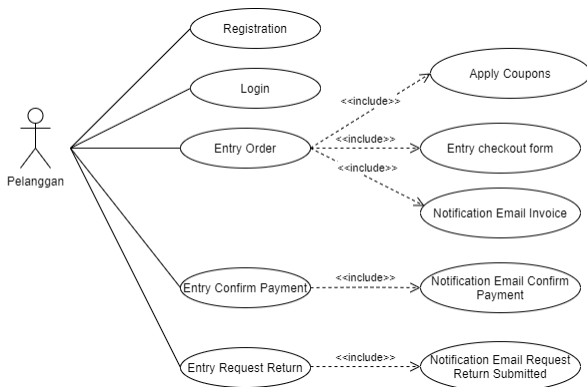


Figure 11. Use case user customer

Figure 11 is the customer's use case, from the Mimimama website functionality, the customer user can register which is used to register on the website, after that the customer receives an e-mail notification to create an account as information that the registration was successful so that the customer can log in which is used to enter the page. mimimama website, then the customer can enter an order that is used to place an order for the product then after placing an

order the customer receives an e-mail invoice notification as proof of the order being received, then the customer can enter payment confirmation as proof of payment from the order made After the customer confirms the payment, the customer will then receive an e-mail notification that the payment confirmation has been received.



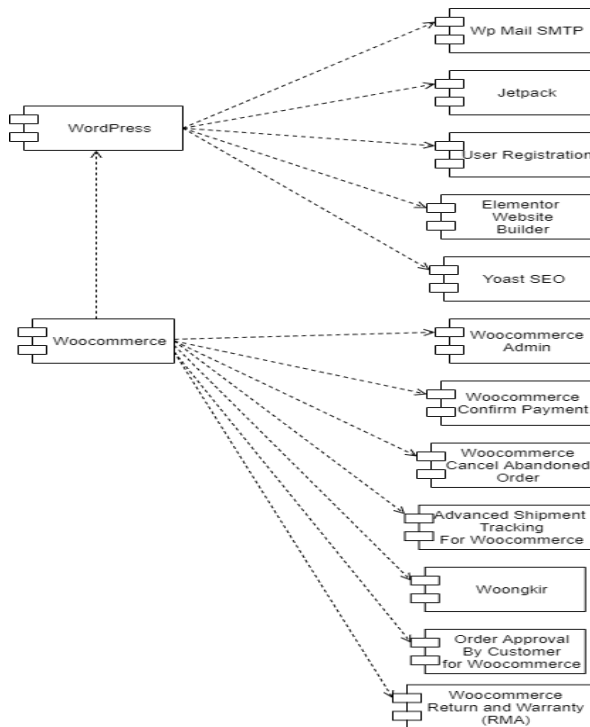
Figure 12. Use case user admin

Figure 12 is an admin user use case. From the functionality of the Mimimama website, the admin user can log in to enter the back-end page of the website. After successfully logging in, the admin can enter the product used to add new products. Besides that, the admin can verify proof of payment from confirmation of payment made by the customer. In the delivery process, the admin can input the receipt number, followed by sending a receipt number note notification to the customer. Admin can change the order status from on hold to being processed, which then after the order is received, the customer gets a notification of order completion. Admin can view sales reports per period, view revenue reports per period, and view website traffic reports.

c) Component Diagram

Component Diagram describes the architecture and software infrastructure used in the design of an Information System [18]. Figure 13 is a component diagram of the plug-in used in the designed WordPress Content Management System (CMS). In addition to the WordPress plug-in, the woocommerce plug-in is also used which depends on the WordPress plug-in. While WP mail, jetpack, user registration, elementor, website builder, Yoast SEO depend on WordPress plug-ins. While the woo-commerce admin plug-in, woocommerce confirm payment, Woocommerce Cancel Abandoned Order, Advanced Shipment Tracking for Woocommerce, woongkir, Order Approval by Customer for Woocommerce, and Woocommerce Return and Warranty depends on the woo-commerce plug-in:

- WordPress is an open-source CMS platform that functions to build and maintain websites such as editing content, creating new posts and pages without having to master a programming language first.



• Figure 13. Component diagram marketplace

- Wp Mail SMTP is a WordPress plug-in used to make it easier to configure SMTP e-mail in sending the e-mail on the website.
- Jetpack is a WordPress plug-in that is used to protect websites from spam to malware scanning and helps optimize website performance and marketing.
- User Registration is a plug-in used to make it easier to create registration and login forms on the website.
- Elementor Website Builder is a plug-in that helps in creating website designs easily and quickly.
- Yoast SEO is a plug-in that helps in improving Search Engine Optimization (SEO) of a website and increasing page rank on search engines.
- Woocommerce is a WordPress plug-in that is used to improve or develop an online business.
- Woocommerce Admin is a plug-in that easily helps admins manage, monitor, and filter reports on websites.
- Woocommerce Confirm Payment is a plug-in used to create payment confirmation pages and forms for orders on websites.
- Woocommerce Cancel Abandoned Order is a plug-in that is used to help manage the order system if the order made has not made a payment and has passed the specified time limit, and the system will automatically change the order status to cancel

- Advanced Shipment Tracking for Woocommerce is a plug-in used to help add tracking information to orders and make it easy for customers to track orders.
- Woongkir is this plug-in that helps provide shipping cost information provided by the expedition for the shipping system on the website.
- Order Approval by Customer for Woocommerce is a plug-in used to assist customers in confirming orders have been received.
- Woocommerce Return and Warranty is a plug-in used to help process and manage customer requests for product returns and warranties.

d) Sequence Diagram

Sequence diagrams are used to describe the behavior of actors in a system in detail over time. This diagram shows some examples of objects and messages that are placed between objects in the use case [19]. The sequence diagram made by the researcher is the order sequence diagram which looks like Figure 14, the payment confirmation sequence diagram looks like Figure 15, the sales report sequence diagram looks like Figure 16, and the revenue report sequence diagram looks like Figure 17.

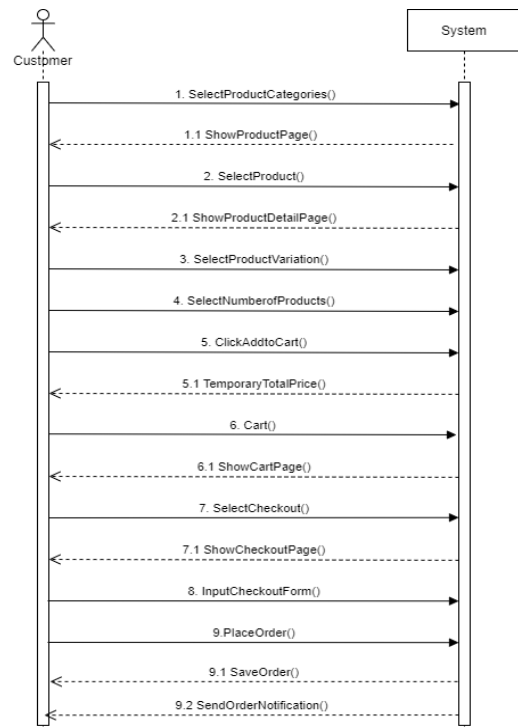


Figure 14. System sequence diagram create an order

Figure 14 is a sequence diagram for making an order, the customer, in placing an order for a product, interacts with the system, namely the customer selects the product category, then selects the desired product. The system displays the product detail page, then the customer selects the product variation, selects the number of products, then clicks the

button. add to cart, then the order will be saved into the cart then the system will calculate the total shopping while then the customer enters the cart menu, then selects checkout by clicking proceed to checkout then the system will display the checkout page. On the checkout page, the customer must fill out the checkout form. After that, click creates order, and the system processes the order made by the customer. Then the system sends an e-mail notification of the order to the customer.

Figure 15 is a payment confirmation system sequence diagram, which illustrates the interaction between customer actors and the system. First, the customer logs in to the website, then select the confirm payment menu, and then the system will display the confirm payment page. The customer inputs the confirm payment form and clicks submit, and then the system will send a notification via e-mail.

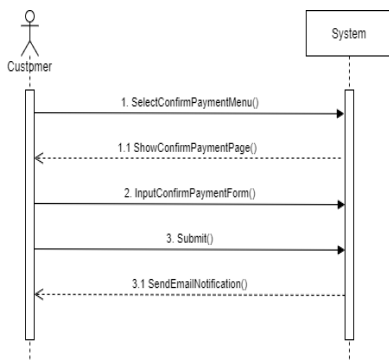


Figure 15. System sequence diagram confirm payment

Figure 16 is a system sequence diagram of a sales report, which illustrates the interaction between admin actors and the system. Firstly the admin enters the back-end website page then opens the analytics menu, then the system will display the analytics page, then the admin selects the product menu, then the system will display the product page, and then the system will display sales reports per product on the Mimimama marketplace.

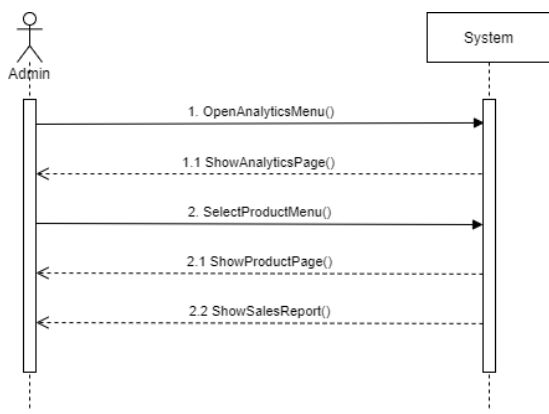


Figure 16. System sequence diagram sales report

Figure 17 is a system sequence diagram of a revenue report that depicts the interaction between admin actors and the system. Firstly the admin enters the back-end page of the

website then the admin opens the analytics menu then the system will display the analytics page, then the admin selects the revenue menu then the system displays the revenue page, and then the system displays the revenue page. Then the system will display a revenue report on the Mimimama marketplace.

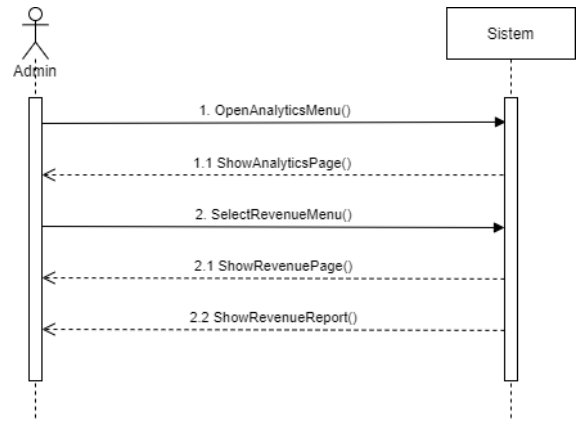


Figure 17. System sequence diagram revenue report

C. Result of Using SEO

The following are the implementation test results of the use of SEO strategies carried out by the author on June 25, 2021, at 17:36 WIB. This SEO result was successfully indexed by Google and was on the first page of third-place using the keyword "Cheapest regular zee chocolate milk in the Ciledug area," as shown in Figure 18.

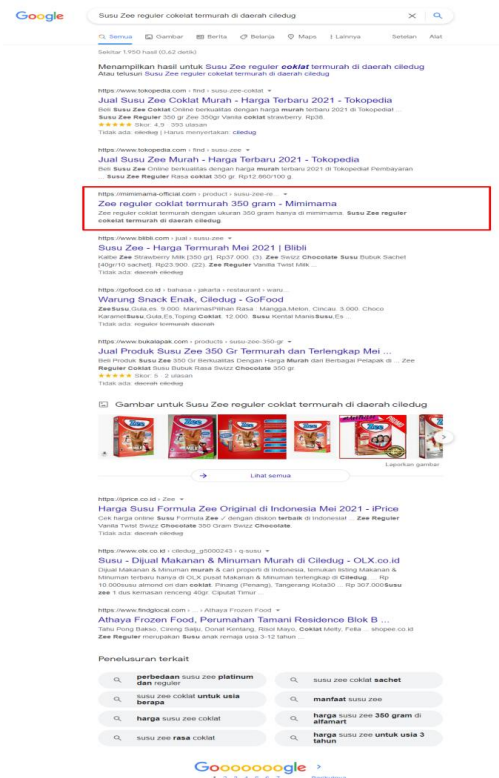


Figure 18. Result of using SEO

D. Usability Testing

In conducting usability testing, researchers observed the use of the website by random participants, and then the results were recorded on usability problems. This section describes how the data were collected and applied to each research question. In this study, the authors used questionnaires and assignments that had been designed to align with the research questions so that the data collected were by these questions. The following are the statements used in the questionnaire, which can be seen in Table I.

TABLE I
 USABILITY TESTING STATEMENT [20]

No	Statements
1.	Navigation paths met my expectations.
2.	I knew where I was in relation to the homepage at all times.
3.	I could retrace back my path easily.
4.	Information was presented in a way that made sense.
5.	The website was designed to meet user's needs.
6.	I think the site was well laid out.
7.	When I clicked on the homepage menu, I found what I expected.
8.	If I had to repeat it, I could complete the tasks I did.
9.	If I had to repeat it, I could complete the tasks I failed.
10.	Finding information on the site was easy.
11.	I can find information quickly on the site.
12.	The appearance of the site made it pleasant to use.

In addition to using a questionnaire, the researcher also uses tasks that are used to measure the success of the website created. The following are the tasks given by the researcher, namely:

- Task 1 – Find the My Account menu icon
- Task 2 – Find the products that are on sale
- Task 3 – Place an order for the product
- Task 4 – Confirm payment
- Task 5 – Find Mimimama store location information

In this section are answers to research questions. In conducting research using qualitative methods with responses using a Likert scale, the percentage of participants who choose various ranks is interpreted. The statements in the table below are derived from the questionnaire using the following instructions: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, and SA = Strongly Agree.

"Agree" is used to include responses from "Agree" and "Strongly Agree", and "Disagree" is used to include responses from "Disagree" and "Strongly Disagree," which can be seen in Table II.

IV. CONCLUSION

Several conclusions can be drawn based on the research results, including the Mimimama e-commerce store website created to help customers find product information and expand Mimimama's marketing reach by using On-Page Search Engine Optimization (SEO), which places the Mimimama website page. On the first page of google search. The results using qualitative methods with responses on a Likert scale on the e-commerce website of the Mimimama store indicate that 100 percent agree that the navigation menu, website pages, and menus are easy to use, and 83 percent agree that the information presented still makes sense, website

meet user needs, and the menus on the website are easy to use. Furthermore, 17% disagreed that the information provided was logical, the website complied with user requests, the information was easy to find, and the website looked pleasant to use. Search Engine Optimization (SEO) still needs to be optimized to expand the reach of marketing by increasing the website's page rank on search engines such as Google search, and in addition to utilizing SEO on Page, you can also use Off-Page SEO to optimize it more optimally. The design or interface of the Mimimama store e-commerce website should be improved to make it easier for users to understand, such as by using more user-friendly themes or plug-in templates.

TABEL II
 USABILITY TESTING RESULTS

No	Statements	Disagree	Neutral	Agree
1.	Navigation paths met my expectations.	0%	0%	100%
2.	I knew where I was in relation to the homepage at all times.	0%	0%	100%
3.	I could retrace back my path easily.	0%	0%	100%
4.	Information was presented in a way that made sense.	17%	0%	83%
5.	The website was designed to meet user's needs.	17%	0%	83%
6.	I think the site was well laid out.	0%	17%	83%
7.	When I clicked on the homepage menu, I found what I expected.	0%	17%	83%
8.	If I had to repeat it, I could complete the tasks I did.	17%	0%	83%
9.	If I had to repeat it, I could complete the tasks I failed.	0%	17%	83%
10.	Finding information on the site was easy.	17%	0%	83%
11.	I can find information quickly on the site.	17%	0%	83%
12.	The appearance of the site made it pleasant to use.	17%	0%	83%

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