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KADOKU: Digital Innovation in Finding the Best Gifts Through Web Platform

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ABSTRACT

Gift exchange is a significant social phenomenon, serving as a form of communication and emotional expression. However, the challenges of modern life often make it difficult for individuals to select and acquire suitable gifts within a limited timeframe. This research addresses the issue by designing and developing a Gift Sales Website named Kadoku, which integrates the concept of E-Commerce to support gift outlet business owners. Utilizing the Scrum methodology, the website incorporates a live help feature to assist users in finding their desired gifts efficiently. The system underwent black box testing to ensure functional validity, and its usability was evaluated through a survey of 15 respondents. The findings revealed that 85% of users considered the website easy to operate, 84% stated it facilitated their gift selection process, and 83% expressed overall satisfaction with the platform as a solution for simplifying gift searches. By averaging the user feedback scores, the website achieved an overall agreement level of 77.02%, demonstrating its effectiveness in addressing user needs. This study highlights the potential of E-Commerce platforms, developed with agile methodologies like Scrum, to enhance user experience and provide practical solutions for everyday challenges. Kadoku serves as a viable model for future innovations in the gift retail sector.

Keywords: Website, Gift, Digital Innovation, E-Commerce, Kadoku

Introduction

Culture reflects the ways and steps humans take to understand and organize their world. This world is formed by people who establish relationships between humans, even involving generations [1]. Humans, in their life journeys, always desire to communicate with each other. In communicating, they exchange symbols with agreed-upon meanings through verbal and non-verbal expressions [2]. They believe that the effort to understand the meaning of life with responsibility is a challenge. In addition, individuals can develop a sense of love and receive affection from others, understanding that these aspects provide beauty in life [3].

The phenomenon of sending gifts, receiving gifts, and giving suggestions for choosing gifts for friends or closest relations having birthdays or other happiness. This trend ultimately forms a social system that involves various products and goods [4]. This form of communication allows us to show appreciation, love, and respect for the people we care about [5]. Not understanding the gift given can cause discomfort and even cause feelings of shame, both for the giver and the recipient of the gift [6]. People often face difficulties finding appropriate gift ideas for certain events in everyday life. In addition, to obtain it, they still need to visit conventional gift shops to order and purchase gifts [7]. PHP and SQL are crucial for solving business processes by enabling dynamic web features like user registration, gift browsing, and admin support, while SQL manages data like inventory and transactions. Together, they streamline processes, ensuring efficient gift selection and purchase.

The PHP programming language is a scripting language placed on the server and then processed. Explicitly designed to build dynamic websites [8]. SQL Database is an RDBMS (Relational Database Management System) server, a software that allows database users to create, manage, and utilize data in a relational structure [9]. PHP and MySQL have been used by several previous studies in education [10] [11] and in economics [12] [9] PHP and MySQL are a collaboration between programming languages and database services that are currently popular. Research related to the analysis and design of the Kadoku application for gift sales shows that M-Commerce is recognized as a marketing tool supporting gift shop owners to expand their sales reach [7] significantly. The website that is developed can increase the effectiveness and efficiency in processing sales transaction data [13]. Other studies show that the buyer's process for ordering gifts will be easier and faster [14]. By developing a website that offers explicitly hamper sales services, it can overcome difficulties in the gift-wrapping process [15]. The contribution of PHP and SQL to solving the proposed problem lies in their ability to automate and optimize key business processes.

Based on the above studies, it can be seen that it is rare to find a gift website that is equipped with a helpful consultation feature. Thus, the contribution proposed in this study is developing a gift suggestion feature provided by the admin via chat on the website platform, which is done by implementing the scrum method. The main objective of this study is to provide convenience to buyers in overcoming the challenges of finding a suitable gift, especially in situations of time constraints. PHP and MySQL are some of the technology choices used to create the Kadoku website. Both when creating several menus that will be selected by customers and the back end of the application that will be used by an admin to set up the system.

Method

The scrum method is one of the agile development frameworks used in this application, where the Kadoku analysis and development process prioritizes flexibility and typical responsiveness. With short iterations and close collaboration between developers, designers, and stakeholders, it can ensure rapid adaptation to changing customer needs, resulting in a gift sales application that is innovative and also by the dynamics of the ever-changing market [16]. The Scrum methodology represents a prominent framework for managing intricate projects, particularly in software engineering. Fundamentally, Scrum encourages a cooperative work ethos, underscoring the importance of teamwork, transparency, and adaptability. In contrast to conventional project management paradigms that depend on exhaustive preliminary planning, Scrum functions based on iteration and continuous enhancement principles.

Within the Scrum framework, tasks are structured into brief iterations called "sprints," which generally span one to four weeks. Throughout each sprint, the team delivers an increment, a small, concrete component of the overarching project. Regularly scheduled meetings, including daily stand-ups and sprint assessments, maintain team cohesion and ensure that progress remains aligned with objectives. Scrum empowers teams to adjust to evolving requirements and produce high-quality deliverables efficiently and swiftly by segmenting the workload into manageable units and emphasizing flexibility and responsiveness [17].

At its core, Scrum seeks to address customer demands through transparent communication, collective accountability, and a dedication to perpetual enhancement. Initiating with a broad project concept, it systematically refines this vision into a prioritized compilation of features (termed the product backlog) that correspond with the product owner’s goals. This agile methodology has emerged as a fundamental element in software development, fostering innovation and enhancing customer satisfaction.

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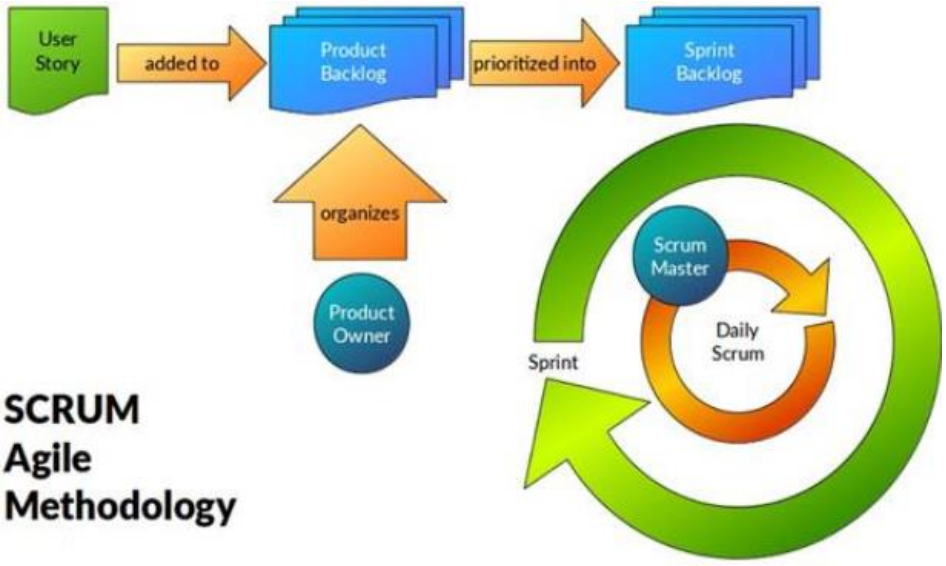

Figure 1. Scrum Agile Methodology

The explanation of the Scrum Agile Methodology process in Figure 1 is as follows:

a) User Story is a detailed description of the system requirements[17]. User stories will record all desired user requirements, usually in the form of notes prepared to be included in the product backlog.
b) The Product Backlog defines the needs of business actors. The description of these needs is dynamic, and often, needs can change [18]. The Product Backlog is usually a list of team tasks that are continuously maintained and re-prioritized to suit market changes. Developers will maintain and update the list, remove irrelevant items, and add new requests from customers.
c) Sprint Planning is a scheduled activity during the sprint, where the work done, the problems faced, and the target completion are discussed as discussion material for the next meeting [19].
d) Sprint Backlog focuses on compiling a list of the main user needs, taking into account the set work schedule [20]. At the end of the Sprint, the team gathers for an informal session to review the work that has been completed and show it to the customer. Developers may also rework the Product Backlog based on the current Sprint.

Results and Discussion

A. User Story

A User Story describes the system user's identity, tasks, and goals. It is very significant because the list of user stories becomes a guideline for forming the product backlog and subsequent development steps. For example, it is in Table 1 below.

Table 1. User Story

Actor	Action	Reaction
Admin	A. Collect Customer Information	Collect information about the interests, hobbies, and needs required by customers.
	B. Manage customer orders, including validating payments made by customers	Admin can immediately process customer orders to be sent to the destination address.
	C. Gift Acceptance	prepare gifts that will be given to customers according to the orders that

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Actor	Action	Reaction
		have been made.
Customers	A. Order reference	Customers can view stock, prices, and product descriptions. Customers can select more than 1 product before the ordering and payment stage.
	B. Determine the budget	Customers determine their financial budget to buy gifts that are suitable for their budget. Shipping cost estimates appear.
	C. Payment	The customer makes payment according to the gift ordered
	D. Gift Acceptance	The customer receives a gift according to the order that has been paid for.

B. Product Backlog

Product Backlog is the initial stage in the system development process using the Scrum method. Various elements will be created in this phase, including business processes, actors, activities, and system structures. The content comes from the results of the User Story identification that has been done previously. Table 2 below shows the composition of the Product Backlog, focusing on building a website-based system using the PHP programming language and SQL database. Number 1 reflects low priority, number 2 indicates medium priority, and number 3 indicates high priority.

Table 2. Product Backlog

No	Item	Priority
1.	System and database design	3
2.	Admin login page	1
3.	Customer login page	1
4.	Admin dashboard page	2
5.	Admin product data page	3
6.	Admin purchase data page	1
7.	Admin purchase data detail page	1
8.	Customer home page	1
9.	Customer product detail page	2
10.	Customer cart page	2

The next step is designing an information system using UML (Unified Modeling Language), a system design modeling method inspired by OOP (Object-Oriented Programming). Several types of UML diagrams created in this process include Use Case Diagrams, Activity Diagrams, and Class Diagrams. The correlation between Scrum and UML lies in their complementary use during agile development. Scrum provides an iterative framework for managing development tasks, while UML (Unified Modeling Language) offers visual tools to model and communicate system designs. In Scrum, UML diagrams like Use Case Diagrams, Class Diagrams, and Activity Diagrams are often used during sprint planning and backlog refinement to visualize requirements, define workflows, and ensure a shared understanding among team members. This integration helps maintain alignment between iterative development cycles and the overall system architecture.

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1. Use Case Diagram

A Use Case Diagram explains the interaction between one or more actors with the information system to be created. It helps in understanding and documenting various usage scenarios that can occur in the system [21]. Below are the Use Case Diagrams and Use Case Scenarios from the Kadoku website.

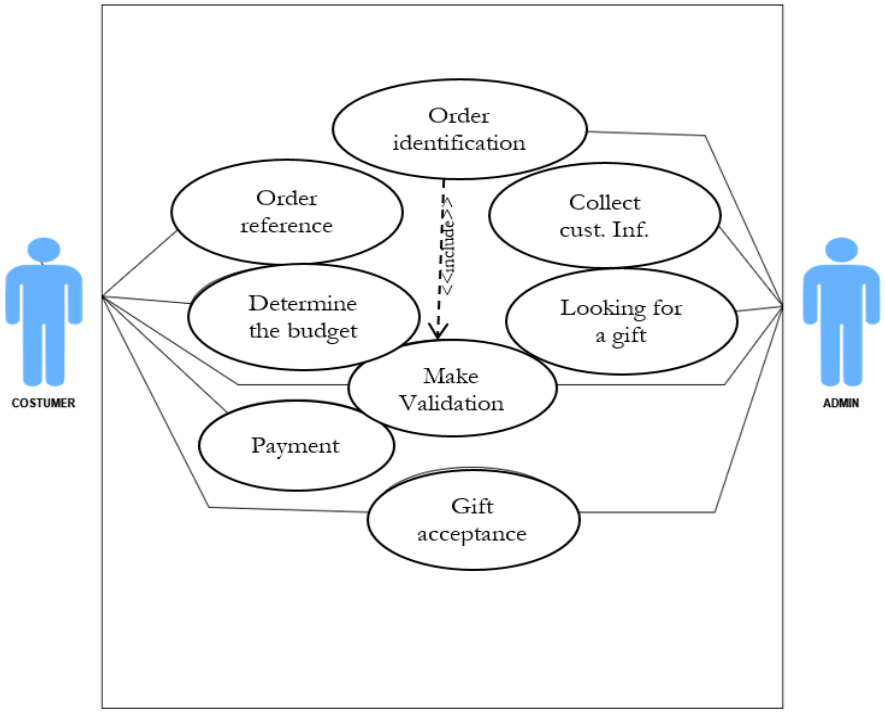

Figure 2. Use Case Diagram Gift Purchase

Figure 2 explains the overall activities of the admin and customer. The admin can access order identification, collect information about the interests and needs of the recipient, search for unique gifts, and validate and give gifts to the recipient according to the customer's request. In the customer activity, they can provide recipient references and determine a budget that is by finances, and the admin can send gifts. After creating a use case diagram, a use case scenario is created to explain the flow of each process. The following is a table of use case scenarios.

Table 3 below explains the customer's order identification, process. The customer explains and identifies the order to the admin and can then choose a gift that the admin has recommended.

Table 3. Customer Order Identification

Usecase	Customer order identification
Description	The customer explains and identifies the order.
Actor & interface	Actor: Customer; Interface: Identification page
Pre- Condition	The actor has not entered the identification
Basic Flow	a. The actor opens the identification page b. The actor enters the identification form
Post- Conditional	The actor selects the option recommended by the admin.
Alternative(s) Flow	-

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Table 4 below explains how the admin collects information about the recipient's interests, hobbies, and needs and searches for information that will be recommended to customers.

Table 4. Collecting Information About the Recipient's Interests, Hobbies and Needs

Usecase	**Collecting information about the recipient's interests, hobbies, and needs**
Description	Admin searches for information provided by customer
Actor & interface	Actor: Admin Interface: admin page
Pre-Condition	The actor has not received information
Basic Flow	The actor opens the admin page.
Post-Conditional	The actor has received information from the customer.
Alternative(s) Flow	-

After the customer finds a unique gift that suits their wishes and budget, they choose a payment method and pay for the goods they have ordered. Table 5 provides a detailed explanation.

Table 5. Make a Payment

Titled	**Payment**
Description	Customer Melakukan pembayaran sesuai pesanan
Actor & interface	Aktor: Customer Interface: Payment page
Pre-Condition	The actor has not made payment.
Basic Flow	a. Actor enters the payment page b. Actor selects a payment method c. The actor makes the payment
Post-Conditional	The actor has made the payment.
Alternative(s) Flow	-

Table 6 below explains the conditions under which the customer validates whether the order has been processed, and the admin will process it if the customer has made the payment; this page will open if the customer has made the payment.

Table 6. Validation

Usecase	**Make validation**
Description	Admin and Customer validate each other's orders
Actor & interface	Actor: customer and admin Interface: Validate page
Pre- Condition	The actor has not entered the validation page
Basic Flow	a. The actor enters the validation page b. The actor validates the order
Post- Conditional	Actors have validated each other.
Alternative(s) Flow	-

Table 7 below explains the conditions under which the customer validates the order until the package delivery page appears. The customer uses this page to view delivery information until the package arrives at the destination address.

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Table 7. Gift Acceptance

Usecase	Gift Acceptance
Description	Admin sends order customer receives orderpesanan
Actor & interface	Actor: Customer and admin Interface: Shipping information page
Pre- Condition	The actor has not completed the order.
Basic Flow	The actor enters the shipping page.
Post- Conditional	The actor sees the shipping information page
Alternative(s) Flow	-

2. Activity Diagram

An activity diagram is a diagram that describes the activities or workflows that occur in the kadoku website system [22]. Figure 3 describes the sequence of activities, starting with the main menu display by the system, customers giving gift preferences, admins viewing and processing customer information, the system displaying products with prices, customers choosing the system prices, and customers making payments. After payment, a courier delivers the order, creating a series of activities that end as the final step.

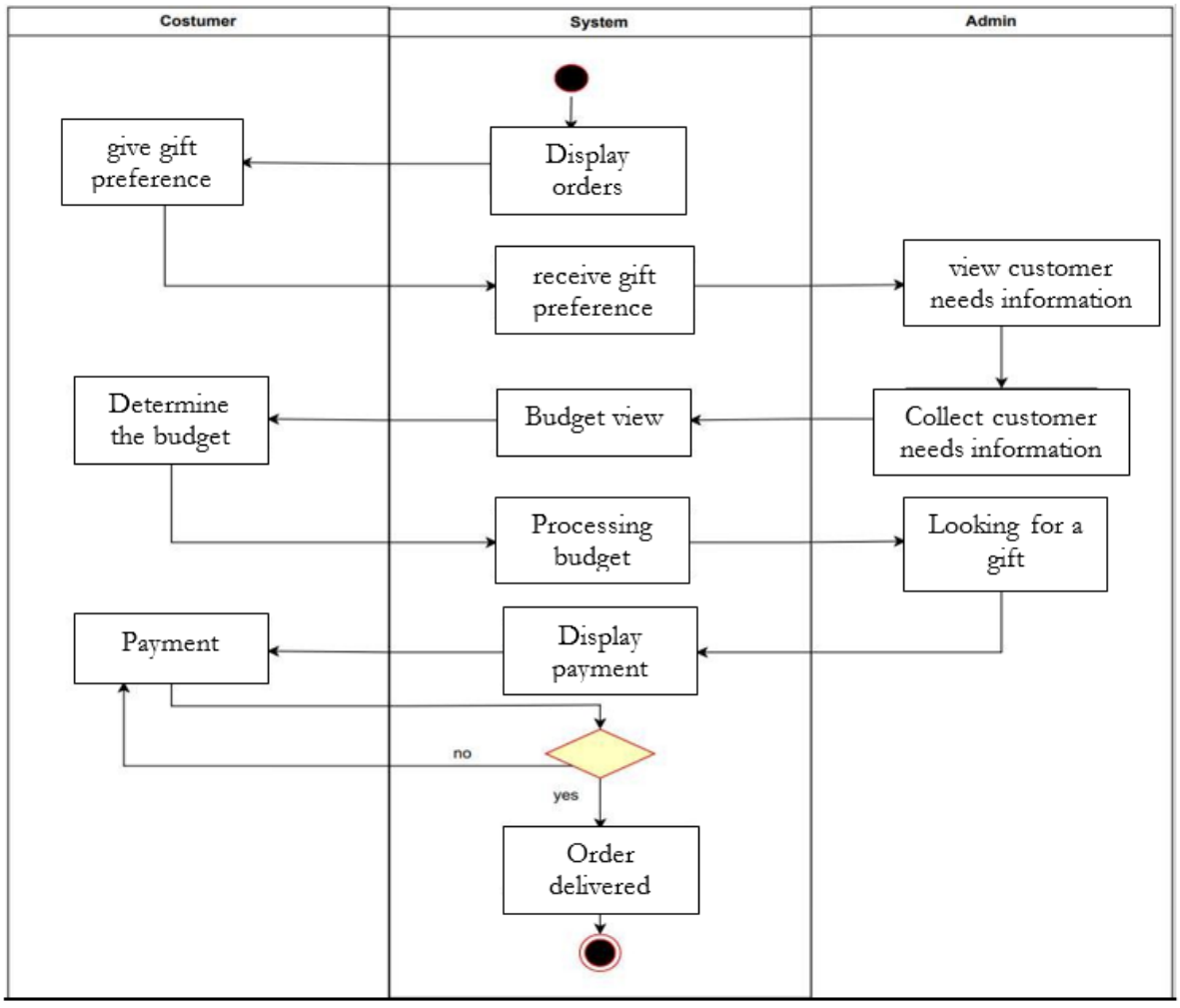

Figure 2. Activity Diagram Kadoku Website Gift Ordering

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3. Class diagram

A class diagram is a diagram at the software design stage that can assess the quality of the class diagram design of the software to be developed [23].

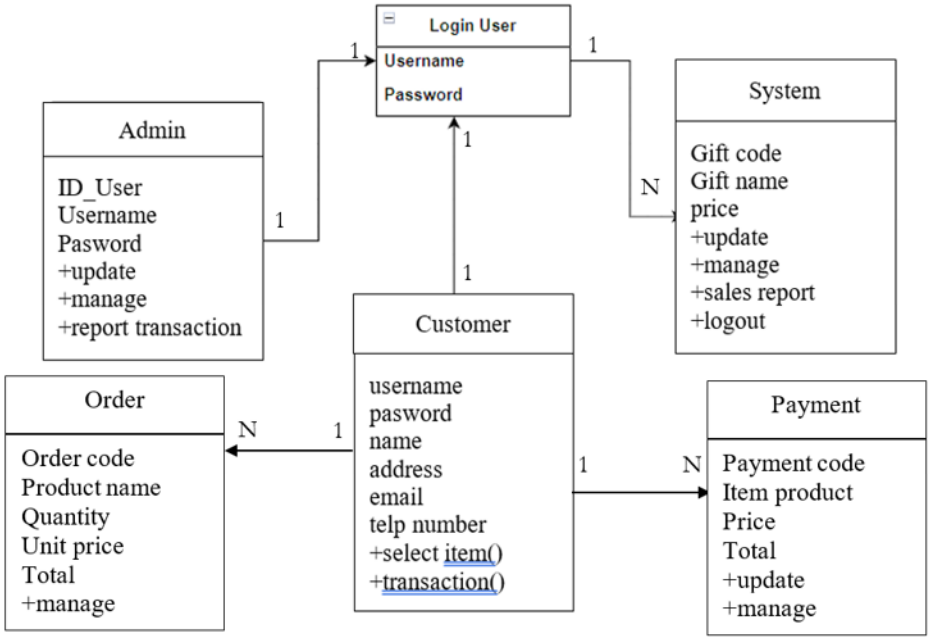

Figure 4. Kadoku Website Class Diagram

Figure 4 Class Diagram illustrates several classes, including the admin class with attributes id_user, username, password, and operation methods such as updating information, managing gift data, managing transaction data, and recording transaction reports. The customer class has attributes such as username, password, name, address, email, and telephone number, with operations for selecting goods and making payment transactions. Meanwhile, the system class as a website has attributes such as gift code, gift name, and price, with operations that include the prominent display of the homepage, goods, transactions, sales, and login and logout processes. In the class diagram, the admin and customer classes correlate or relate to the same system.

C. Sprint

The third stage in development is the sprint, which consists of two main sessions: sprint planning and sprint backlog [20]. In sprint planning, the Scrum team holds a meeting to evaluate the list of tasks in the Product Backlog. The Scrum team discusses each feature to be developed by each team member, including providing an estimate of the time required for each task. The following is the development of the user interface or the Kadoku website interface page.

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Figure 5. UI Menu Website Kadoku

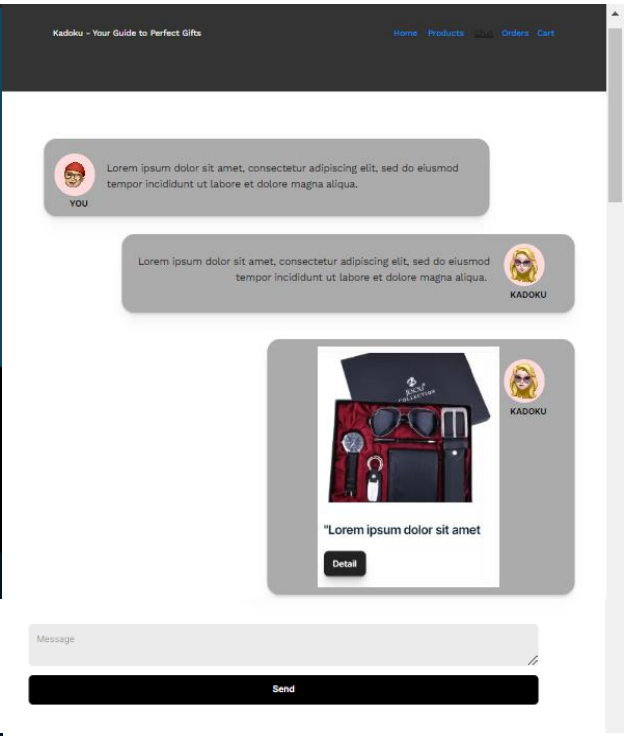

Figure 6. UI Menu Chat Website Kadoku

Figure 5 above is the initial display or menu page of the Kadoku website; several buttons will direct website users to the products or chat page. After being able to access the chat page, the website display will be like in Figure 6 above, where users can use this feature to ask for the best gift suggestions, and the admin can provide suggestions or recommendations that are suitable for the preferences that the customer requests.

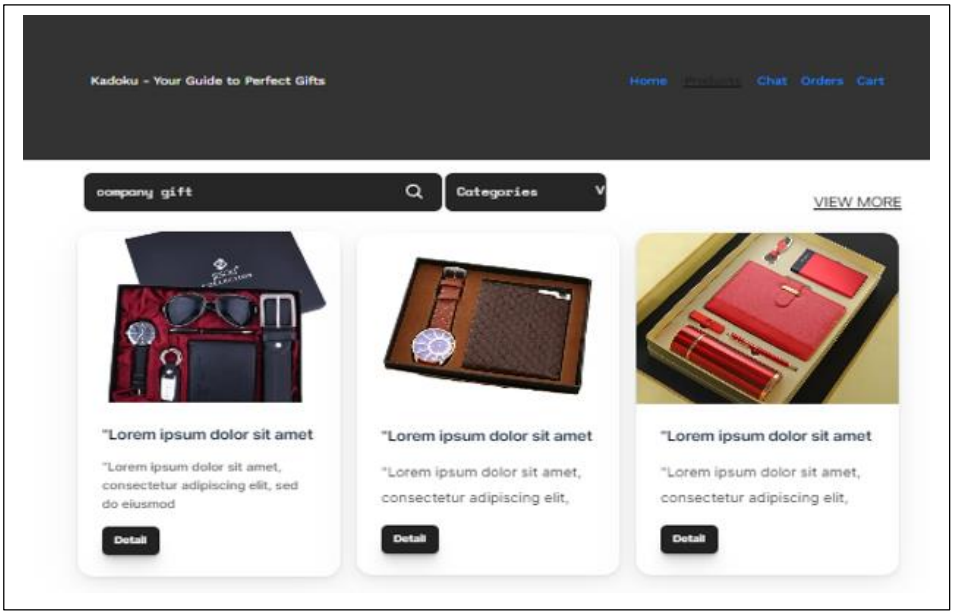

Figure 7. UI Menu Product

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Figure 7 above is the interface design for the product page of the Kadoku website, where website users can use the search feature and filter the category of the item being searched for; there is a detail button to see clearer information about the products on the Kadoku website. The following is the result of the implementation of the Kadoku website using the PHP programming language and the MySQL database.

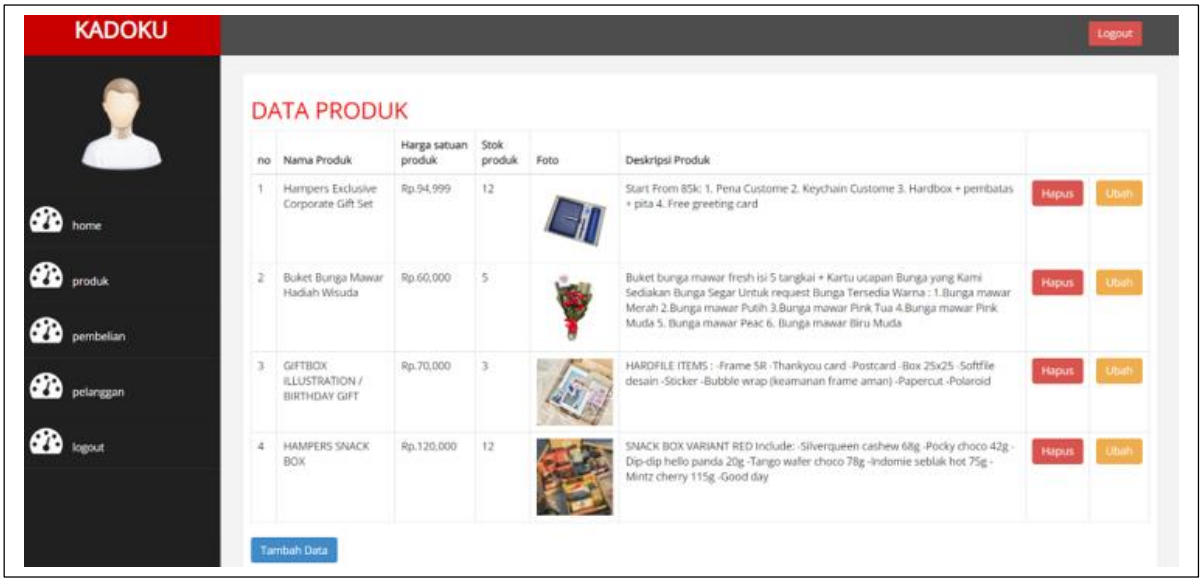

Figure 8. Product Data Page

Figure 8 above is a display of the product data page on the admin page; on this page, the admin can manage the products that will be displayed on the customer's website. Kadoku admin can delete, edit, and add products.

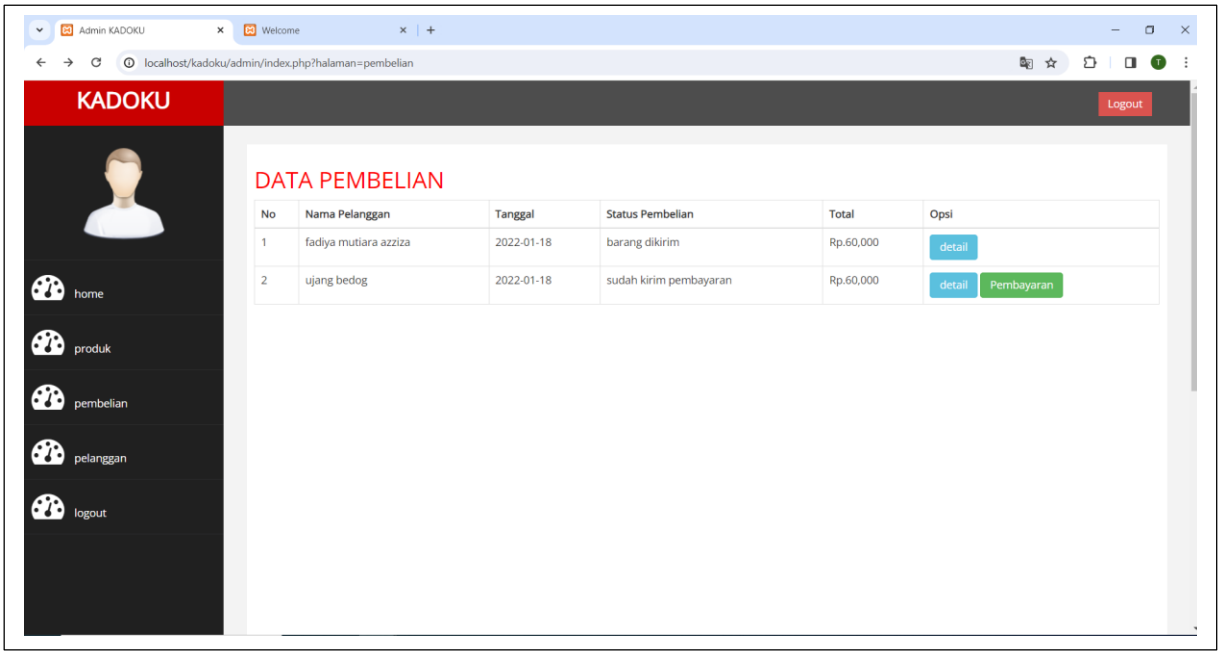

Figure 9. Purchase Data Page

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Figure 9 above is a purchase data page on the admin page. On this page, the Kadoku admin validates the customer's payment. If the customer has made the appropriate payment, the admin will process the order.

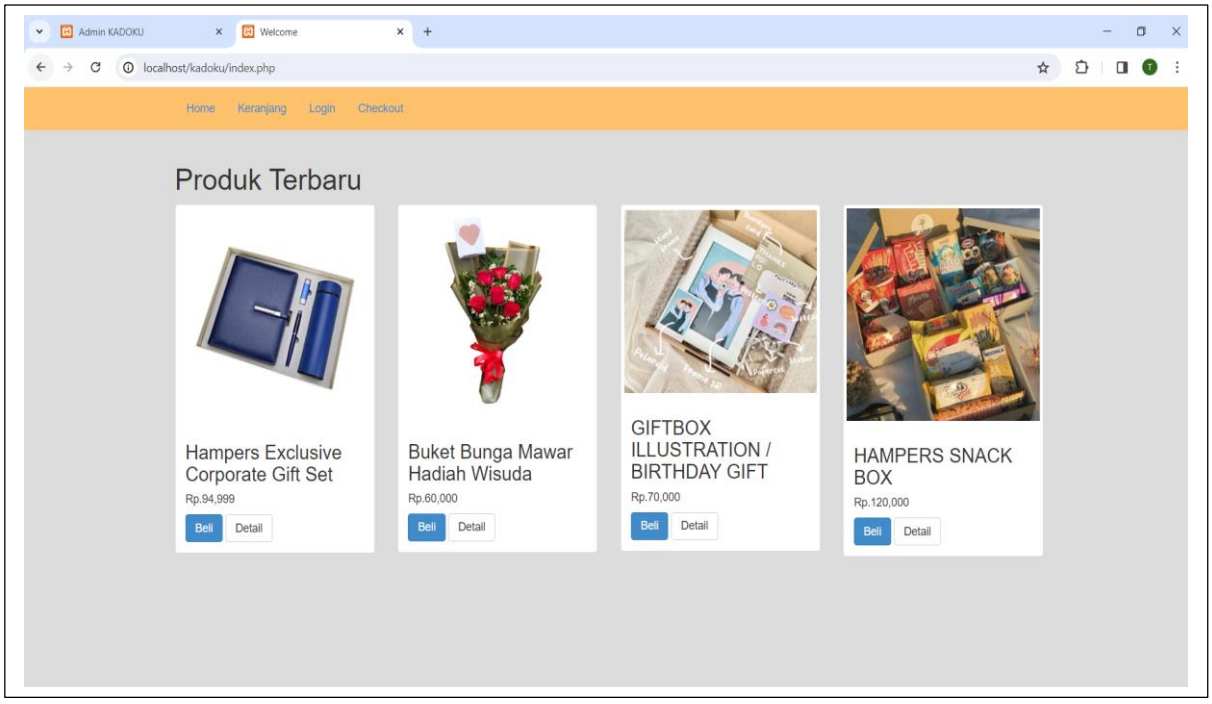

Figure 10. Customer Main Page

Figure 10 above is the main display of the customer page; there are several products displayed by the admin Kadoku.

After the Kadoku website is implemented, the next step is to conduct a trial in the form of black box testing. Blackbox testing is testing by observing the input and output results. The testing results can be seen in the table 8 below.

Table 8. Black Box Test Result

No.	Testing	Scenario	Desired Result	Result	Status
1	View product page	Can manage products to be displayed	The system will display several gift products	The system displays several gift products	Valid
2	Suggest page	It can be used to ask for the best gift suggestions	Can use the feature to ask for gift suggestions	The system will answer the best gift suggestions	Valid
3	View purchase data	Will validate customer payments	The system will display customer purchase data	The system displays customer purchase data	Valid

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No.	Testing	Scenario	Desired Result	Result	Status
4	Displaying customer data	Will display managed customer data	The system successfully displays managed customer data	Customer data is successfully displayed	Valid
5	Showing shopping page	There are several items added	The system can add items that are added	The system has successfully added the added items	Valid
6	View shopping history	Will show the shopping history	The system can display shopping history	The system can display shopping history	Valid
7	Display checkout page	Can set the address and type of expedition	The system will set the address and type of expedition that has been set	The system will save the address and type of expedition that has been set	Valid

In testing the Kadoku questionnaire by giving 10 questions with a Likert scale of 1-4 to respondents who saw the In this study, validity and reliability tests were not carried out, because the number of correspondents was small and only to determine the usefulness of the website that will be used by potential customers. Kadoku's website interface is for user convenience; questions to users can be seen in Table 9 below.

Table 9. Questionnaire

No	Questions
1	How easy is the Kadoku Website to use?
2	Does the search feature on the Kadoku Website help you find gift ideas quickly?
3	How satisfied are you with the variety of gift ideas offered by the Kadoku Website?
4	How satisfied are you with the overall layout and design of the Kadoku Website?
5	How satisfied are you with the speed and responsiveness of the Kadoku Website when used?
6	How effective are you in finding the desired gift ideas through the search feature on the Kadoku Website?
7	How satisfied are you with the quality of gift ideas provided by the Kadoku Website?
8	Do the features on the Kadoku Website operate well?
9	Does the Kadoku Website meet the needs of users well?
10	Are users satisfied with the presence of the Kadoku Website as a solution to facilitate gift searches?

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This questionnaire involved 15 respondents with an average result of 77.02% entering the category of good website assessment. The percentage results of each question can be seen in Table 10 below.

Table 10. Percentage Result for Each Question

Question	Percentage (Y)
1	70%
2	72.2%
3	77%
4	70%
5	73%
6	82%
7	84%
8	74%
9	85%
10	83%
Average	72.02%

Conclusion

Kadoku sales website has made a substantial contribution to facilitating gift searches and managing time efficiently. This contribution not only reduces the complexity of finding the right product but also significantly increases time efficiency for users. By simplifying the gift selection process, Kadoku not only acts as a shopping platform but also as an important tool in improving user experience and optimizing their use of time in buying gifts online. The results of a questionnaire conducted on 15 prospective Kadoku website users showed that 85% of the Kadoku website met user needs well, 84% were satisfied with the quality of gift ideas provided by the Kadoku website, and 83% were satisfied with the presence of the Kadoku website as a solution to facilitate gift search. By calculating the average of the overall percentage of each question, the result was 77.02% and by looking at the indications above, it shows that all respondents agreed that this system helps them in choosing gifts, especially when they don't have much time. They also appreciate that the contributions implemented are by user needs. Although this website has been built according to the initial plan, potential website users are still dissatisfied with the overall layout and design of the Kadoku website, as can be seen from the percentage value showing 70%. Therefore, for further research, it is recommended to be able to develop an attractive appearance with a better layout and design.

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