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RESEARCH ARTICLE

Design of a Mobile Phone Sales System Website at Vivo Store

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Abstract: One aspect highlighted is the importance of the internet in commerce, particularly e-commerce, which connects sellers and buyers without limitations of time and place. Websites serve as crucial instruments to facilitate the ordering and sales processes, enabling access to information anytime and anywhere, clarifying company operations, and enhancing customer convenience in placing orders. This study aims to analyze the development of the Vivo Store mobile phone sales website and evaluate its effectiveness. The website aims to broaden marketing reach and enhance customer accessibility in placing orders. The research is expected to contribute by optimizing the mobile phone sales process at Vivo Store through a waterfall methodology-designed website. This website aims to simplify purchasing for customers without the need to visit physical stores and assist employees in data management through a database. The results show that the development of the mobile phone sales website at Vivo Store using the waterfall method has been successfully completed. This website allows customers to make purchases online without visiting physical stores and assists employees in managing available units through a database. The development of the mobile phone sales website using the waterfall method is a successful step that benefits Vivo Store in optimizing their e-commerce business. This research provides valuable contributions to information technology and marketing strategies in the current era of online commerce.

Keywords: website, mobile phone, sales

1. Introduction

In today's technologically advanced era, the use of the internet and information systems has become a cornerstone in various aspects of human life, particularly in business. Companies, both large and small, increasingly rely on this technology to ensure efficient operations by producing timely and accurate information (Sunardi, 2019).

The internet, as one of the most influential innovations in the modern technological era, has not only transformed communication and access to information but also driven the evolution of business processes, including sales and marketing. In this context, online sales or e-commerce has become a dominant phenomenon, enabling interaction between sellers and buyers without geographical or time limitations (Setiawan & Suryana, 2018).

Vivo Store, as a player in the mobile phone sales industry, faces challenges in expanding their promotional reach and sales. Currently, their promotions and sales are limited to the WhatsApp platform, restricting their potential to reach a broader and more diverse market (Firmansyah & Mulyani, 2017). Intense competition in the market also compels Vivo Store to seek innovative marketing strategies to differentiate itself from competitors.



Therefore, the development of a website-based sales system becomes highly relevant. The website not only allows Vivo Store to effectively showcase and market their products but also improves efficiency in the ordering and delivery processes for customers (Yudanto & Susanto, 2020). With this system, Vivo Store is expected to maximize e-commerce potential, enhance competitiveness, and provide a satisfying online shopping experience for consumers.

This study aims to design and implement a website system that supports the mobile phone sales process at Vivo Store. Thus, this article will delve into the detailed design and implementation of the system, as well as the expected benefits for Vivo Store in enhancing their business performance in the current digital era.

2. Literature Review

2.1. Definition of Sales

Sales are activities that involve the process of exchanging goods or services between sellers and buyers with the aim of meeting consumer needs and gaining profits for the seller (Kotler & Armstrong, 2020; Siswanto, 2018).

2.2. Definition of Mobile Phones

Mobile phones, or often referred to as mobile phones or mobile phones, are electronic communication devices that allow users to make voice calls, send text messages, and access various applications and internet services (Hadi, 2019; Rudianto & Nugroho, 2017).

2.3. Definition of Websites

A website is a collection of web pages that are connected to each other and can be accessed via the internet network. Websites are used to convey information, display products or services, and facilitate interaction between users and the content provided (Alam & Yousuf, 2016; Suryadi & Prasetyo, 2018).

2.4. Definition of XAMPP

XAMPP is a software package that provides a local server environment for developing and testing web applications. XAMPP consists of Apache HTTP Server, MySQL database, PHP, and Perl, which can be run simultaneously on a local computer without requiring an internet connection (Agrawal & Goyal, 2019; Varshney & Gupta, 2018).

2.5. Definition of PHP

PHP (Hypertext Preprocessor) is a server-side programming language used for developing dynamic web applications. PHP allows users to produce dynamic web content, such as login pages, data entry forms, and other interactive web pages (Lerdorf et al., 2013; Welling & Thomson, 2016).

2.6. Definition of PHP MyAdmin

phpMyAdmin is a PHP-based web application used to manage MySQL databases via a web interface. phpMyAdmin allows users to create, edit, and delete databases, as well as run SQL queries directly through a web browser (Muhammad & Ali, 2017; Shaikh & Panhale, 2019).

2.7. Definition of SQL

SQL (Structured Query Language) is a standard query language for accessing and managing relational databases. SQL is used to perform operations such as retrieving data, updating data, deleting data, and managing table structures in databases (Elmasri & Navathe, 2015; Karami & Zahedi, 2018).

2.8. Definition of UML

UML (Unified Modeling Language) is a visual language for describing, designing, and documenting object-based software systems. UML uses various types of diagrams, such as

use case diagrams, class diagrams, and sequence diagrams, to describe various aspects of software systems (Booch et al., 2005; Fowler, 2019).

3. Research Methods and Materials

To develop the application system, researchers used the waterfall method. The waterfall method is often also called classical life cycle or linear sequential model. The waterfall method provides a sequential or ordered application life flow approach starting from analysis, design, implementation, testing and maintenance.

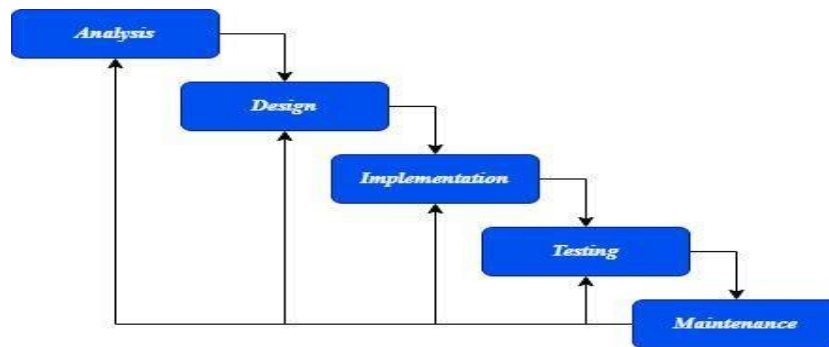


Figure 1. Waterfall Method

An explanation of the stages of the waterfall method in the image above is as follows:

a. Analysis

At the analysis stage, data is collected to provide information about prices and the purchasing process.

b. Design

At the design stage, a program is created to design the system that will be used. The design stages used are Use Case Diagram, Entity Relationship Diagram (ERD), Unified Modeling Language (UML), Class Diagram, Flowchart.

c. Implementation

At the Implementation stage, the system that will be used to create website-based applications is PHP programming, MySQL and the CodeIgniter Framework.

d. Testing

At the testing stage, a testing process is carried out on the application that has been created to find out whether the program created has no problems with the system that has been created. The method used in software testing is using Blackbox.

e. Maintenance

The maintenance stage carried out is correcting errors on the website that has been created. This implementation is carried out until everything required has been fulfilled.

3.1. Data collection technique

The stages carried out by the author in collecting data to create a mobile phone sales website design at the Vivo Store can be explained in the research flow as follows:

1) *Primary data*

a. Observation

The results of observations made by the author at the Vivo Store show that the process of purchasing cellphones, which requires coming directly to the store and collecting data on

units that have been sold, still uses manual methods, namely by writing in a notebook or inputting into Microsoft Excel.

b. Interview

The process carried out by the author is to carry out a question and answer process with customers and admins in order to obtain the information the author needs to design a website so that it can meet their needs and make it easier for customers to buy cellphones without having to come to the store just by accessing the website that has been designed by the author and making it easier employees to record buyers and available units just by looking at the database.

2) Secondary data

To collect information and literature data, the author uses various resources, such as research journals which have the same discussion related to designing mobile phone sales websites.

3.2. Analysis

a. Running System Analysis

At this stage the author carries out an analysis of the current system, namely the Vivo Store, which still uses manual methods in carrying out ongoing business processes, including inputting stock data, data on goods that have been sold, as well as daily, monthly and annual reports which are still written manually.

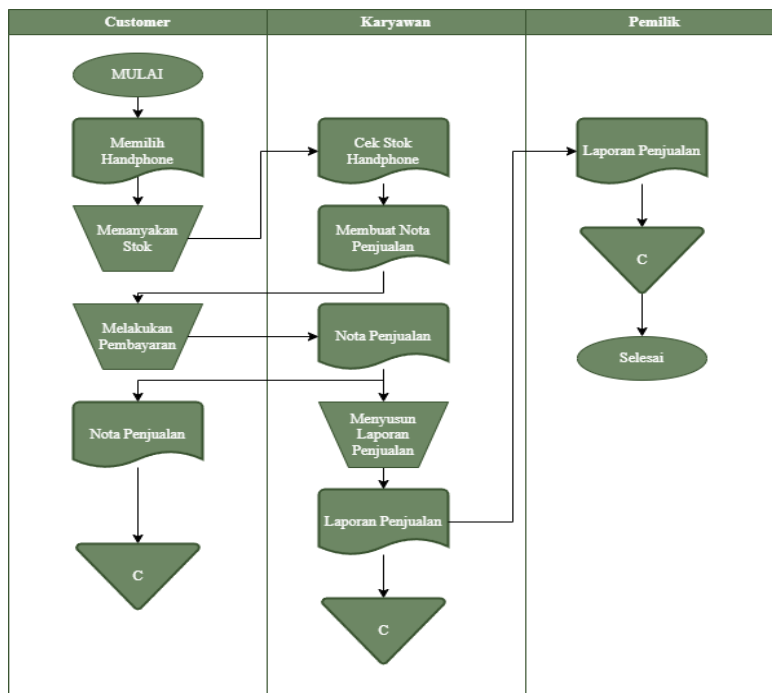


Figure 2. FlowMap Running System Analysis

At this stage the author carries out an analysis related to the problems/needs in the technology required by the Vivo Store which is useful for simplifying ongoing business processes.

Analysis of user needs includes creating features to make it easier for admins as users to access the website designed by the author, namely providing features to record stock of goods and sales that have been sold, as well as updating available units.

For customers, the features needed are to make it easier to make cellphone purchase reservations without having to come directly to the store, making payments online.

Table 1. Needs Problem Analysis

Problem	Solution
Customers mostly come to stores to buy products, but products that... in want no available.	A sales website was created to make it easier for customers to see stock availability desired product.
Processing data sale still use manual, recording.	In the admin menu on Website made menu.

b. Proposed Problem Solving

In this discussion, the author creates an application in the form of a website which is useful for making it easier for admins to record customers, available units and customers in making payments. Below is a flowchart of proposed problem solving.

3.3. Planning

The software that will be developed uses the UML (Unified Modeling Language) method, which is a method of visual modeling that is used as a means of system design.

a. Use Case

A use case diagram is an illustration or representation of the interactions that occur between the system and its environment. Use Case (Admin and Customer) Admin can see the stock of cellphones being sold, log in, buy, edit order status and edit orders. Meanwhile, customers can only look at cellphones and information, order cellphones on the website.

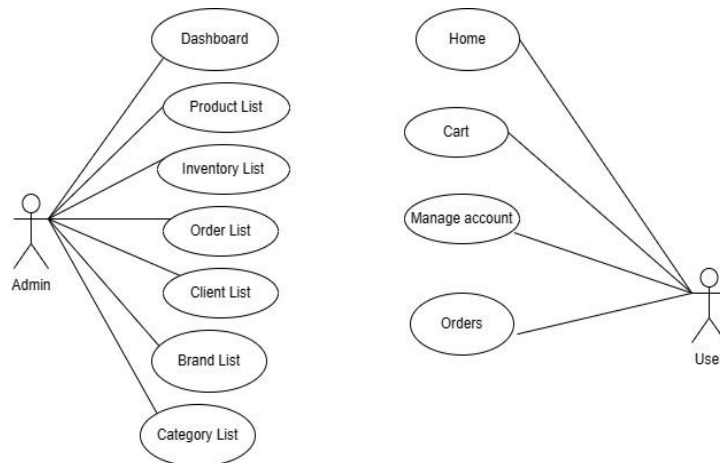


Figure 3. Use Case

b. Customer Activity Diagram

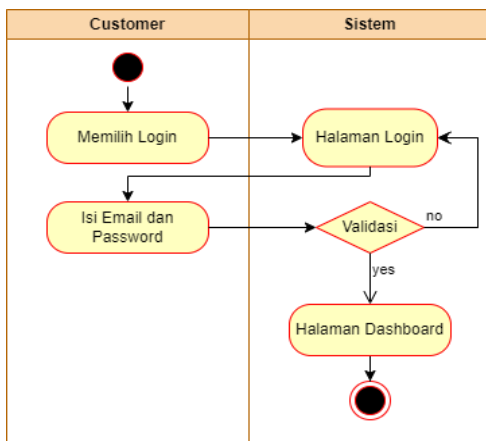


Figure 4 Activity Diagram Login

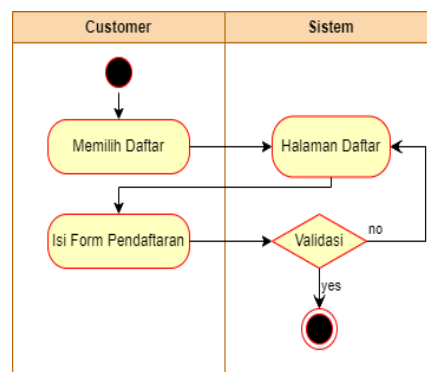


Figure 5 Create an Account

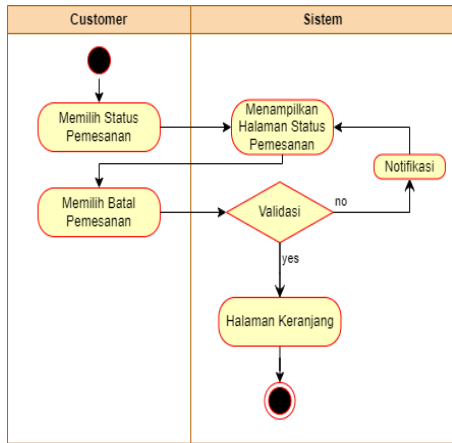


Figure 6 Activity Diagram Order cancellation

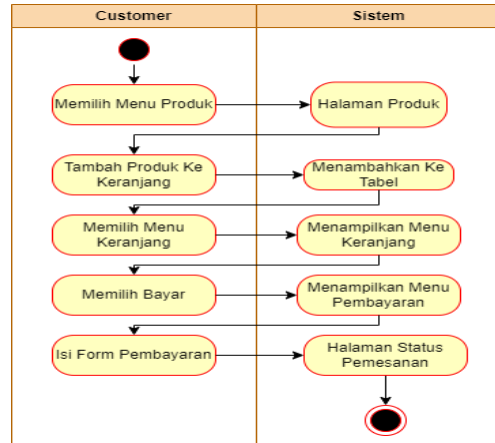


Figure 7 Order Activity Diagram

c. Activity Diagram Admin

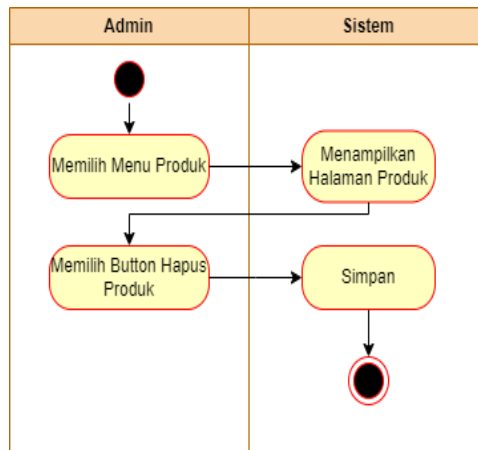


Figure 8. Activity Diagram Delete Items

d. Sequence Diagrams

a. Customer Sequence Diagram

Figure 11 presented the customer sequence diagram.

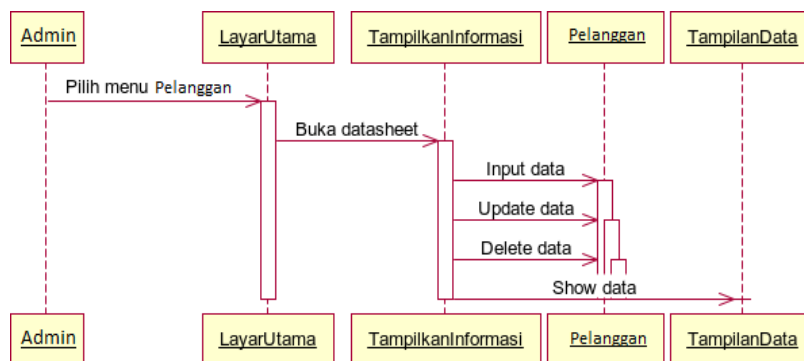


Figure 11. Customer Sequence Diagram

b. Payment Sequence Diagram

Figure 12 presented the payment sequence diagram.

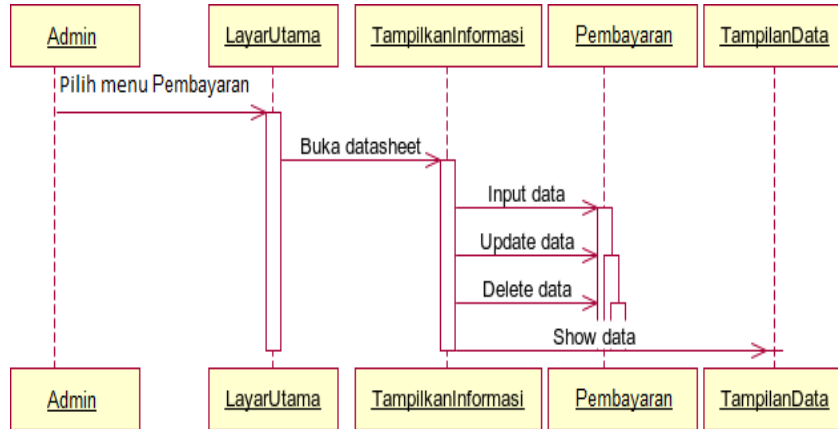


Figure 9. Payment Sequence Diagram

c. Product Sequence Diagram

Figure 13 presented the product sequence diagram.

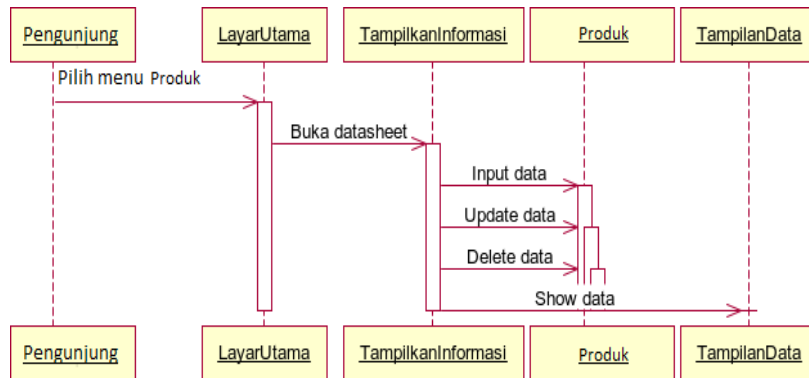


Figure 10. Product Sequence Diagram

d. Ordering Sequence Diagram

Figure 14 presented the ordering sequence diagram.

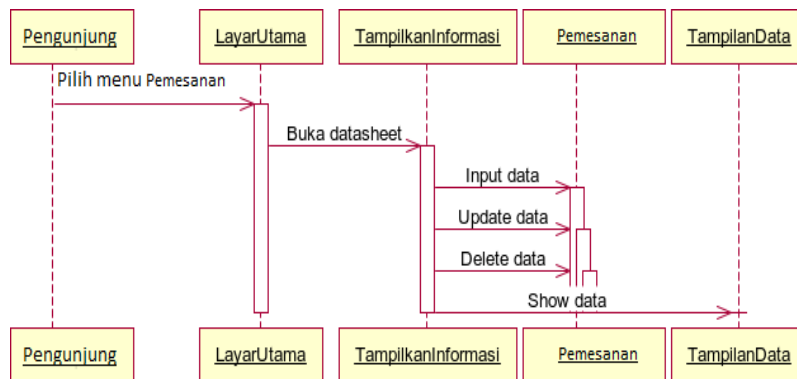


Figure 11. Ordering Sequence Diagram

e. Class Diagrams

Figure 15 presented the class diagram.

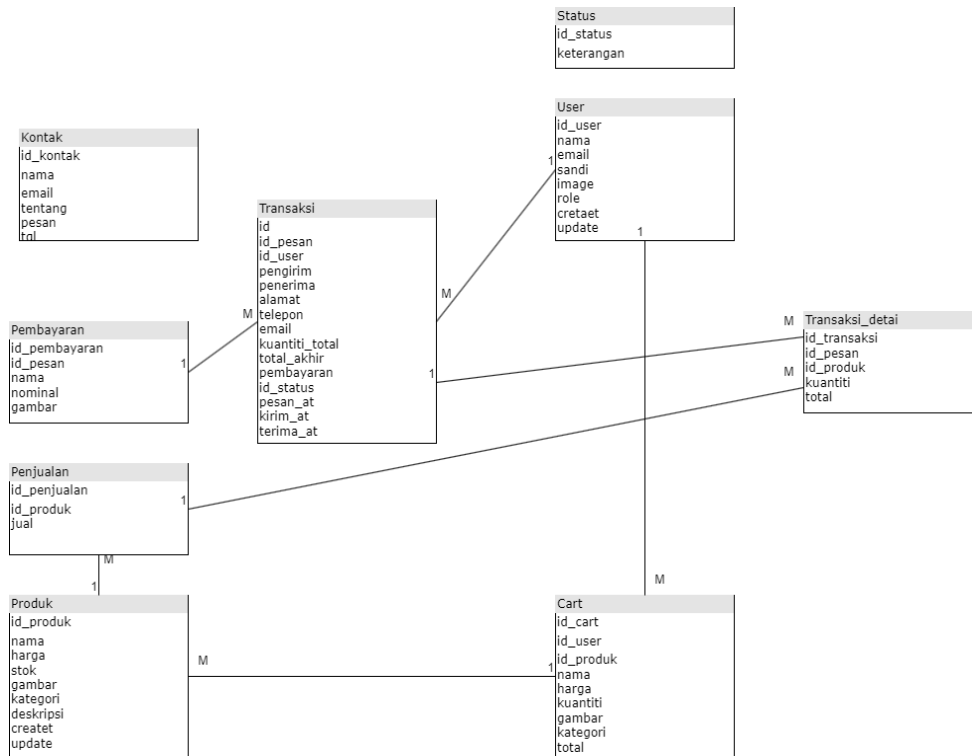


Figure 12. Class Diagrams

4. Results and Discussion

4.1. System Specifications

a. Software Requirements (Software)

The supporting software in the "Vivo Store" website design process is as follows:

- Windows operating system
- Xampp
- Mysql
- Visual studio code
- HTML
- Php
- Bootstrap
- Web browser (Mozilla Firefox, Google Chrome and Internet Explorer)

b. Hardware Requirements (Hardware)

As for the supporting hardware in the process of designing the "Vivo Store" website, the author used computer equipment with the following specifications:

- Processor: Intel® Core™ i3-7020U CPU @ 2.30GHz (4CPUs) 2.3GHz
- RAM: 4GB
- Storage: 500 GB
- Operating system: Windows 10
- Network: Internet Connection

4.2. Application Usage Procedures

4.2.1. Admin Usage Procedures

1) Login Page

After the admin enters the main page, the admin selects the login menu to enter the login page. This display only contains email and password. Figure 16 presented the login page.



Figure 13. Login page

2) Admin Dashboard Page

After the admin has successfully logged in, the admin will enter the admin dashboard which contains cellphone product data, products sold, website user data, not only that, the admin can also see transaction reports. Figure 17 presented the admin dashboard page.

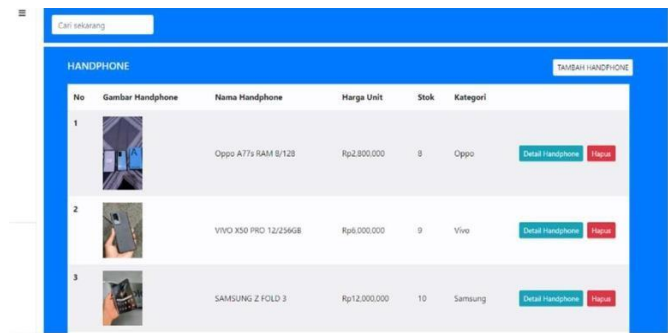
The image shows an admin dashboard with a blue header and a search bar. Below the header, there are three summary cards: 'PRODUK' (7 Handphone), 'TERJUAL' (18 Handphone), and 'PENGGUNA' (2 Akun). Below these cards is a table with transaction data.

#	ID PESAN	JUMLAH	TOTAL HARGA	STATUS
1	1094011976	1	Rp6.000.000	Menerima pembayaran
2	1142607986	1	Rp6.000.000	Menerima pembayaran

Figure 14. Admin Dashboard Page

3) Admin Product Page

On this page the Admin can add cellphone products, change details of cellphones being sold and even delete cellphone products being sold. Figure 18 presented the admin product page.

The image shows an admin product page titled 'HANDPHONE'. It features a search bar and a 'TAMBAH HANDPHONE' button. Below is a table listing products with columns for No, Gambar Handphone, Nama Handphone, Harga Unit, Stok, and Kategori. Each row has 'Detail Handphone' and 'Hapus' buttons.

No	Gambar Handphone	Nama Handphone	Harga Unit	Stok	Kategori
1		Oppo A77s RAM 8/128	Rp2.800.000	8	Oppo
2		VIVO X50 PRO 12/256GB	Rp8.000.000	9	Vivo
3		SAMSUNG Z FOLD 3	Rp12.000.000	10	Samsung

Figure 15. Admin Product Page

4) Transaction Page

On this page, Admin can see transactions that have occurred and Admin can validate transactions that have been paid by customers. Admin can also see order details from customers who have made payments. Figure 19 presented the transaction page.

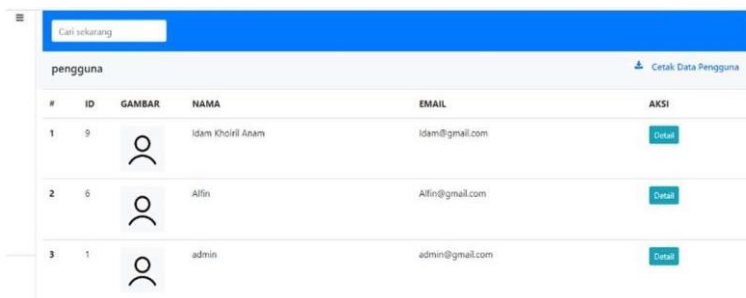


#	ID PESAN	PENERIMA	PENGIRIM	JUMLAH	TOTAL HARGA	STATUS
1	1142607986	Alfin	LAM AIN STORE	1	Rp6,000,000	Menunggu pembayaran

Figure 16. Transaction Page

5) Website User Account Page

On this page the Admin can see in detail the user on the Vivo Store website, the Admin can even delete the user's account. Figure 20 presented the website user account page.

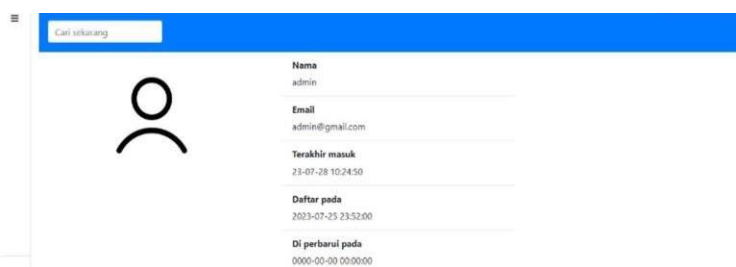


#	ID	GAMBAR	NAMA	EMAIL	AKSI
1	9		Idam Khoiril Anam	idam@gmail.com	Detail
2	6		Alfin	Alfin@gmail.com	Detail
3	1		admin	admin@gmail.com	Detail

Figure 17. Website User Account Page

6) Admin Profile Page

On this page the admin profile can be seen admin login history and Admin account registration. Figure 21 presented the admin profile page.



	Nama admin
	Email admin@gmail.com
	Terakhir masuk 23-07-28 10:24:50
	Daftar pada 2023-07-25 23:32:00
	Di perbarui pada 0000-00-00 00:00:00

Figure 18. Admin Profile Page

7) Logout admin

Figure 15 presented the logout admin page.



Figure 19. Logout Admin

4.2.2. Customer Use Procedures

1) Dashboard Menu

Figure 23 presented the dashboard menu.

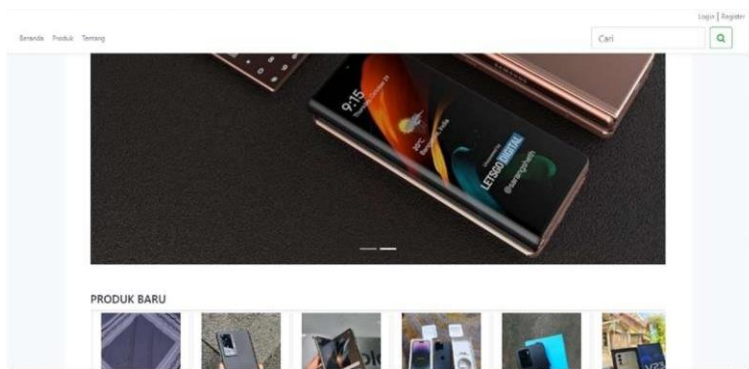


Figure 20. Dashboard Menu

2) Register Menu

On this page the user will register their account if the user does not yet have an account from the Vivo Store. Figure 24 presented the register menu.

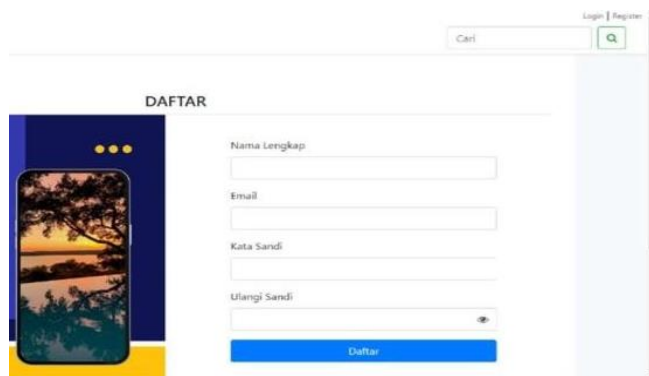


Figure 21. Register Menu

3) Login Menu

On this page the user logs in after registering an account to then place an order. Figure 25 presented the login menu.

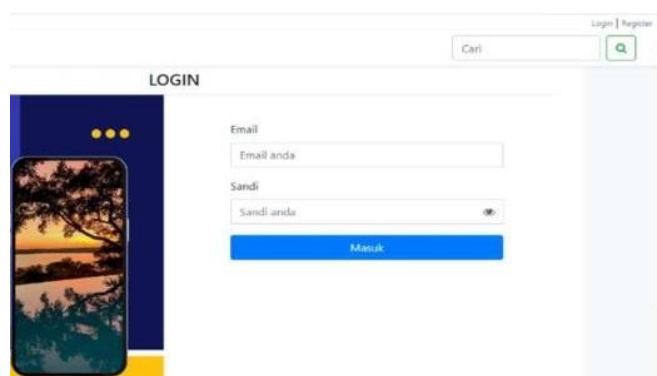


Figure 22. Login menu

4) Home Menu

Figure 26 presented the home menu.



Figure 23. Home Menu

5) Mobile Product Menu

Figure 27 presented the mobile product menu.

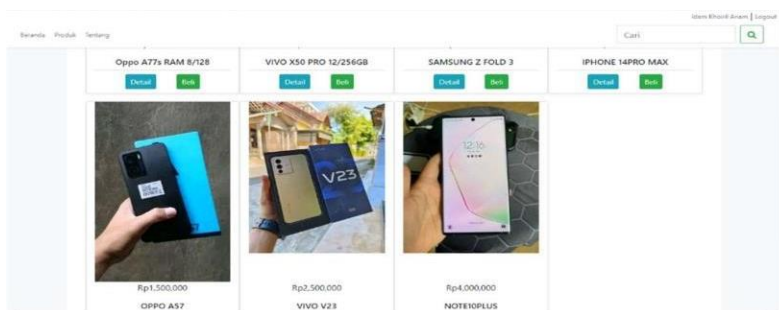


Figure 24. Mobile Product Menu

6) Product Details

Figure 28 presented the product details.

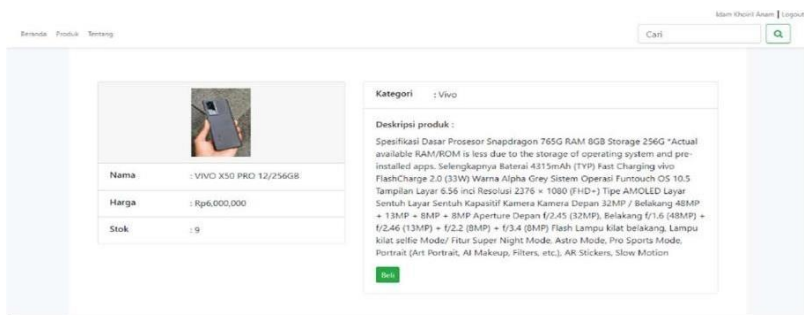


Figure 25. Product Details

7) About Us Menu

Figure 29 presented the about us menu.



Figure 26. About Us Menu

8) User Profile

Figure 30 presented the user profile.



Figure 27. User profile

9) Cart Menu

Figure 31 presented the cart.

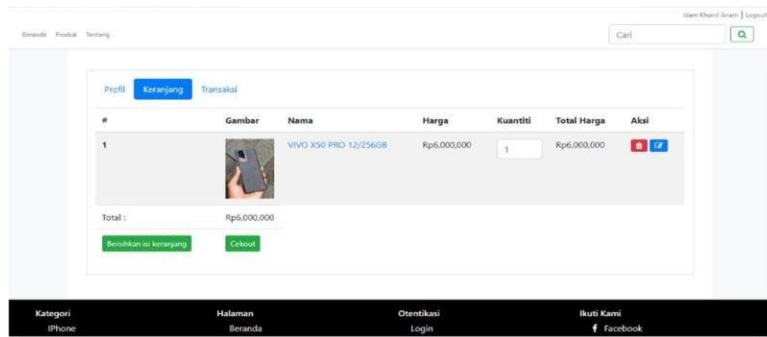


Figure 28. Cart

10) Payment Menu

Figure 32 presented the payment menu.

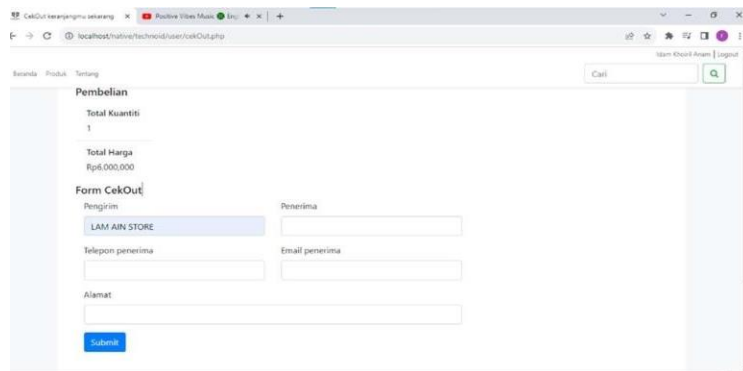


Figure 29. Payment menu

4.3. Black Box Testing

Black box testing is a method of testing applications in which functionality is tested without knowledge of implementation details, code structure and internal paths. Testing only reviews application input and output that is completely based on software specifications and requirements.

Table 2. Black Box Testing

No	Page Tested	Actor	Action	System Reaction		Results
				Correct	Wrong	
A. Admin System Page						
1	Page Beginning Admin	Select login.	menu	Enter to login page admin	Doesn't go to page login	Succeed
2	Admin login	Enter Email and password		Enterto the main page of the admin website	Going return page to login	Succeed
3	Logout	Select log out	menu	Will log out or exit the system and appear on the home page	Didn't log out	Succeed
4	User data	User search	data	Will display data user who searching for	The user data you were looking for was not found	Succeed
5	Mobile Data	Add cellphone data by entering all cellphone data		Mobile data will increase	Displayingerror message if any data is not filled in	Succeed
		Change cellphone data according to the desired changes		The latest cellphone data will be successfully saved	Displayingerror message if any data is not filled in	Succeed

5. Conclusion

Based on research in the thesis regarding designing the Vivo Store online shop website, it can be concluded that designing an online shop website is an important step to increase business presence in the digital world. Through proper design, Vivo Store can expand market reach, increase brand visibility, and increase the opportunity to achieve success in the competitive e-commerce industry. This research has identified several key aspects that need to be considered in designing an online shop website, such as:

- a. Creating a cellphone sales website by first creating a design plan, then choosing the software used to create a website for the Vivo Store cellphone shop.
- b. To market products at Vivo Store stores in less strategic areas, a sales website was created to make it easier for buyers to see the products being sold online.

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