Designing a Web-Based E-Commerce Application "Sentra Warga" for UMKM

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Article Info	ABSTRACT
Keywords: UI, UX, UMKM, Online Store Applications, Interface Design, User Experience.	This research aims to design and implement User Interface (UI) and User Experience (UX) in online store applications intended for Micro, Small, and Medium Enterprises (UMKM). The methods used include analyzing user needs, making initial designs, testing with users, and making improvements based on the feedback received. The user needs analysis stage involves interviews and surveys to understand the preferences and difficulties experienced by UMKM. Initial design creation is carried out with intuitive and easy-to-understand design principles in mind. Testing with users is carried out to evaluate the effectiveness of the design, which is then adjusted based on the feedback obtained. The results of the study show that good UI and UX design can improve user satisfaction, make navigation easier, and speed up the transaction process. In addition, the study highlights that a user-friendly interface can reduce learning time for new users and reduce the error rate in using the application. The importance of the results of this research is to provide an effective and efficient solution for UMKM to increase their competitiveness in the digital market through an easy-to-use online store application. Thus, UMKM can more easily reach potential customers and increase their sales significantly.
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INTRODUCTION

In today's digital era, information and communication technology has changed various aspects of life, including the trade sector. Online store applications have become an urgent need for Micro, Small, and Medium Enterprises (UMKM) to increase their market reach and competitiveness. With this app, UMKM can expand their markets without geographical restrictions, sell products more effectively, and interact directly with customers, helping to increase sales and build a strong brand. However, the main challenge faced by UMKM, especially in the Rukun Tetangga (RT) and Rukun Warga (RW) environments, is the lack of knowledge and skills in using digital technology. Therefore, designing and implementing an intuitive and easy-to-use User Interface (UI) and User Experience (UX) is essential. A well-designed online store application can provide a pleasant and efficient shopping experience, making it easier for lay users to understand and operate the application. With a user-

friendly design, this application can be accessed by all groups, including housewives and small traders, thereby increasing the efficiency and convenience of shopping and providing an effective solution for UMKM to increase their competitiveness in the digital market.

METHOD

In designing web-based applications, the author will use the Agile software development method. Agile software development is software development that focuses on speed in handling changes according to the needs of users and required business processes. Each member of the Agile team reflects to work effectively and have a good work pattern. With key principles that prioritize individual interaction, functional software, collaboration with customers, and adaptability to change, Agile encourages teams to work more effectively and efficiently, and produce products that are more tailored to user needs.

Development Stages

Sommerville (2011) stated that the Agile method is an incremental development method that focuses on rapid development, software that is released gradually, reduces process overhead, and produces high-quality code and in the development process involves customers directly.
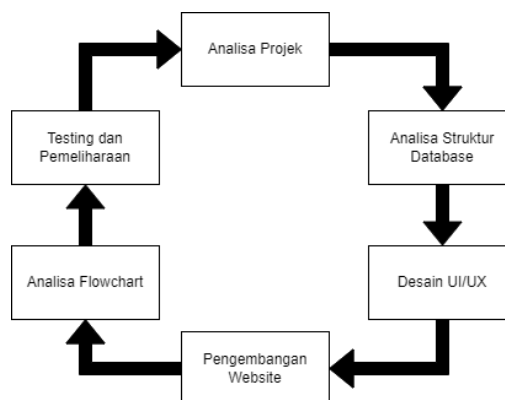
Picture 1 Agile Method

a. Project Analysis: The initial stage in which project objectives, user needs, and possible solutions are identified. This involves discussions with stakeholders to understand the project vision and compile a list of work that needs to be completed (product backlog).

b. Database Structure Analysis: At this stage, the team designs the data structure required for the project. This ensures that all the data requirements for the application are met and the database system can support the application's functionality.

c.   UI/UX Design: The team focuses on designing the user interface and user experience to create an intuitive and easy-to-use app that meets the needs and preferences of the user.

d.   Website Development: At this stage, the team develops the app based on the design and needs that have been analyzed beforehand. Development is carried out in stages, with a focus on completing and testing each part of the product at regular intervals.

e.   Flowchart Analysis: Teams create flowcharts to detail the logical processes and workflows of the application, aiding in more efficient development and testing.

f.   Testing and Maintenance: After development, the application is tested to find and fix bugs. Maintenance is carried out on an ongoing basis to ensure that the application remains functioning properly and meets user needs that may change over time.

Programming Tools

The programming languages and databases used to design the system are as follows:

a.   Backend: PHP (Using the Laravel 10 framework).

b.   Frontend: HTML and CSS (Using Boostrap 5).

c.   Databases: Xampp and MySql.

The hardware used to operate the system to be made is:

a.   Device (Computer or Laptop).

The software used to operate the system to be created is:

a.   Windows 10 Operating System

b.   Visual Studio Code Applications

c.   MySql Database Server v3.3.0

d.   Xampp is used as a server

e.   UML creation using Draw.io application

f.   Postman

Usecase Diagram

This diagram shows the use case for an online store system involving three actors: Seller, Buyer, and Admin. Sellers and Buyers must register and log in to access various features. Sellers can manage products through a dashboard page that includes adding products to the cart and validating orders. Shoppers can view product details, add products to carts, make payments, and view order history. Admins have access to validate the product and perform CRUD (Create, Read, Update, Delete) operations on the product. This use case also includes additional features such as OTP verification during registration, profile management, and logging out of the system.
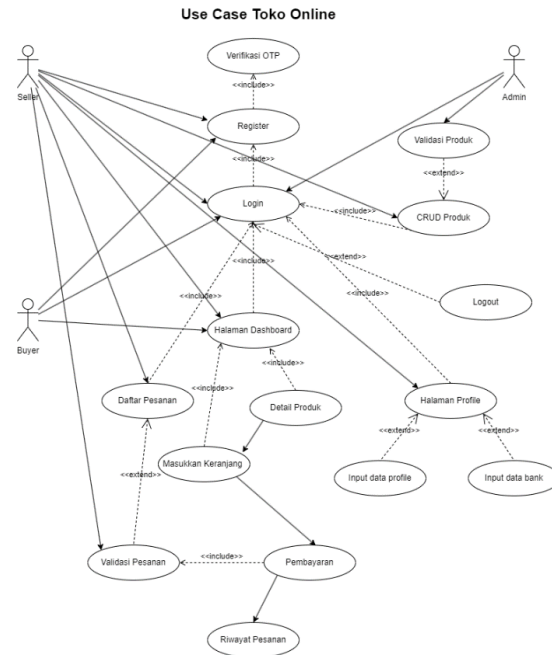
Picture 2 use case diagram

Flowchart

This flowchart illustrates the workflow for Buyers, Sellers, and Admins in an online store system. Shoppers log in or register, view dashboards, product details, add to cart, make payments, and view order history. Sellers log in or register, access the dashboard, perform CRUD operations on products, view product listings, check orders, and validate orders. Admin logs in and validates the product submitted by the seller. This diagram illustrates the process of login, validation, and interaction of each user with the system.
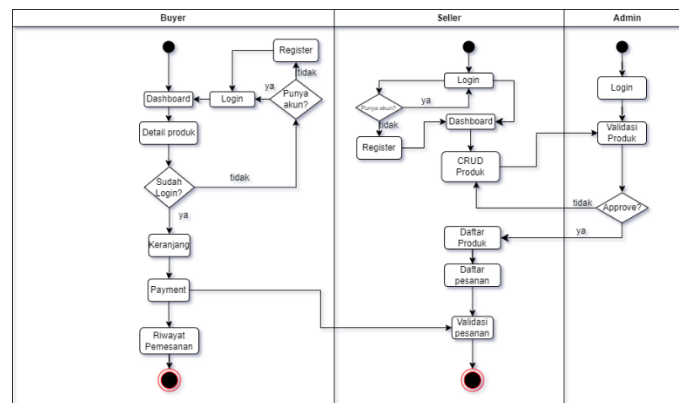
Picture 3 Flowchart

Entity Relationship Diagram (ERD)

This ERD diagram shows the structure of the online store database with the main entities: User, Orders, Product, Categories, Carts, Image, Payment Method, Bank, Message, Otps, and Restock.

Users connect with Orders, Carts, and Banks. Orders are related to Product, Payment Method, and Bank. Product is connected to Categories and Images. Carts records the items in the cart, and Restock stores stock replenishment data. Otps manages user verification, and Messages stores messages. Relationships between entities ensure data integrity and system functionality.
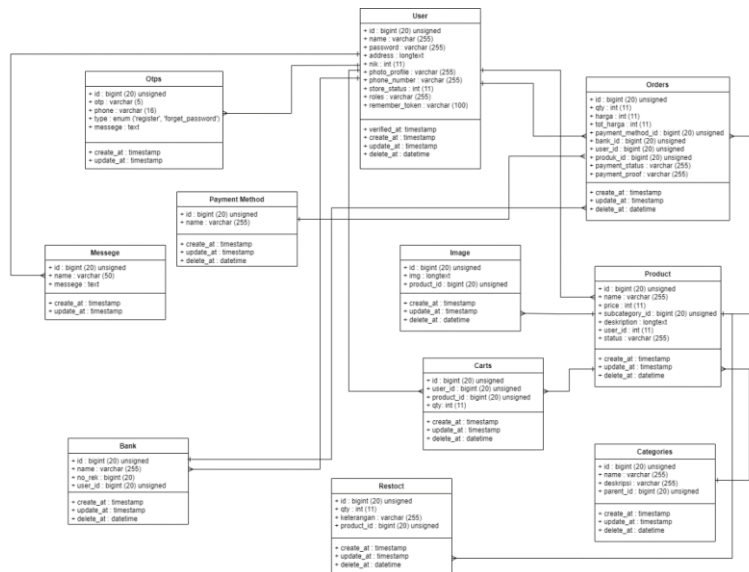
Picture 4 Entity Relationship diagram (ERD)

RESULTS AND DISCUSSION

In this field work practical assignment, I was assigned to work at the company PT. Vetencode Pradani Abadi as a Front End Web Developer who is a member of the "Project TOKO" team. PT. Vetencode Pradani Abadi is a growing software house company, we have served the creation of information systems both among the government and corporate, which was pioneered since 2019 based in the city of Cianjur, West Java.

The implementation of this Field Work Practice program is accommodated by the MBKM (Independent Learning Independent Campus) platform starting from February 16 – June 30. In the discussion of this Internship Report, I will focus on the process of creating a web-based e-commerce application "Sentra Warga" for "SELLER" users in the TOKO project.

Design Implementation
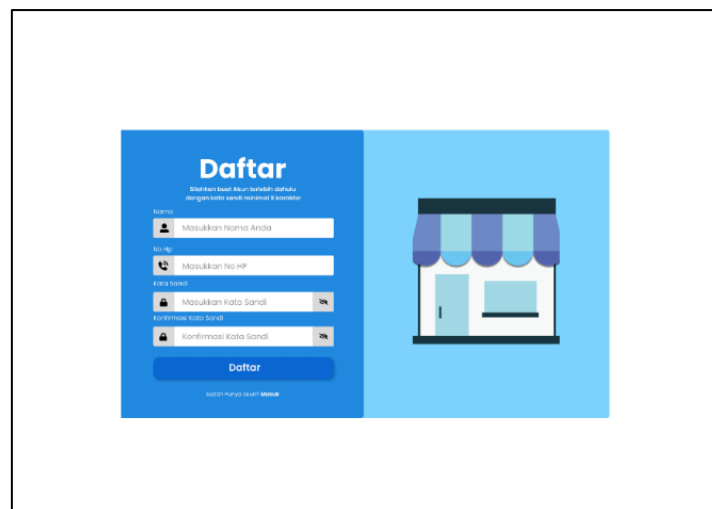
a.   Login Page

Picture 5 Login Page

Login Page, This Page is the Registration Page for "seller" users
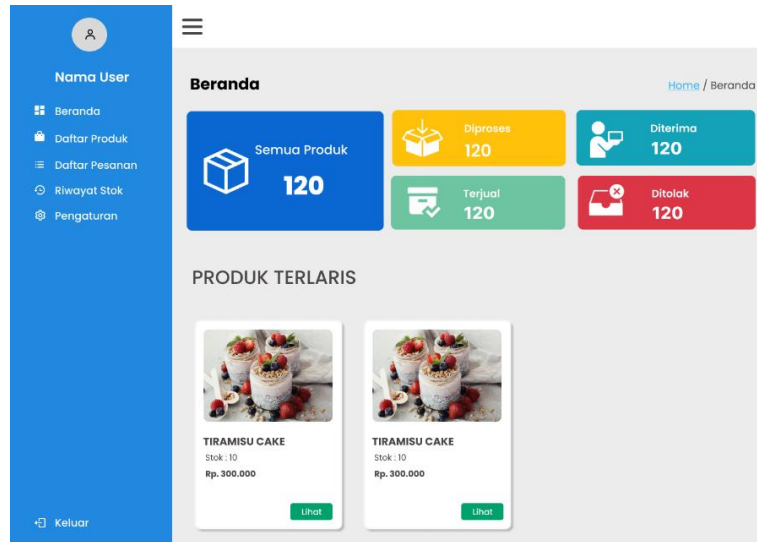
b.   Listing Page

Registration Page, on This page Users can register an account first to become a seller.

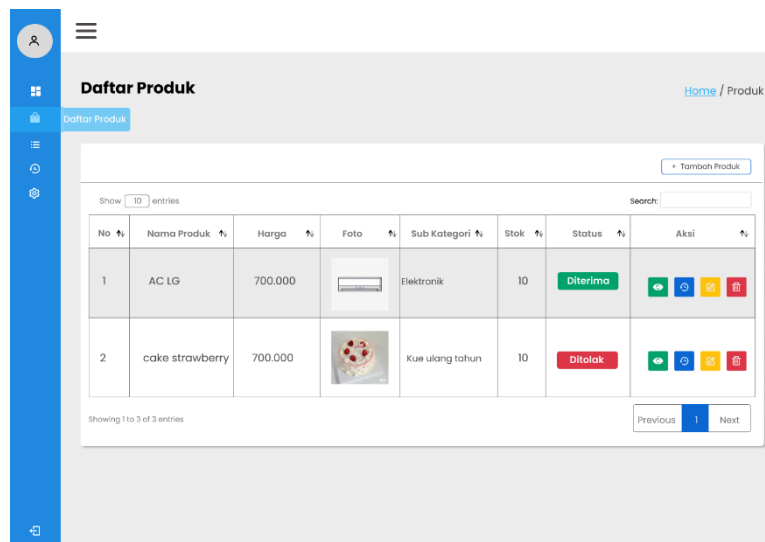Picture 6 Listing Page

c.   Seller Home Page

This Home Page is the Home Page for "Seller" users. On this page, users can view the Total of all

products, orders received, orders in progress, orders sold and rejected orders

Picture 7 Home Page

d.   Product Page

On the product page, users can add new products, view product details, edit products, add product stock, and delete desired products.
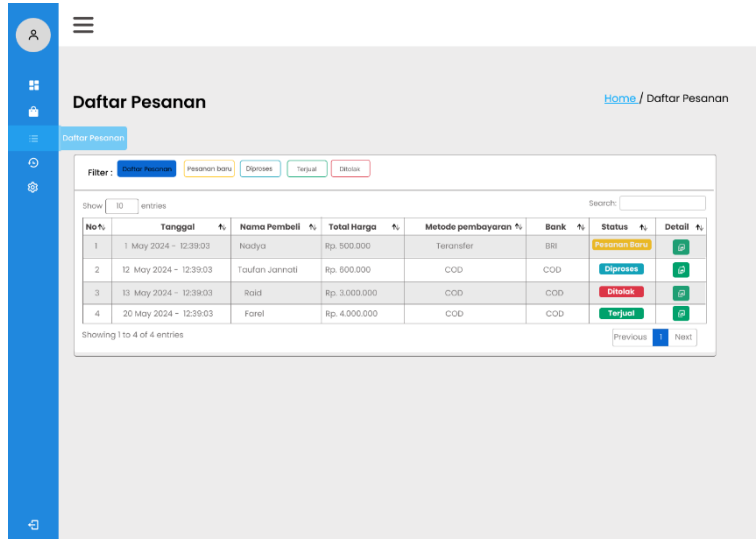

Picture 8 Product Listing Page

e.   Order List

Order List page, on this page users can see the list of orders ordered by buyers, on this page there is also an order list detail feature so that users can see more details of what goods are ordered
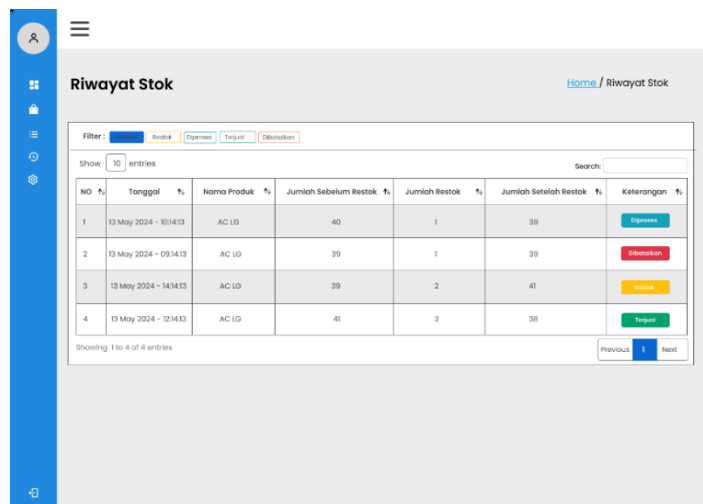
by buyers.

Picture 9 Order List Page

f.   Stock History

Stock history page, on this page users can see a list of stock history that has been added, on this page there is also a filter button that can filter the status of stock sold, restocked, canceled and in progress.

Picture 10 Stock History Page

g.   Settings

On the Settings page, on the page there are 2 features users can edit their profile and also add an account.
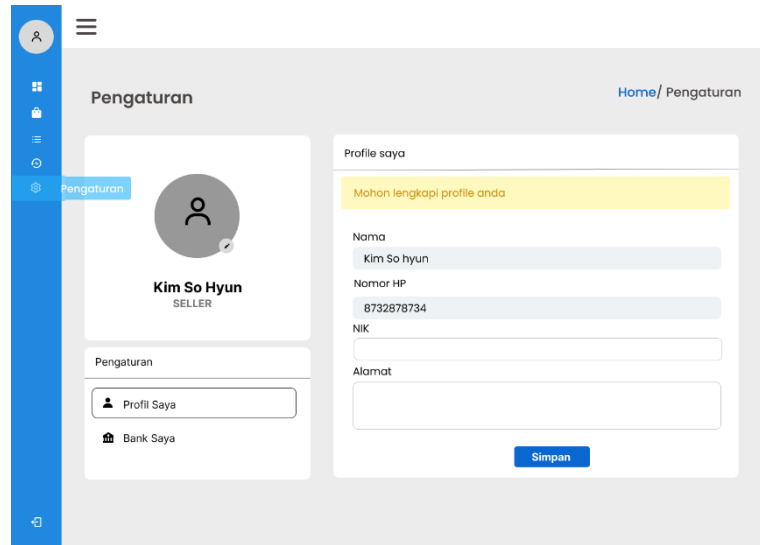
Picture 11 Settings Page

After testing the system, the test results can be concluded as shown in the following table.

No.	Browser	Version	Result	Information
1	Google Chrome	125.0.6422.78	Succeed	The application can run as expected.

Table 1. Test Results on the Citizen Center Application

CONCLUSION

This research successfully designed and implemented the "Sentra Warga" e-commerce application aimed at Micro, Small, and Medium Enterprises (UMKM) based on the web. The design process included user needs analysis, initial design creation, user testing, and improvements based on feedback. The research findings indicate that a well-designed User Interface (UI) and User Experience (UX) can enhance user satisfaction, make navigation easier, and speed up the transaction process. The application also reduces the learning time for new users and lowers the error rate in using the application.

The significance of this research lies in providing an effective and efficient solution for UMKM to increase their competitiveness in the digital market through an easy-to-use online store application. This application facilitates UMKM in reaching potential customers and significantly boosting sales. The intuitive UI and UX design allow users from various backgrounds, including housewives and small

traders, to use the application easily. In conclusion, the "Sentra Warga" application offers a platform that can improve shopping efficiency and convenience for UMKM, helping them compete better in the digital era.

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