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Design of Product UMKM Ordering Application Using Firebase Realtime Database Based on Cload Computer

Muhammad Syahputra Novelan
Universitas Pembangunan Panca Budi Medan

ABSTRACT

The growth of the MSME (Micro, Small and Medium Enterprises) sector is increasingly rapid, encouraging the need for digital platforms to simplify the process of ordering MSME products. This design proposes the development of an application for ordering MSME products using the Firebase Realtime Database which is integrated with Cloud Computer. Firebase Realtime Database is used as real-time data storage, while Cloud Computer is used to run applications on a larger scale. This application makes it easy for customers to explore MSME products, place orders, and track order status directly. Firebase Realtime Database enables automatic data updates, providing users with accurate and up-to-date information. Integration with Cloud Computer ensures the application can handle a large number of users, as well as increasing the reliability and performance of the application. The main features of the application include a list of MSME products, shopping cart, ordering system, order status notifications, and transaction history. The security of customer data is guaranteed through encryption applied to communications between the application and the Firebase Realtime Database. By adopting Firebase Realtime Database and Cloud Computer technology, it is hoped that this application can provide an efficient shopping experience and advance the MSME sector in utilizing digital technology. This design creates the basis for further application development that can increase customer engagement and expand the market for MSME

Keywords:

UMKM, Cload Computer, Firebase Realtime

Corresponding Author:
Kirana Agung M. Rahim
Universitas Teuku Umar
Email: nurhayati@mikroskil.ac.id

INTRODUCTION

The growth of the MSME (Micro, Small and Medium Enterprises) sector is increasingly rapid, encouraging the need for digital platforms to simplify the process of ordering MSME products. This design proposes the development of an application for ordering MSME products using the Firebase Realtime Database which is integrated with Cloud Computer.[1][2] Firebase Realtime Database is used as real-time data storage, while Cloud Computer is used to run

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applications on a larger scale. This application makes it easy for customers to explore MSME products, place orders, and track order status directly.[3][4] Firebase Realtime Database enables automatic data updates, providing users with accurate and up-to-date information. Integration with Cloud Computer ensures the application can handle a large number of users, as well as increasing the reliability and performance of the application. The main features of the application include a list of MSME products, shopping cart, ordering system, order status notifications, and transaction history.[5] The security of customer data is guaranteed through encryption applied to communications between the application and the Firebase Realtime Database[6], [7]. By adopting Firebase Realtime Database and Cloud Computer technology, it is hoped that this application can provide an efficient shopping experience and advance the MSME sector in utilizing digital technology.[8], [9], [10] This design creates the basis for further application development that can increase customer engagement and expand the market for MSME.[11], [12]

METHODS

The research methodology for designing an UMKM product ordering application using the Firebase Realtime Database based on Cloud Computer can involve several steps including planning, development, implementation, and evaluation. Here are the research methodologies that you can consider.

1. Analysis of Needs and Requirements
   Identify application needs and requirements by communicating with MSME owners and potential users. Determine key features, data security, and desired user scale.[13]
2. Literature Study
   Conduct a literature study to understand the current trends in product ordering applications and relevant technologies, such as Firebase Realtime Database and Cloud Computing. Review literature related to MSMEs and the challenges they face in adopting digital technologies.[14]
3. System Design
   Create an application system design, including application architecture, user interface, and integration with Firebase Realtime Database and Cloud Computer. Determine how data will be stored, managed, and accessed.[15]
4. Prototype Development.
   Build a prototype of your app to test your concept and get feedback from potential users. Make sure the prototype includes the key features you have identified.[16]
5. Application Development
   Implement applications based on tested prototypes. Integrate Firebase Realtime Database for data storage and Cloud Computer for increased scale and performance.
6. Functionality Test
   Perform functional testing to ensure that all application features are working properly. Identify and fix any bugs or technical issues that may arise.
7. User Testing
   Conduct user testing to get direct feedback from potential users. Review the user interface, ease of use, and effectiveness of the application.
8. Implementation
   After passing the test and testing, implement and launch the application publicly. Ensure adequate technical support is available.
9. Evaluation and Update
   Conduct a post-launch evaluation to identify potential improvements or enhancements. Get feedback from users and make updates as needed.

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10.Results

In this application, we will explain the UMKM Product Ordering Application Design System Using Firebase Realtime Database Based on Cload Computer.[17]

System Design

This diagram is very important to organize and illustrate the required system behavior, as well as to describe the functionality of the MSME Product Ordering Application System Using the Firebase Realtime Database Based on Cload Computer in the following use case.

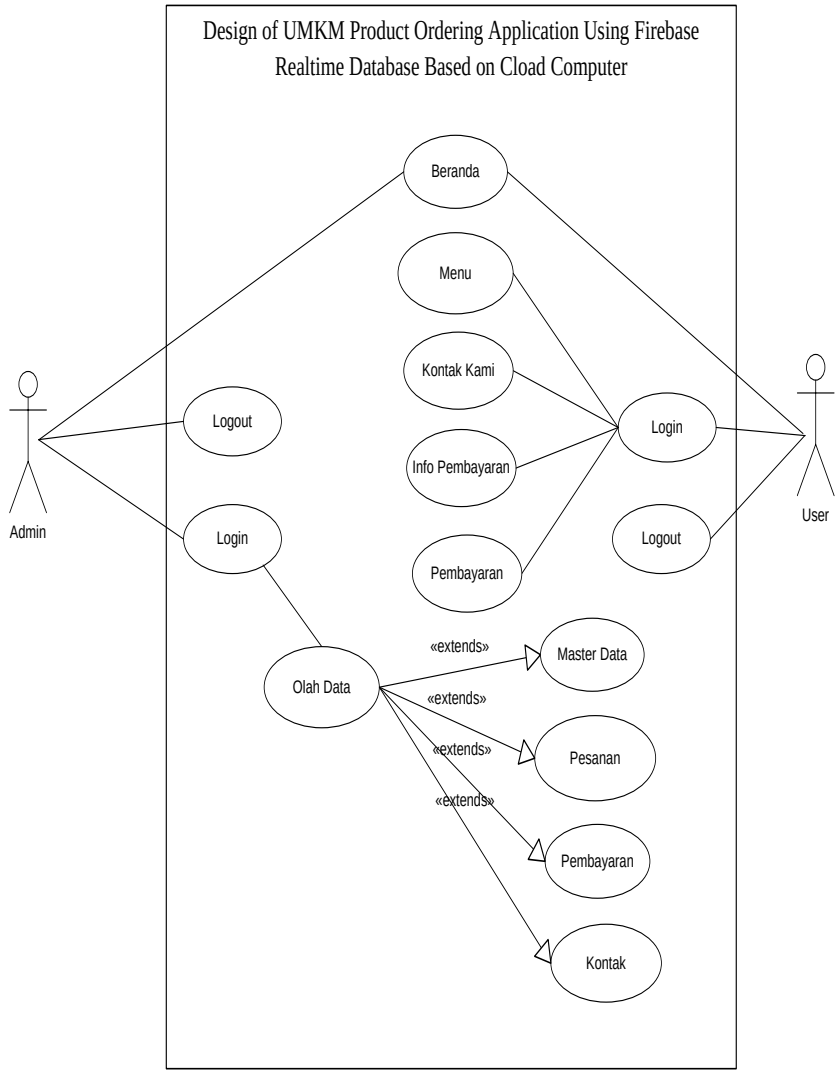

Figure 1. *Use Case Diagram*

Activity Diagram

Activity Diagram explains the activities carried out by users on the system. This diagram will explain how the information system process interacts with users.

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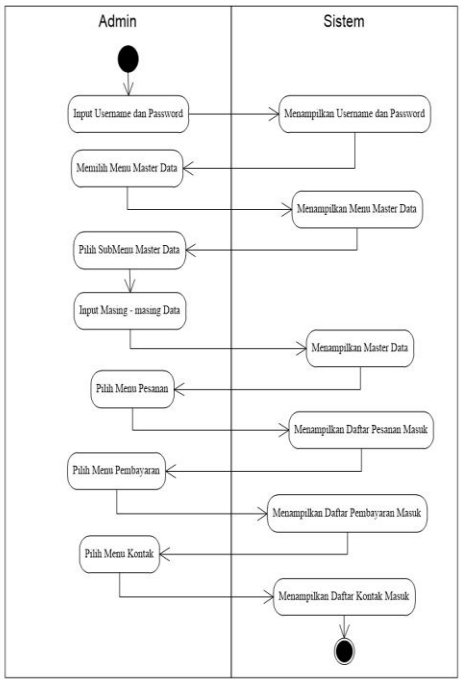

Figure 2. *Activity Diagram Admin*

From the image above explains how the process of Admin activity in selecting a menu in the UMKM Product Ordering Application Using Firebase Realtime Database Based on Cload Computer. The system will display if the admin selects several menus and submenus. The admin also inputs several submenus in the master data, orders, payments and contacts. Next, it will be shown how the user activity process uses the UMKM ordering application system. Figure 5 shows the user activity diagram process.

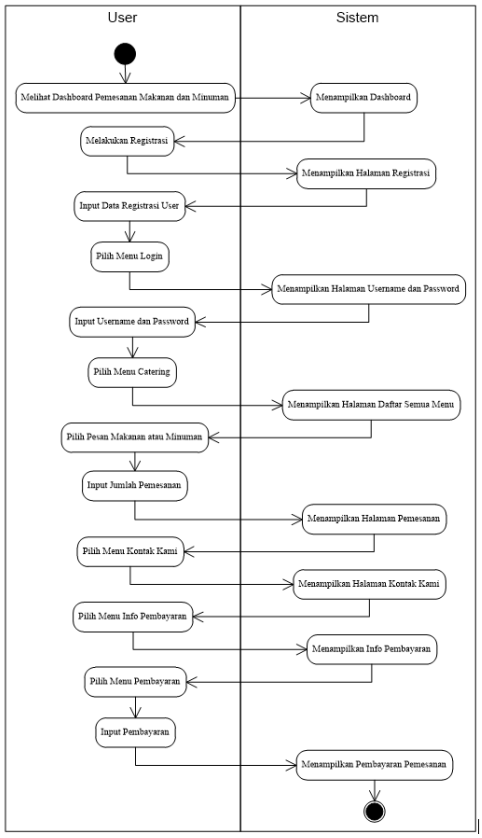

Figure 3. *Activity Diagram User*

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RESULTS AND DISCUSSION

The results and discussion are the results of the implementation of the UMKM Product Ordering Application system Using Firebase Realtime Database Based on Cload Computer. The author conducted a trial using data provided by the company. However, before conducting the test there are several device requirements for the information system.

Dashboard Design

The admin dashboard menu is the main page that will manage admin data, namely with master data that contains user data, product data, product category data, and city or shipping data, then there is another order, payment and contact menu. In this menu, the admin can change the data if there are any desired changes and see customer payment information. The dashboard design can be seen in the picture 4.

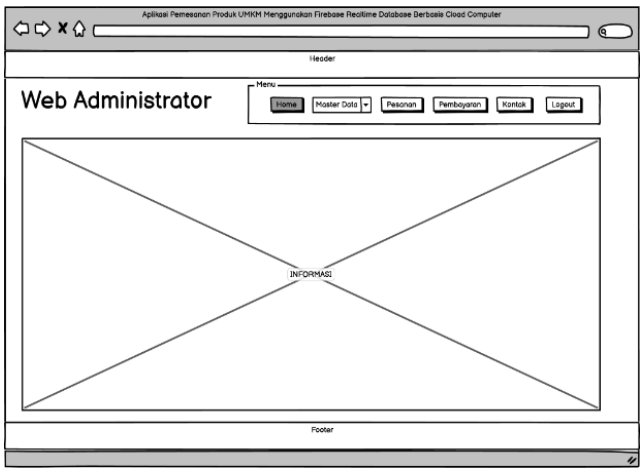

Figure 4. Dashboard Design

Product Data Design

In the Product Data Design, it is data that can be processed by the admin if the admin wants to add a food and beverage menu along with prices based on the product category created by the admin. To see the product data design, see the image 5.

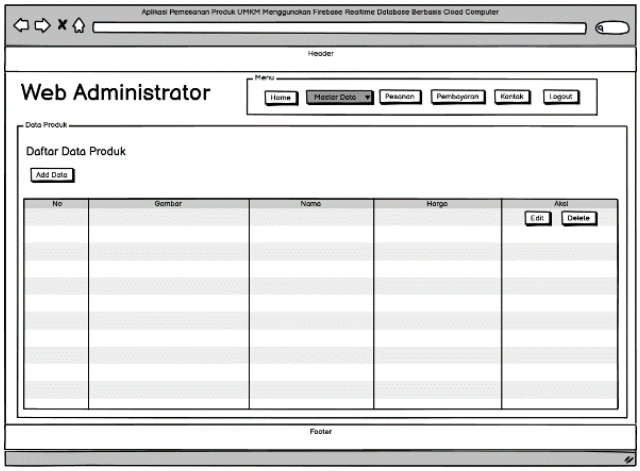

Figure 5. Product Data Design

Order Design

In the order design is information to see customer orders in the form of message name, order date, date and time that the food or drink must be sent, mobile phone number and payment status. For the order design can be seen in the picture 6.

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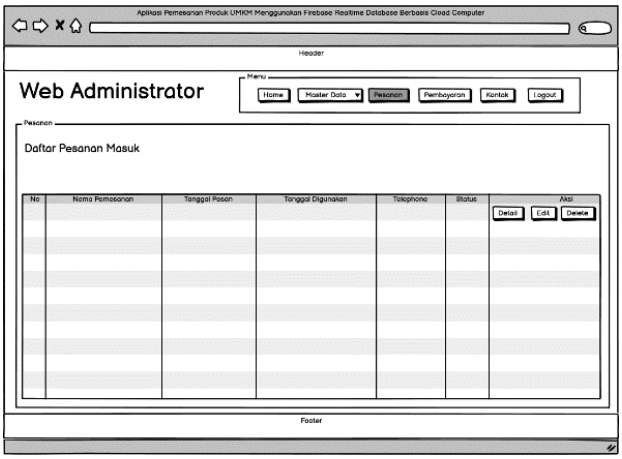

Figure 6. Order Design

Product Menu Design

In the product menu design, it is a display of a list of all UMKM product menus. If customers want to order, just click the order button and then make payments online. Customers can also see detailed images of food or drinks. For the catering menu design, it can be seen in the picture 7.

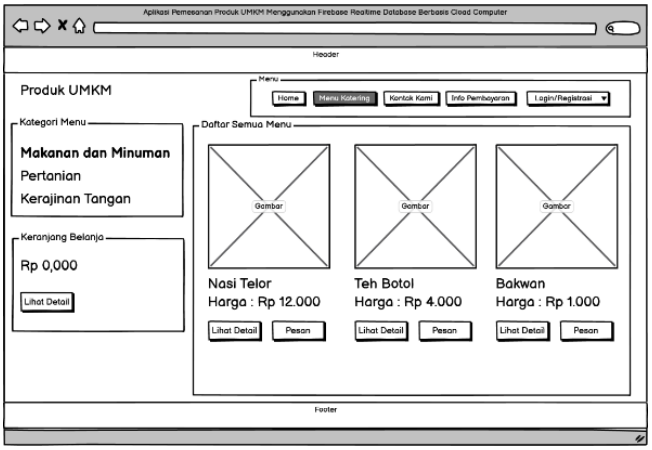

Figure 7. Product Menu Design

Payment Information Plan

In the payment information design, there is information about payments made by money transfer and the account number is displayed in the payment information menu. The payment information design can be seen in the picture 8.

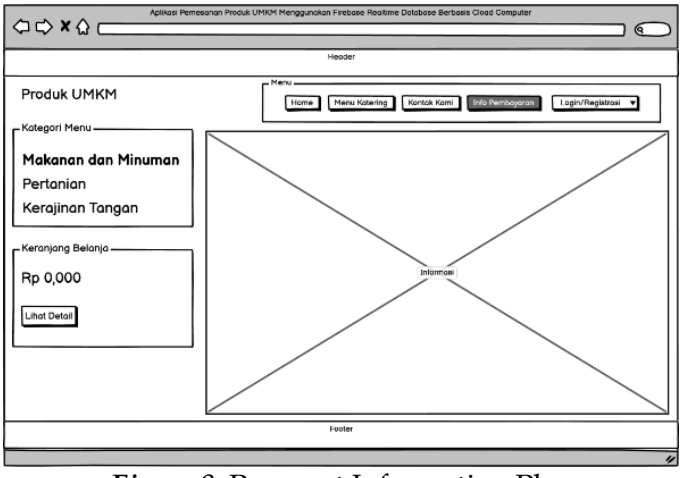

Figure 8. Payment Information Plan

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CONCLUSION

The design of an MSME product ordering application by utilizing the Firebase Realtime Database based on cloud computing has been successfully designed to support the sales and ordering process of MSME products efficiently. This application is designed to facilitate MSMEs in managing products, orders, and interactions with consumers through a cloud-based system that can be accessed anytime and anywhere. By using the Firebase Realtime Database, the application is able to provide real-time data updates so that orders can be received and processed immediately without delay, increasing the responsiveness of service to customers. The use of cloud computing in this application also reduces the need for expensive physical infrastructure, and allows data storage and management with better security and more flexible scale. This application is expected to increase the reach of the MSME market, operational efficiency, and consumer satisfaction, thus providing a positive impact on the growth and competitiveness of MSMEs in the digital era.

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