

Optimization Of Micro, Small and Medium Enterprise Financial Management
Through Android-Based Zazan Mobile Application for Efficiency of Digital
Economy Sustainability

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Abstract

In order to sustain and grow a firm, financial management is essential. This procedure is essential for obtaining profit and loss data, preventing employee and business partner fraud, and separating personal and business funds to determine the company's financial situation accurately. Informal MSME actors multitask and operate as small business owners, entrepreneurs, and managers of all business issues. So, there is not enough time to document the financials of a corporation. Making financial records requires basic knowledge, which makes the work feel challenging, intricate, and time-consuming. One way to address this issue is making the Android mobile application "Zazan" to assist in managing the finances of medium-sized, tiny, and microbusinesses. A descriptive strategy was used to gather the data required for this investigation. An integrated application that could record business activity transactions, record business activity schedules, and connect with customers was required, as determined by the analysis and implementation findings.

Furthermore, clients can quickly learn more about business players by accessing location information. Interaction between customers and business transaction activities facilitates the automation of business activity recording, enabling the application to complete financial recording. Entrepreneurs will find it easier to manage their financial spending with the help of the company's financial reports. Having employee and multi-store functionalities would be preferable because business actors occasionally have multiple business branches and employees.

The implications of this research extend beyond merely providing a tool for financial management; they highlight the necessity of accessible financial solutions for MSMEs. By bridging the gap in financial literacy and time constraints, the "Zazan" application not only empowers business owners to maintain accurate financial records but also fosters better decision-making and strategic planning. This can lead to enhanced business performance, improved relationships with stakeholders, and ultimately, sustainable growth in the competitive market landscape.

Keywords : Optimization, Financial Management, Mobile Application, MSME, Android

INTRODUCTION

Small, medium, and micro enterprises (MSMEs) are a critical sector of the Indonesian economy. MSMEs are anticipated to expand further in 2024 and substantially contribute to employment creation and GDP. The condition of local MSMEs deteriorated during the first two years of the COVID-19 pandemic, which was from 2020 to 2021. Raw material issues were encountered by over 48% of MSMEs and 77% of 1,180 MSME respondents. Only 15% of MSMEs are expected to utilize the financial management

strategies detailed in the table, as indicated by 2020 data.

Table 1. Growth of MSME Financial Management

Years	MSME Financial Management	Annual Growth
2020	15%	30%
2021	20%	33%
2022	25%	25%
2023	30%	20%

The utilization of financial management in MSMEs is anticipated to rise from 15% in 2020

to 35% in 2024, with the most significant annual growth occurring in 2021 (33%), followed by a decline to 17% in 2024. Technological advancements are among the numerous factors that can impact the expansion of MSMEs that implement financial management (Ferine et al., 2023; Hasanudin, 2023; Jiang, 2024). Financial management is becoming increasingly significant in the digital age (Mosteanu & Faccia, 2020; Ren, 2022). Android-based information systems allow individuals and organizations to effectively manage their finances by providing simple access, integration of financial services, and flexibility (Abdulghani et al., 2021; Darmayadi & Izmazatnika, 2020; Dharsono, 2021). The preponderance of mobile device users in Indonesia are Android-based, with Android users comprising 89.04% and IOS users comprising 10.86% (Mang'ana et al., 2023; Zhou & Sun, 2024). The advancement of digital technology, specifically mobile applications, presents significant opportunities for MSMEs to enhance the efficiency of financial management. Zazan, a specific application tailored to assist MSMEs, has the potential to be the ideal solution for enhancing the effectiveness of financial management and promoting the growth of MSMEs in Indonesia.

Based on the background of the problem above, the objective of this research is to determine how the use of the Android-based mobile application "Zazan" can optimize financial management in micro, small, and medium enterprises (MSMEs) to enhance efficiency in digital economy sustainability.

METHOD

The researcher employed a descriptive method to provide an objective overview of the object under investigation. It also elucidates the method by which researchers resolve issues by the context. Researchers employ the subsequent investigation scheme:

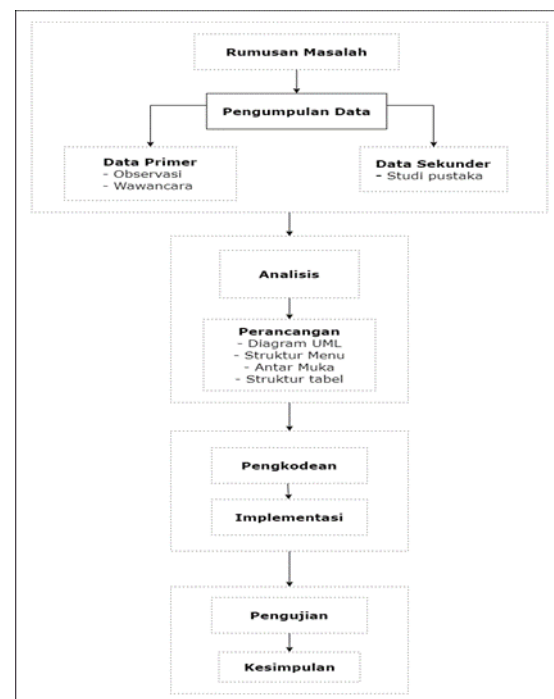


Figure 1. Research Flow

The research methodology is structured into several key phases that guide the investigation into optimizing financial management for micro, small, and medium enterprises (MSMEs) through the Android-based "Zazan" application. The process begins with problem formulation, where the specific issues related to financial management that the application aims to address are clearly defined, establishing a solid foundation for the study.

Following this, the research moves into data collection, which is divided into two main categories: primary and secondary data. Primary

data will be gathered through direct observations and interviews with MSME owners to understand their financial management practices and interactions with the "Zazan" application. These firsthand accounts will provide deeper insights into the challenges they face and the perceived benefits of using the application. Concurrently, secondary data will be collected through a comprehensive literature review of existing studies relevant to the topic, which will help contextualize the findings and highlight any gaps that the application could fill.

Once the data is collected, the next phase is analysis. This involves systematically reviewing both qualitative and quantitative data to identify key themes and patterns regarding the effectiveness of the "Zazan" application in optimizing financial management. Building on the analysis, the study will then focus on the design phase, where structured design elements for the application will be developed. This includes creating UML diagrams to illustrate the application's architecture, outlining the menu structure for user-friendly navigation, and designing user interfaces that enhance the overall user experience.

After finalizing the design, the coding phase will commence, involving the actual development of the "Zazan" application based on the established specifications. Following development, the application will undergo a thorough testing phase to ensure its functionality, usability, and reliability. This critical stage will help identify and rectify any bugs or issues prior to the application's final launch.

The research will culminate in the conclusion phase, where findings from the analysis and testing are synthesized to draw meaningful conclusions. Recommendations will be provided for future improvements to the "Zazan" application and suggestions for further research in the field of financial management for MSMEs. This structured approach ensures a comprehensive investigation, ultimately contributing to enhancing financial management practices and supporting the sustainability of the digital economy.

RESULTS AND DISCUSSION

Software Overview

The "Zazan" application is intended to aid small and medium-sized enterprises (SMEs) in managing their operations. Financial management is one of the primary objectives of this application, as not all entrepreneurs are equipped with the necessary knowledge to manage their finances effectively. Furthermore, the application assists entrepreneurs in the progressive documentation of their business operations.

The app enables sellers and buyers to interact during transactions, enabling them to complete transactions through the app. Each transaction is directly stored in the database. The company's financial status is evaluated using these transaction records as one of the variables.

As part of the Zazan ecosystem, the "Zazan-kuy" application complements the "Zazan-mitra" application by facilitating direct communication with small and medium-sized enterprises (SMEs). This seamless integration allows for a semi-automated transaction process, enabling

customers to browse available products, place orders, and complete purchases with ease.

User Characteristics

The nature of factual conditions inherent in the business activities or behavior of the entrepreneurs concerned in operating their businesses are the characteristics of MSMEs. These characteristics are the distinguishing features between business actors based on the size of their enterprises. Micro, small, and medium enterprises (MSMEs) can be classified into three distinct categories according to the World Bank's criteria. Micro enterprises are characterized by having a minimum of 10 employees, making them the smallest entities in this classification. Small enterprises follow, defined by a workforce of at least 30 employees, while medium enterprises are distinguished by having a minimum of 300 employees. This classification helps to understand the varying scales of operations and the unique challenges each type of enterprise faces in the economic landscape.

From a business perspective, MSMEs can be categorized into four distinct categories. The first category includes MSMEs in the informal sector, such as street vendors, who operate outside formal regulatory frameworks. The second category consists of micro MSMEs, which possess valuable craftsmanship skills but often lack the entrepreneurial spirit needed to expand their enterprises. The third category is comprised of dynamic small enterprises, a subset of MSMEs that show potential for transformation into full-fledged entrepreneurs. These enterprises often achieve growth through the establishment of cooperation, such as subcontracting, and by

engaging in export activities, showcasing their capacity for development. Finally, the fourth category encompasses fast-moving enterprises—micro, small, and medium-sized enterprises that are ready to scale up into larger businesses and possess the requisite entrepreneurial skills to facilitate this growth.

The researcher's field observations indicate that SME entrepreneurs are exceedingly diverse. Consequently, users of the "Zazan" application may originate from various origins. Nevertheless, the researcher observed that the preponderance of SME entrepreneurs is 17 or older.

Functional Analysis

The author discovered how business actors operate their enterprises while conducting field research. The author's observations yielded the subsequent outcomes:

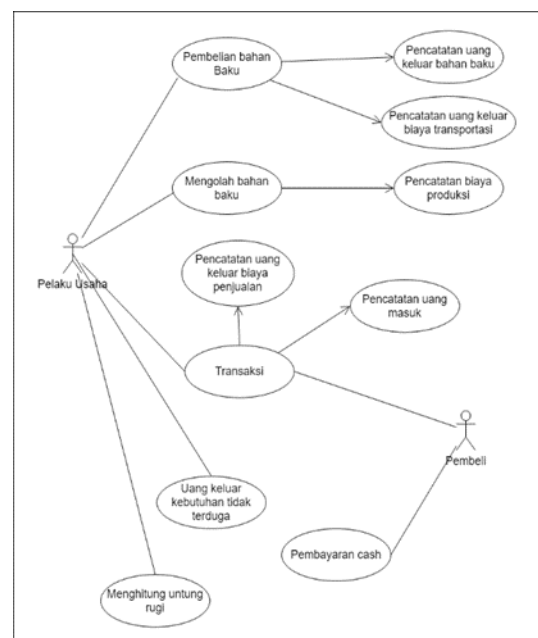


Figure 2. Use Case Diagram of MSME Business Activities



Use case diagram

[illegible]

Figure 4 Use Case Diagram “Zazan”

The structure of a system is delineated by class diagrams, which specify the classes that will be generated to construct the system. The class diagram for the "Zazan" application is as follows:

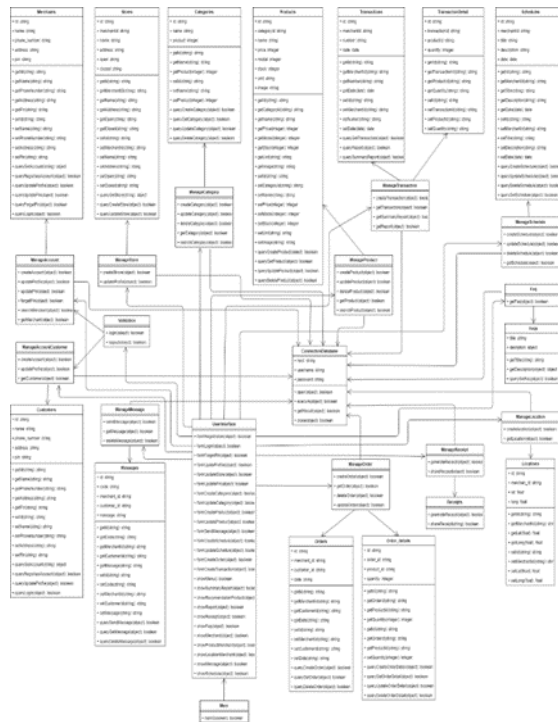


Figure 5. Class Diagram "Zazan"

Sequence Diagram

According to Rosa's book, the number of sequence diagrams that must be drafted is at least as numerous as the number of defined use cases with their processes. Therefore, the "Zazan" application's Sequence diagram is as follows:

Sequence Diagram: Login

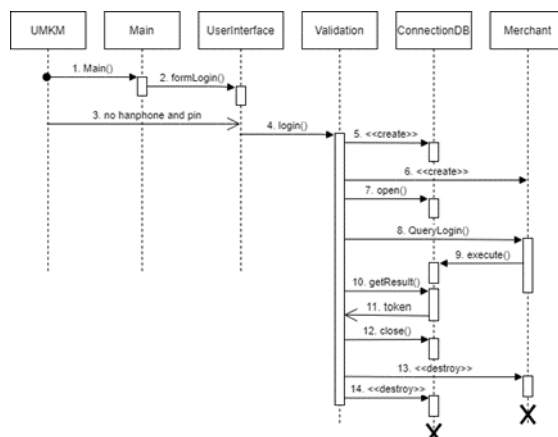


Figure 6. Sequence Diagram "Zazan" Use Case Login

Sequence Diagram: Manage Product Categories

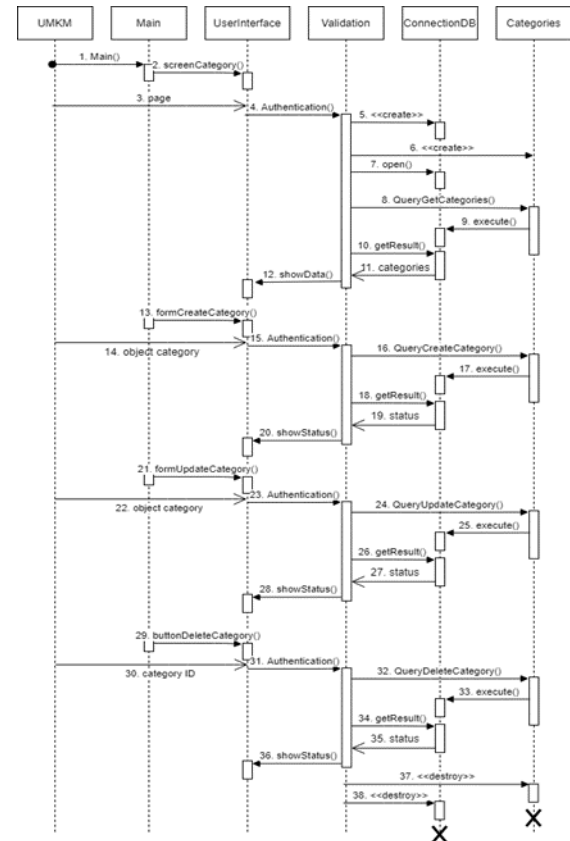


Figure 7. Sequence Diagram "Zazan" Use Case Manage Product Categories

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Sequence Diagram: Manage Products

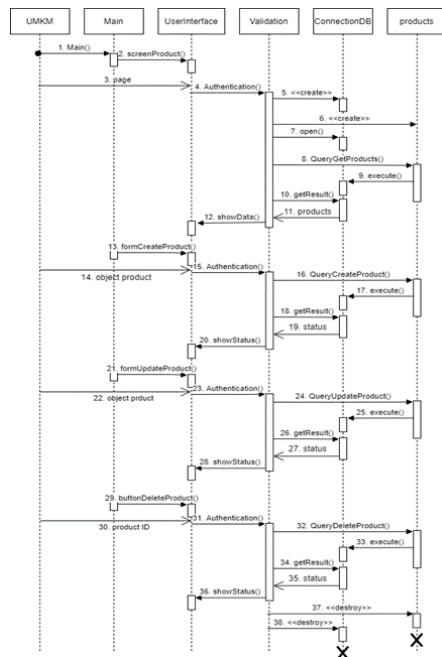


Figure 8. Sequence Diagram “Zazan” Use Case Manage Product

Sequence Diagram: Forgot Pin

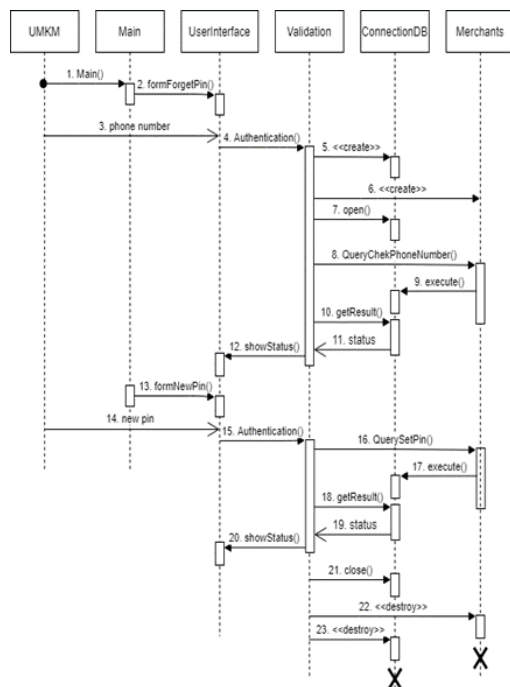


Figure 9. Sequence Diagram “Zazan” Use Case Forgot Pin

Sequence Diagram: Searching for Products

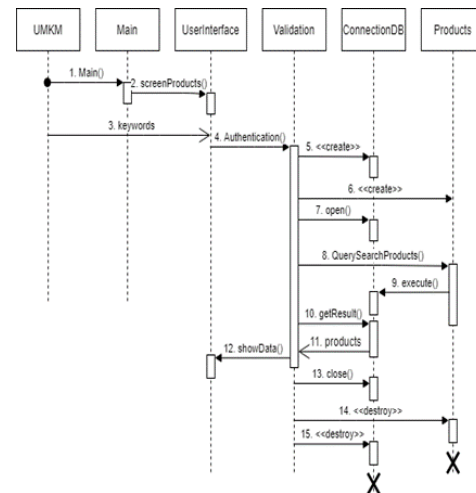


Figure 10. Sequence Diagram of “Zazan” Use Case Searching for Products

Sequence Diagram: Creating Transactions

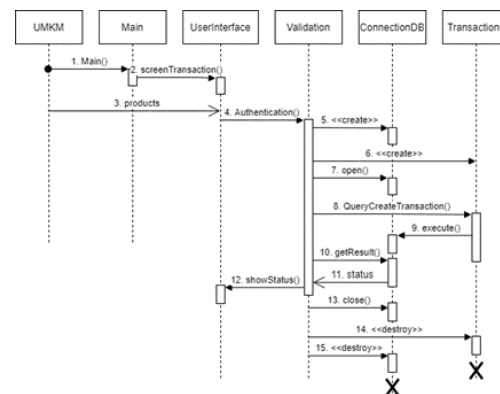
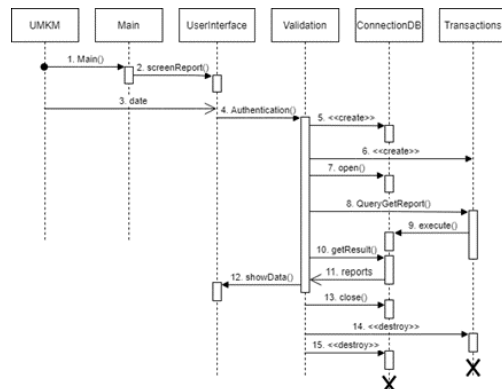


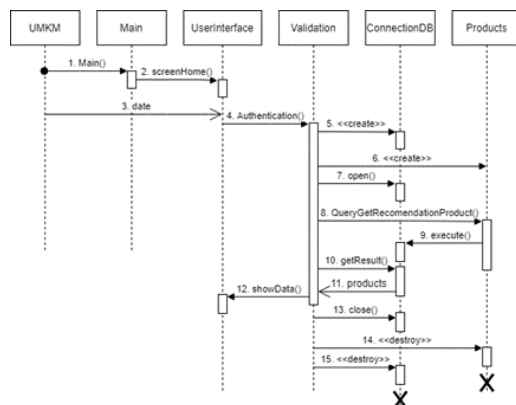
Figure 11. Sequence Diagram “Zazan” Use Case Creating Transactions

Sequence Diagram: view income report



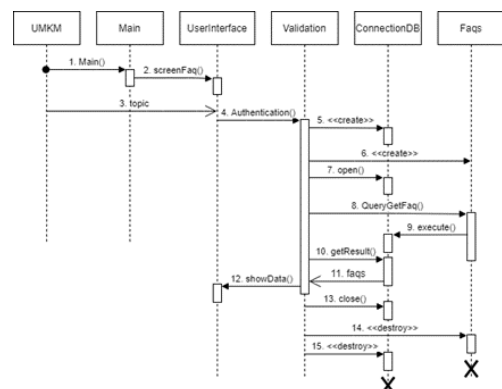
**Figure 12. Sequence Diagram of “Zazan” Use
 Case Viewing Income Report**

Sequence Diagram: Viewing Product Recommendations



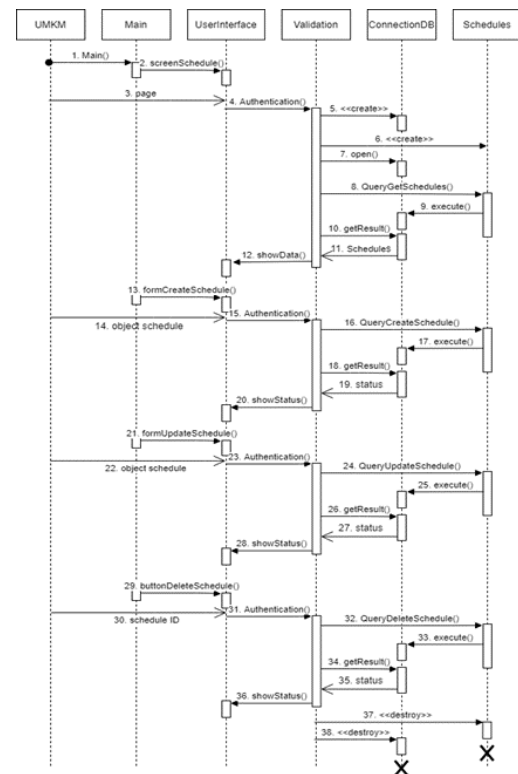
**Figure 13. Sequence Diagram “Zazan” Use
 Case Viewing Product Recommendations**

Sequence Diagram: Viewing FAQ



**Figure 14. Sequence Diagram “Zazan” Use
 Case Viewing FAQ**

Sequence Diagram: Manage Schedule



**Figure 15. Sequence Diagram “Zazan” Use
 Case Manage Schedule**

Sequence Diagram: Manage Conversations

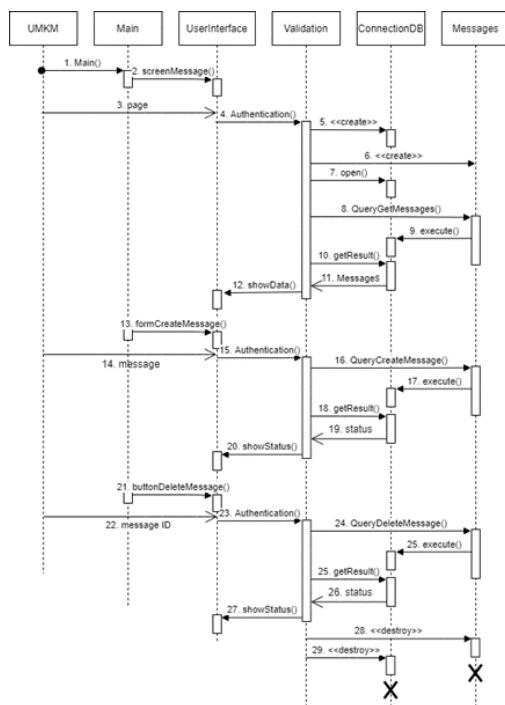


Figure 16. Sequence Diagram “Zazan” Use Case Manage Conversation

Sequence Diagram: Searching for MSMEs

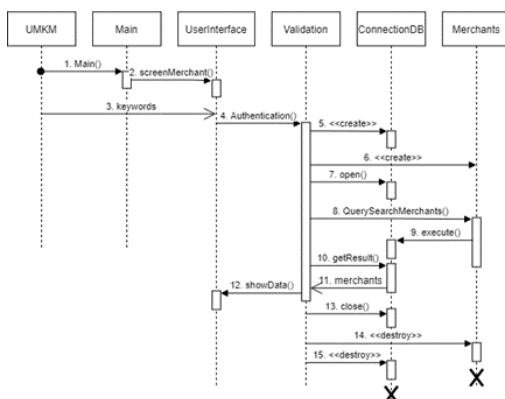


Figure 17. Sequence Diagram of “Zazan” Use Case Searching for MSMEs

Sequence Diagram: Ordering Products

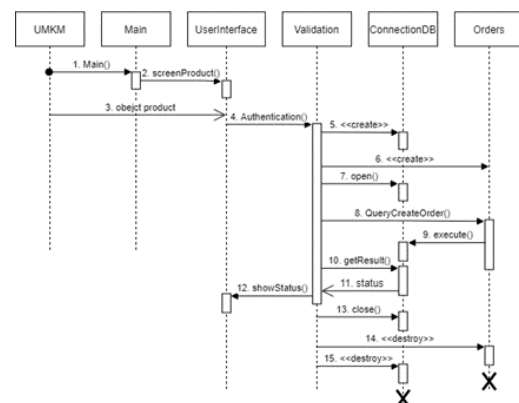


Figure 18. Sequence Diagram of “Zazan” Use Case Ordering Products

Sequence Diagram: Changing Profile

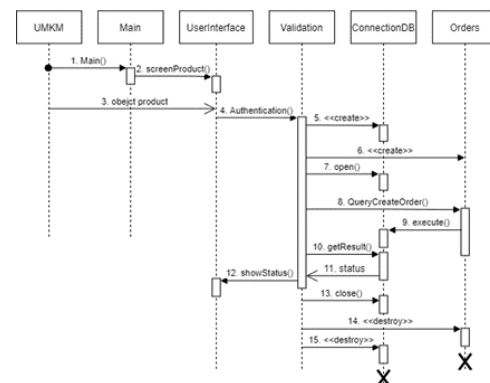


Figure 18. Sequence Diagram of “Zazan” Use Case Ordering Products

Sequence Diagram: Changing Profile

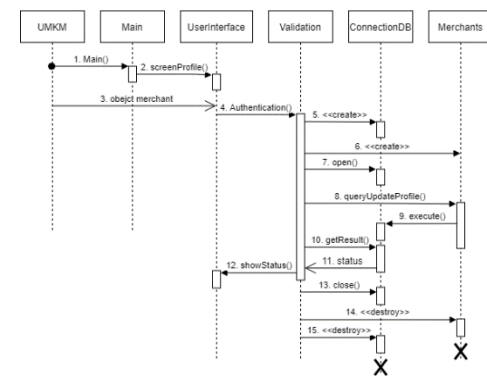


Figure 19. Sequence Diagram “Zazan” Use Case Changing Profile

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Sequence Diagram: Changing Pins

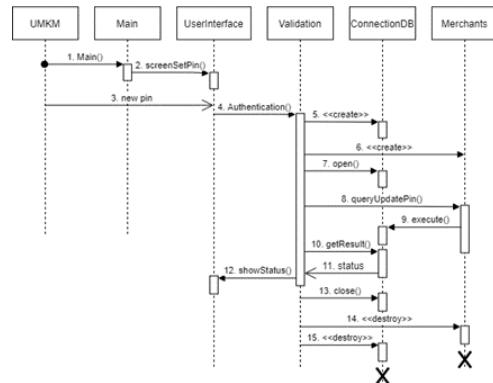


Figure 20. Sequence Diagram of “Zazan” Use Case Changing Pin

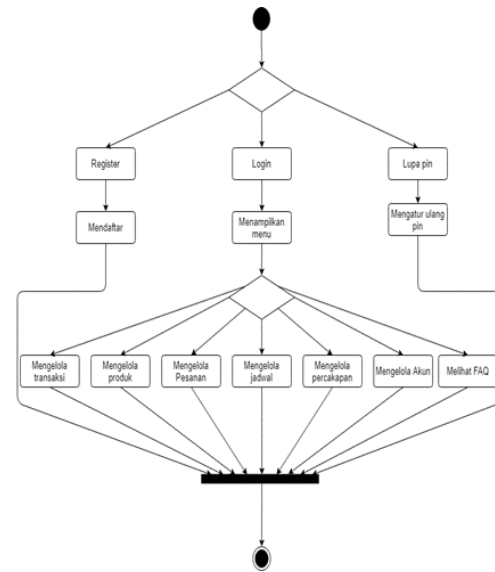


Figure 22. Activity Diagram “Zazan”

Sequence Diagram: Logout

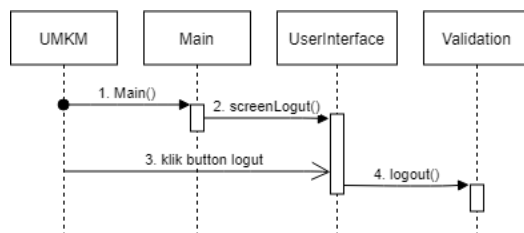


Figure 21. Sequence Diagram “Zazan” Use Case Logout

Object Diagram

Object diagrams are employed to delineate a system's structure in terms of objects' path and the objects' designation. The "Zazan" application is illustrated in the following object diagram:

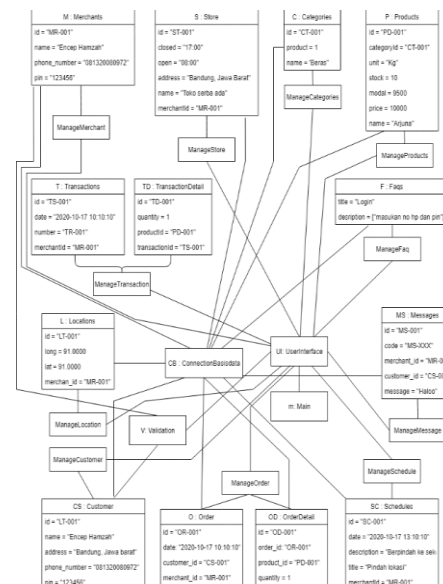


Figure 23. Object Diagram “Zazan”

Activity Diagram

Activity diagrams are highly beneficial for representing the actions that will be executed during an operation and the outcomes of those actions. The activity diagram image of the "Zazan" application is provided below:

Communication Diagram

Communication diagrams are employed to delineate how objects or components interact by transmitting messages. The communication diagram for the "Zazan" application is provided below:

Use Case: Login

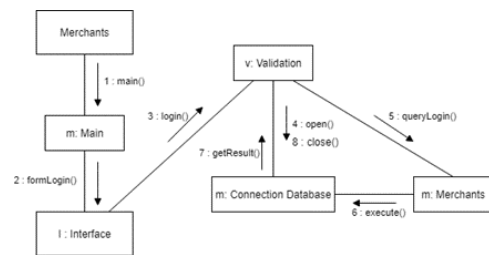


Figure 24. Communication Diagram "Zazan"

Use Case Login

Use Case : Kelola Kategori Produk

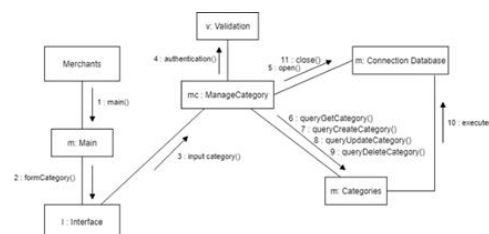


Figure 25. Communication Diagram "Zazan"

Use Case Manage Product Categories

Use Case : Manage Products

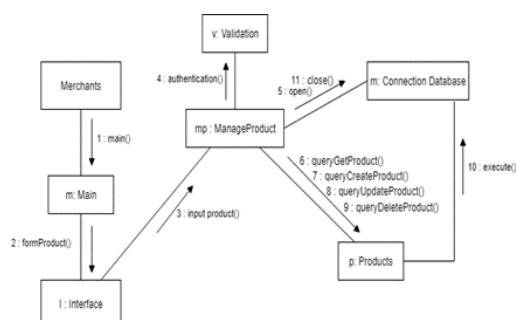


Figure 26. Communication Diagram "Zazan"

Use Case Manage Product

Use Case : Forgot Pin

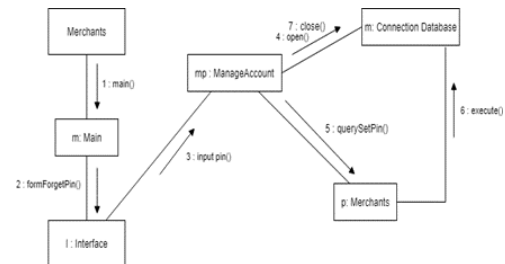


Figure 27. Communication Diagram "Zazan"

Use Case Forgot Pin

Use Case: Searching for Products

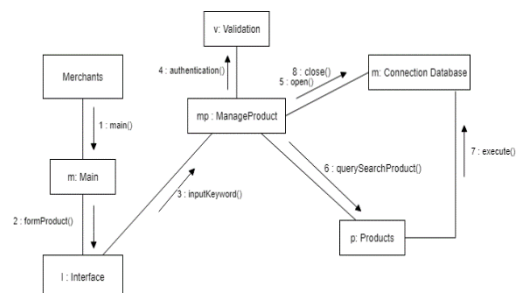


Figure 28. Communication Diagram "Zazan"

Use Case Searching for Products

Use Case: Creating Transactions

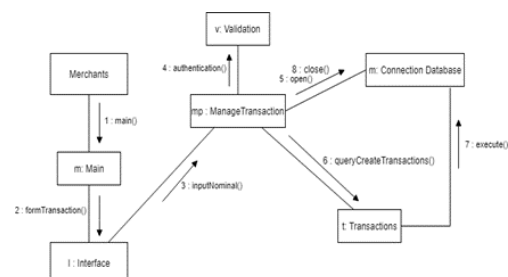


Figure 29. Communication Diagram "Zazan"

Use Case Creating Transactions

Use Case: Viewing Income Reports

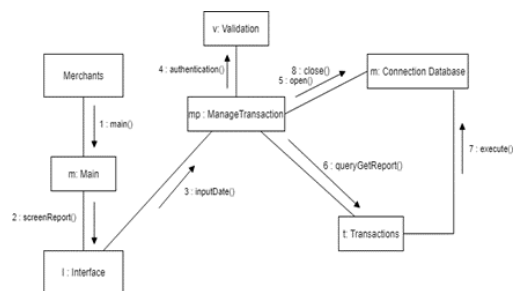


Figure 30. Communication Diagram “Zazan”

Use Case Viewing Reports

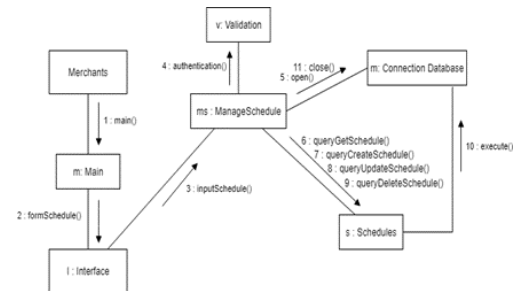


Figure 33. Communication Diagram “Zazan”

Use Case Manage Schedule

Use Case: View Product Recommendations

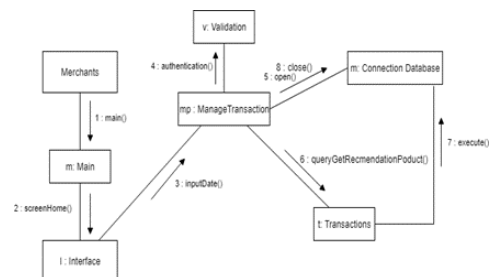


Figure 31. Communication Diagram “Zazan”

Use Case Viewing Product Recommendations

Use Case: Manage Conversations

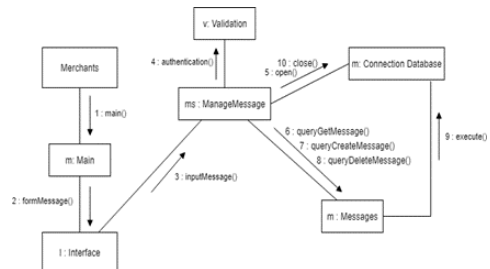


Figure 34. Communication Diagram “Zazan”

Use Case Manage Conversation

Use Case: Viewing FAQ

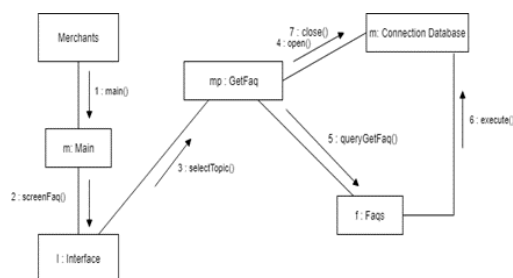


Figure 32. Communication Diagram “Zazan”

Use Case Viewing FAQ

Use Case: Searching for MSMEs

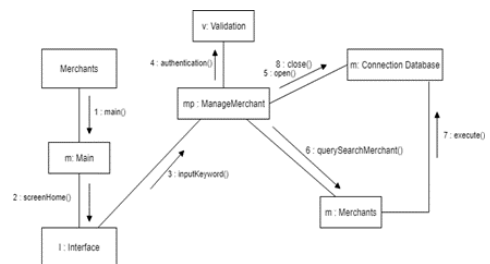


Figure 35. Communication Diagram “Zazan”

Use Case Searching for MSMEs

Use Case: Manage Schedule

Use Case: Ordering Products

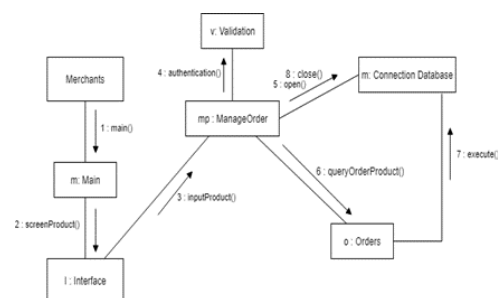


Figure 36. Communication Diagram “Zazan”

Use Case Ordering Products

Use Case: Changing Profile

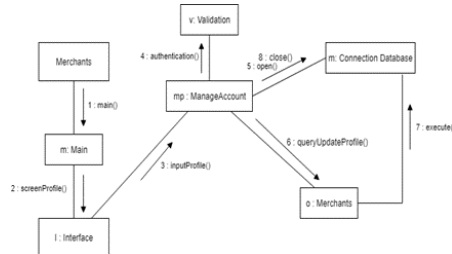
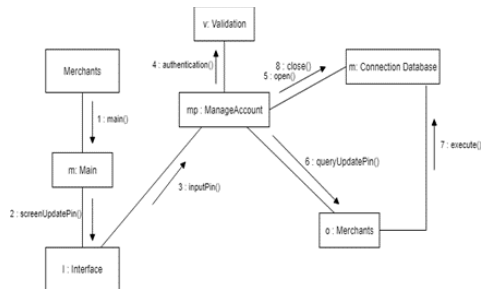


Figure 37. Communication Diagram “Zazan”

Use Case Changing Profile

Use Case: Changing PIN



**Gambar 38. Communication Diagram
 “Zazan” Use Case Merubah Pin**

Use Case: Logout

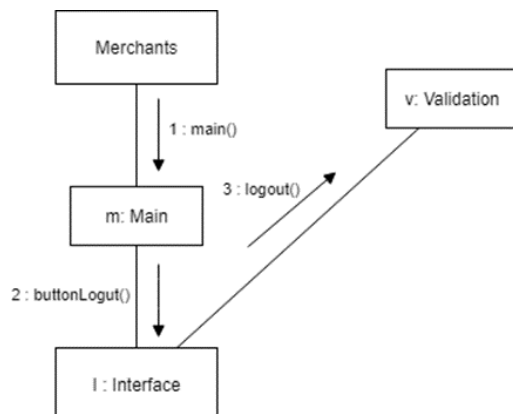


Figure 39. Communication Diagram “Zazan”

Use Case Logout

Component Diagram

The purpose of component diagrams is to organize the required functions. The "Zazan" application is illustrated in the following component diagram:

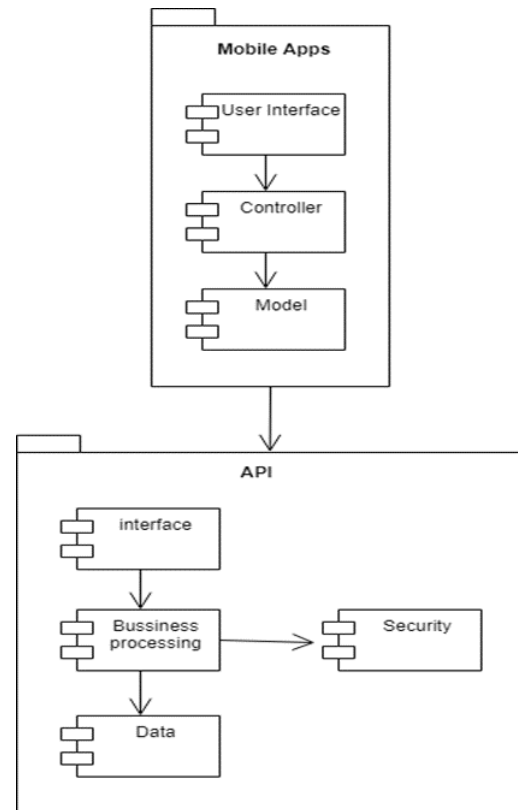
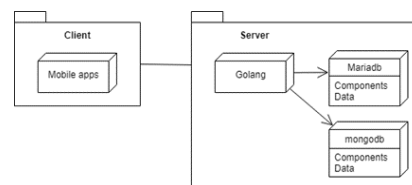


Figure 40. Component Diagram “Zazan”

Deployment Diagram

Deployment diagrams are employed to indicate component configuration during the application development process. This is the deployment diagram for the "Zazan" application:



Gambar 41. Deployment diagram “Zazan”

Menu Structure

The "Zazan" application comprises two applications: zazan-mitra for SMEs and zazan-kuy for common users. The interface structure of the "Zazan" application is as follows:

Zazan-mitra

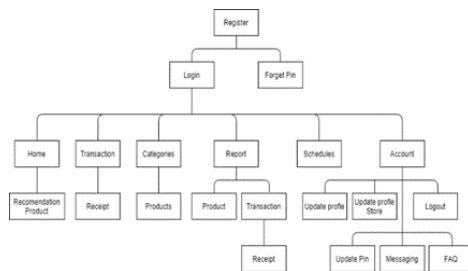


Figure 42. Zazan-Mitra Menu Structure

Zazan-Kuy

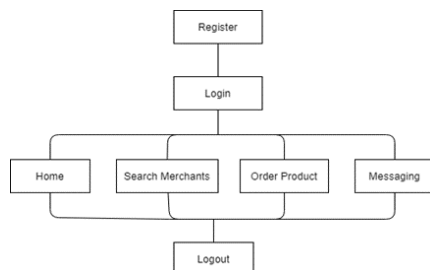


Figure 43. Zazan-Kuy Menu Structure

Physical Data Model (PDM)

The database design implemented in a relational database is described using PDM. The PDM for the "Zazan" application is as follows:



Figure 44. PDM Application "Zazan"

Implementation of the "Zazan" Application Interface

The user's view of the application is called the interface. The "Zazan" application is comprised of two applications: "zazan-mitra" and "zazan-kuy." The interface design results for the two applications are implemented as follows:

Zazan-partner

MSMEs will utilize Zazan-mitra. The zazan-mitra interface has yielded the subsequent outcomes:

Account Registration Page



Figure 45. MSME Account Registration Page

This page contains a registration form for MSMEs, which enables them to register for the Zazan-Mitra application. Prospective users must complete all the mandatory data columns: name, address, PIN, and cellular number.

Login Page



Figure 46. Login Page

This page serves as a login form for MSMEs that have enrolled in the "Zazan" application. Users are required to input their registered mobile phone number and PIN to access the system.

Forgot PIN Page

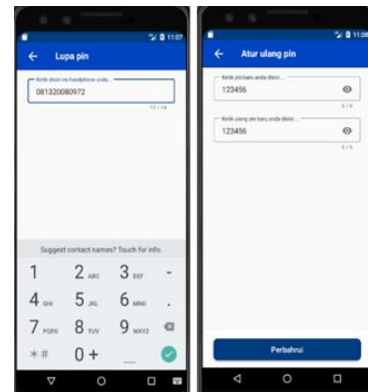


Figure 47 Forgot PIN Page

If users are unable to recall the PIN associated with their enrolled account, they may reset it by accessing this page. To do so, users must first input the registered mobile number and subsequently enter the most recent PIN for the account.

Home Page



Figure 48. Main Page

The primary page presents a summary of the MSME revenue data for that date. Furthermore, product recommendations derived from the most popular products are provided on this page. By selecting the "sell" option, users can execute transactions through this menu. An order

notification will be displayed on the order pane, and users can view the order's details.

Order Page



Figure 49. Order Page

This page displays a list of orders from MSME customers. The purchase menu tab displays a notification each time an order is placed. Users can view the order details and proceed with the transaction. The order, the product ordered, and the time of the order are all displayed on the card.

"plus" button on the screen. A product category form will then appear. Complete the form by entering the necessary information and clicking the "save" icon. Click on the pencil icon on the card to alter a category, presenting an update form. Please complete the form and select "update." Select the trash can icon on the card to eliminate a category. A validation pop-up will appear, and you will be prompted to click the "delete" button. To locate a product, select the magnifying glass icon in the screen's upper right corner. A search bar will appear; input a keyword and click the magnifying glass icon again.

Manage Products Page

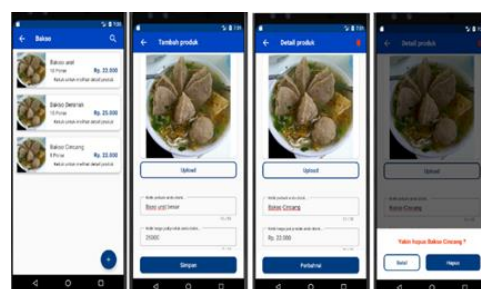


Figure 51. Manage Products Page

Manage Product Categories Page

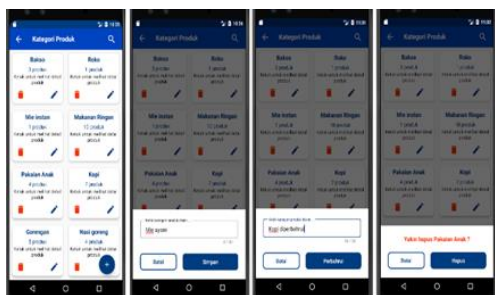


Figure 50. Manage Product Categories Page

The page functions as a product category administration menu, enabling users to search, create, update, or delete a product category. If you wish to establish a new category, select the

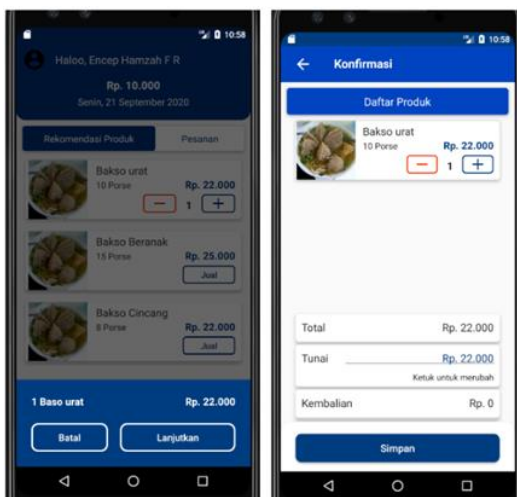
This page functions as the product administration menu, enabling users to search for, create, update, or delete a product. The add product page will be displayed after clicking the plus icon to create a new product. A form with fields for the product name, selling price, cost price, stock, unit, and an image field is located on this page. Complete each field and then select the "save" button. To update a product, select the product card, and the "Update Product" page will be displayed. A form with fields for name, selling price, purchase price, stock, unit, and image is located on this page. Click the "update" icon after entering the updated data in the fields that require

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modification. To remove a product, click the product card, and the "update product" page will appear. A confirmation pop-up will appear after you click the trash can icon in the upper right corner of the page. Select the "delete" icon. Click the magnifying glass icon in the upper right quadrant of the product page to search for a specific item. A search bar will be displayed; input a keyword and then select the magnifying glass icon again. The product data will be displayed on the product page if the keyword is located.

Transaction Page



Gambar 52. Halaman Transaksi

Users may select products to be transacted on this page, which functions as a transaction creation form. Initially, select the "sell" option on the product card. A plus button with a numerical value and a minus button will be displayed. To increase the quantity of the commodity, click the plus button; to decrease it, click the minus button. Subsequently, a transaction summary pop-up will be displayed at the bottom of the page, displaying the total price, quantity, unit pricing,

and selected products. The transaction confirmation page will be displayed after the products have been selected. Click the "Continue" button.

The total price of the specified products is displayed in the "total" field. The "change" field displays the discrepancy between the "cash" and "total" amounts that the consumer has provided. Select the "cash" field and enter the quantity to input the customer's payment amount. The "change" field will be automatically filled in based on the discrepancy between "cash" and "total." If the "cash" quantity is less than the "total," the "save" button will be turned off, and a message will be displayed stating, "Cash cannot be less than total." Lastly, select the "save" option. A success pop-up will be displayed if the transaction is effectively saved. An error pop-up will be displayed in the event of an error.

Transaction Receipt Page

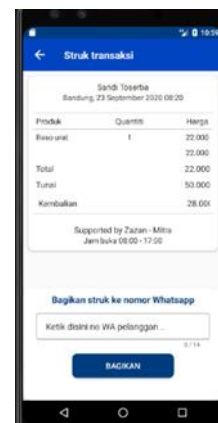


Figure 53. Transaction Receipt Page

This page serves as a digital receipt for the transaction that has been completed, which users may distribute to their clients. To distribute the receipt, users must first input the customer's

mobile number and subsequently select the "share" button.

Report Page

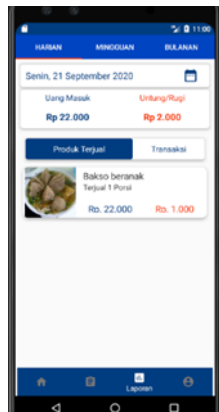


Figure 54. Report Page

This report page is for completed transactions, allowing users to filter them by daily, weekly, or monthly time frames and select report dates. The report date is indicated in the first column, while a summary of transaction totals and profits is provided in the second column. Profits are indicated in orange, while the total transaction quantity is indicated in blue. Click on the "daily," "weekly," or "monthly" options located at the top of the page to apply a time frame filter. To filter by date, click on the date field, select a date from the calendar pop-up, and the data will be displayed on the page. Transaction reports and reports for products that have been sold are located at the bottom. To access the report on the sold products, select the "sold products" tab. To access the transaction report, select the "transactions" tab.

Manage Schedule Page

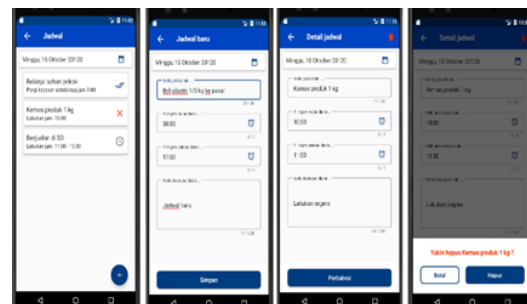


Figure 55. Manage Schedule Page

Users can search, create, amend, or delete a schedule on this page, which is the schedule management menu. To locate a schedule, click on the date field and select a date from the calendar that appears. To generate a new schedule, select the "plus" icon, which will generate the new schedule page. On this page, there is a form for the new schedule. Complete the title, start time, end time, and description fields, then select the "save" button. To modify a schedule, select the schedule card, and the "Update Schedule" page will be displayed. Click the "update" button after entering the updated data in the fields you wish to modify. Click on the schedule card to remove a schedule, and the "Update Schedule" page will appear. Click on the trash can icon located at the top of the page. A confirmation pop-up will appear; select the "delete" button.

Each schedule card has a checkmark icon in three colors. Orange indicates that the schedule was completed late, while gray indicates that the scheduled time has not yet arrived. Green indicates that the schedule was completed on time.

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Zazan-kuy

Zazan-kuy is an application that general consumers or MSME customers will utilize. The zazan-kuy Interface has yielded the subsequent outcomes:

Account Registration Page

Figure 56. Zazan-Kuy Account Registration Page

This page functions as a registration form for general users, enabling them to register for the Zazan-kuy application. Prospective users are required to complete all mandatory fields, including name, address, phone number, and PIN.

Login Page

Figure 57. Login Page

The “Zazan-kuy” application’s authentication form is located on this page, intended for registered users. Users must enter their registered mobile phone number and pin to log in, and then select the “login” button.

Home Page

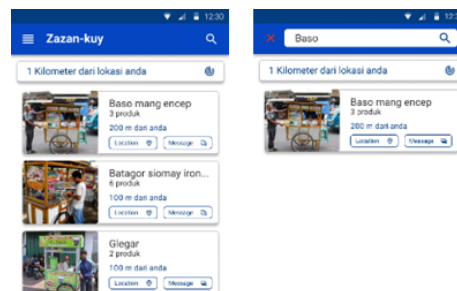


Figure 58. Zazan-Kuy Home Page

When a general user signs in, this page is the primary page that displays information about the nearest MSMEs. Furthermore, users can seek for MSMEs and refine their results based on distance. To locate MSMEs, click the magnifying glass icon. A search column will

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appear; input keywords and click the magnifying glass icon again. To filter by distance, select the distance column and a distance column in KM units will appear. Select the desired distance and click the “filter” icon.

Product Search Page

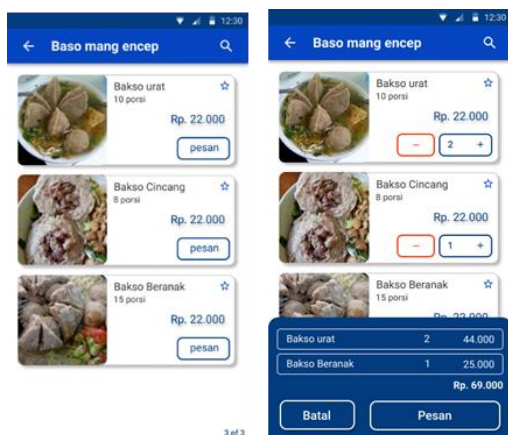


Figure 59. Zazan-Kuy Product Search Page

The products possessed by the selected MSME are listed on this page. Users can browse for and purchase products from this page. To locate a product, select the magnifying glass icon, input a keyword into the search field, and then click the magnifying glass icon again. Select the "order" Icon on the card to order a product. A plus button with a numerical value and a minus button will appear. To increase an order, select the “plus” button; select the “minus” button to decrease it. The order summary is presented in a pop-up window at the bottom. The product name, quantity, unit price, and total price are all displayed in the data. Send the order to the designated MSME by clicking on the message. The customer's order will be added to the MSME order menu.

Conversation Page



Figure 60. Zazan-Kuy Conversation Page

This page is a user conversation form, enabling general users to communicate messages to MSMEs. To engage in a conversation, users must first select the MSME number and subsequently input the message they wish to convey. Users can only communicate with MSMEs already incorporated into the application.

CONCLUSION

The author's research leads to the following conclusions: The "Zazan" application allows business owners to accurately monitor product sales, review completed activities, and evaluate the profitability of their operations by effectively recording business activities, scheduling tasks, and generating simple profit/loss reports. Furthermore, the application utilizes distinct button commands, contrasting base colors, and reasonably large text sizes to guarantee that the menus and features are readily visible to users.

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