

Nailflow Application Interface Design Using Design Thinking Methods to Support Nail Ordering Efficiency at CV. Tjahaya Logam

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ARTICLE HISTORY

Received: November 16, 2025

Revised: October 01, 2026

Accepted: October 25, 2026

DOI

<https://doi.org/10.52970/grdis.v6i4.1864>

ABSTRACT

The development of information technology has encouraged industries to transition to digital systems to improve operational efficiency and service quality. CV Tjahaya Logam, a nail manufacturing company, still relies on a manual ordering system, which may lead to recording errors and delays in order confirmation. To address these issues, the NailFlow application interface was designed using the Design Thinking method, which consists of five stages: Empathize, Define, Ideate, Prototype, and Test. This study aims to develop a user interface (UI) and user experience (UX) design that is intuitive, efficient, and responsive to the needs of customers and company administrators. The resulting prototype incorporates key features, including digital ordering, real-time order tracking, and inventory management. Testing using the Black Box Testing method indicates that all interface elements function as expected. The proposed interface design is expected to improve the efficiency of the ordering process, minimize errors, and enhance the service experience for CV Tjahaya Logam customers.

Keywords: Design Thinking, Interface Design, UI/UX, Nailflow Application, CV Tjahaya Logam.

I. Introduction

The development of information technology has encouraged the industrial sector to adopt digital transformation to improve operational efficiency and customer service. One essential aspect of digital system development is the design of the user interface (UI) and user experience (UX), which can enhance usability, convenience, and overall user satisfaction. CV Tjahaya Logam, a nail manufacturing company, still relies on a manual ordering system that can lead to various issues, including recording errors, delays in order confirmation, and difficulties for customers in tracking their order status. These issues can reduce operational efficiency and negatively affect customer satisfaction. To address these challenges, the authors designed the NailFlow application using the Design Thinking approach, which emphasizes understanding user needs and developing user-centered solutions. The design process involved five stages: Empathize, Define, Ideate, Prototype, and Test. Through these stages, the NailFlow application interface was designed to be more intuitive and efficient, with the aim of streamlining the ordering process and facilitating order management for both customers and company staff. This study focuses primarily on the user interface (UI) and user

experience (UX) design without implementing the system's functional components. The proposed NailFlow interface is expected to improve ordering efficiency, minimize recording errors, and provide customers with greater transparency regarding their order status. Furthermore, this design can serve as a foundation for the future development of a more comprehensive application that supports operational activities and improves service quality at CV Tjahaya Logam.

II. Literature Review and Hypothesis Development

2.1. Company Overview

CV Tjahaya Logam is a nail manufacturing company located at Jln. AKBP Cek Agus No. 1344 A, Kenten, Palembang, Indonesia. The company was established in 1982 by the late Mr. Bustannuddin, who served as its founder and first owner. Following his passing, ownership of the company was transferred to his son, Mr. Tanu Darma. However, the company subsequently experienced bankruptcy due to various challenges. In mid-2024, the company was acquired by Mr. David Gozali, who currently serves as its director. Under his leadership, CV Tjahaya Logam began implementing improvements and introducing various innovations, including the development of digital systems to support and simplify its operational activities (Company Profile of CV Tjahaya Logam, 2025). A work unit generally refers to a group or organizational division responsible for carrying out specific tasks to achieve organizational objectives. At CV Tjahaya Logam, the organizational structure consists of several positions, including the Director, Operations Manager, Heads of Department (HoDs), Head of Factory Workers, Factory Operations Administrator, Sales Operations Administrator, and Factory Workers. Each position has distinct duties and responsibilities that support the company's operational activities.

2.2. Organizational Structure and Duties

The organizational structure of CV Tjahaya Logam defines the responsibilities and authority of each position to ensure that the company's operational activities are carried out effectively and efficiently. The following sections describe the duties and responsibilities associated with each position.

a. Director

The Director is responsible for planning, supervising, controlling, and making strategic decisions to ensure the company's sustainability and development. These responsibilities include establishing general company policies and ensuring that all operational activities align with the company's vision, mission, and applicable regulations.

b. Operations Manager

The Operations Manager is responsible for organizing, supervising, and ensuring the smooth execution of the company's operational activities, including production, administration, and distribution. This position also involves monitoring the implementation of established targets and periodically evaluating the performance of each department to ensure that organizational objectives are achieved in accordance with applicable policies and regulations.

c. Head of Department (HoD)

The Head of Department is responsible for leading, coordinating, and supervising the divisions under their authority. This role includes ensuring that operational activities in both production and administration are conducted effectively and efficiently in accordance with established work procedures and standard operating procedures (SOPs). The Head of Department also ensures the consistent implementation of

company policies to achieve performance targets, improve productivity, and support the company's vision and mission.

d. Factory Operations Administrator

The Factory Operations Administrator is responsible for recording nail production activities accurately, entering production data into the company's system, and regularly monitoring the availability of nail stock at the factory. This position also involves preparing and submitting stock and production reports to the Sales Operations Administrator as a basis for managing product distribution and sales. These activities are carried out in accordance with established company procedures to maintain operational efficiency and ensure the accuracy of production and inventory information.

e. Sales Operations Administrator

The Sales Operations Administrator is responsible for managing customer orders, beginning with order receipt and stock availability checks, followed by the preparation of bills or invoices and the arrangement of delivery schedules. This position also involves coordinating the delivery of goods to customers and managing payment collection in accordance with company procedures. These responsibilities support the smooth operation of sales activities and help maintain the company's cash flow.

f. Head of Factory Workers

The Head of Factory Workers is responsible for organizing, supervising, and coordinating factory workers throughout the nail production process. This position ensures that each stage of production follows established standard operating procedures (SOPs) and meets the specified production targets. In addition, the Head of Factory Workers monitors product quality to ensure that the finished products meet company standards and are ready for distribution and sale.

g. Factory Workers

Factory Workers are responsible for carrying out the nail production process under the direction and supervision of the Head of Factory Workers. Their duties include performing production activities from the initial manufacturing stage through final packaging. They are also responsible for maintaining product quality in accordance with company standards to support smooth production operations and achieve the targets established by management.

2.3. Practical Work Unit

The author completed practical work in the Factory Operations Administration unit at CV Tjahaya Logam, located at Jln. AKBP Cek Agus No. 1344 A, Kenten, Palembang, Indonesia. The primary responsibilities of this unit include processing nail production data and managing product inventory using the digital system provided by the company. CV Tjahaya Logam is a manufacturing company established in 1982 that produces nails for distribution to various regions across Indonesia. Through the use of a computerized work system, the company manages production activities, processes operational data, and coordinates product distribution. This system is intended to improve operational efficiency, enhance information accuracy, and minimize errors in data processing and inventory management.

2.4. Procedures in the Practical Work Unit

The practical work procedures followed at CV Tjahaya Logam consist of several stages, as described below.

a. Receiving and Recording Customer Orders

Customers place nail orders through WhatsApp by specifying the required product type, quantity, and specifications. The orders are then recorded and summarized in a Microsoft Excel file to facilitate order documentation and further processing.

b. Checking Stock Availability and Processing Production

The administrator checks the availability of the ordered products in the warehouse. If sufficient stock is available, the products are prepared for delivery. However, if the available stock is insufficient, the company arranges additional production to fulfill the customer's order.

c. Preparing Delivery Notes and Invoices and Shipping Goods

Once the ordered products are ready, the administrative staff prepare a delivery note and an invoice based on the customer's order. The products are then shipped to the customer together with the relevant documents to support the delivery and payment processes.

2.5. Work Activities During the Practical Work Period

During the practical work period at CV Tjahaya Logam, particularly in the Factory Operations Administration unit, the author performed several activities related to production administration, order documentation, and operational data processing. These activities included the following:

a. Recording and Confirming Customer Orders

The author recorded customer orders and assisted with order confirmation to ensure that the information regarding product types, quantities, and specifications was documented accurately.

b. Preparing Minutes of Production Conversion Changes

The author prepared minutes documenting changes in production conversion to ensure that the relevant information was recorded systematically for administrative and operational purposes.

c. Entering Production Data and Preparing Delivery Orders

The author entered production data into the company's system and prepared delivery orders based on customer requirements. These activities supported the documentation of production output and the preparation of goods for distribution.

d. Identifying Problems and Determining the Practical Work Title

The author reviewed the work processes and identified problems encountered in the Factory Operations Administration unit. This review served as the basis for determining a practical work title relevant to the operational issues identified, particularly those associated with order processing, production data management, and the potential use of digital systems to improve work efficiency.

III. Research Method

3.1. General Theoretical Foundations

General theories provide the fundamental concepts required to understand and apply the principles discussed in this report. These theories establish a broad conceptual framework relevant to the development of the system or application under study. In this report, general theoretical foundations are used to explain information management, technology, and system design in the context of developing the NailFlow

application to improve nail ordering efficiency at CV Tjahaya Logam. The general theories underlying this report include design, user interface (UI) and user experience (UX) design, and business process efficiency.

a. Design

According to Prayogi Nugroho and Suwarno (2024), design is a process that combines creativity in user interface development with a structured framework of logic and database design, implemented iteratively through a prototyping method. In designing the NailFlow application interface, a strategic and structured approach is necessary to support an efficient nail ordering process at CV Tjahaya Logam. An intuitive and engaging interface is also essential to ensure that users can easily understand the available features and navigate the application effectively. Therefore, the design process considers user needs, interface usability, and the efficiency of the ordering workflow.

b. User Interface (UI) and User Experience (UX) Design

User Interface (UI) refers to the visual and interactive elements through which users interact with a system or application. These elements include buttons, icons, colors, typography, menus, and page layouts. According to Abdul Kholik et al. (2024), UI design focuses on the visual presentation and interactive components of an application to ensure that users can understand and operate the system easily. Effective UI design can improve usability and facilitate interaction between users and the system. User Experience (UX), in contrast, encompasses users' overall perceptions and experiences when interacting with a system or application. UX includes usability, accessibility, ease of navigation, and the extent to which the application meets user expectations. Research by Wijaya et al. (2025) emphasizes the importance of inclusive, user-oriented UX design in developing smart city websites to improve the accessibility of public services for different segments of society. The application of UI and UX principles is essential in developing the NailFlow application. By prioritizing an intuitive interface and a user-centered experience, NailFlow is designed to simplify the nail ordering process, facilitate order monitoring, and improve the efficiency of administrative activities at CV Tjahaya Logam. These principles also guide the design of features that accommodate the needs of both customers and company administrators.

c. Business Process Efficiency

Business process efficiency refers to an organization's ability to achieve its operational objectives while minimizing unnecessary resource consumption, processing time, and costs. In the context of information technology, efficiency can be improved through workflow automation, information integration, and better coordination between departments or business units. According to Priambodo (2025), the implementation of appropriate information systems can improve business process efficiency by accelerating operational activities, reducing the likelihood of human error, and supporting faster and more accurate decision-making. Information systems can also facilitate workflow automation and improve overall organizational performance. In the context of CV Tjahaya Logam, business process efficiency is particularly relevant to customer order recording, inventory monitoring, and order status tracking. The NailFlow interface is designed to support these activities by presenting information systematically and facilitating access to essential ordering features. Consequently, the proposed design is expected to reduce difficulties associated with manual processes and support more efficient order management.

3.2. Specific Theoretical Foundations

Specific theoretical foundations provide concepts that are directly related to the processes and practical issues examined in this report. These theories are used to explain the methods, tools, and approaches applied in analyzing existing business processes and designing the NailFlow application interface at CV Tjahaya Logam. The specific theories discussed in this report include flowcharts, Unified Modeling Language (UML), and the Design Thinking method.

a. Flowchart

A flowchart is a diagram that visually represents the sequence of activities or steps within a process or system. It uses standardized symbols to illustrate the flow of information, decisions, and activities, allowing a process to be understood and analyzed systematically. According to Ni Nyoman Emang Smrti et al. (2023), flowcharts are used to describe problem-solving procedures in detail and facilitate the understanding of algorithms. Flowcharts can also support communication and collaboration among development team members by presenting process logic in a visual format. In this report, flowcharts are relevant to illustrating the existing nail ordering procedures at CV Tjahaya Logam and the proposed workflow supported by the NailFlow application. By presenting the process visually, flowcharts can help identify operational bottlenecks and clarify the sequence of activities involved in order recording, stock checking, and order processing.

b. Unified Modeling Language (UML)

Unified Modeling Language (UML) is a standardized modeling language used to visualize, specify, and document the structure and behavior of software systems. UML provides several types of diagrams that represent different aspects of a system, including its components, interactions, and processes. In application development, UML can help developers and stakeholders understand system requirements and communicate the relationships between users and system functions. For the NailFlow application, UML can be used to illustrate user interactions and the functional requirements associated with customer ordering and administrative activities. For example, a use case diagram can describe the interactions between customers, administrators, and the application's main features. Other UML diagrams may be used when necessary to provide a more detailed representation of the proposed system design.

c. Design Thinking

Design Thinking is a user-centered problem-solving approach that emphasizes understanding user needs, generating creative solutions, and evaluating proposed designs through an iterative process. According to Nuraini and Rachmawati (2023), the Design Thinking method enables development teams to understand user needs in depth through five stages: Empathize, Define, Ideate, Prototype, and Test. This method is appropriate for designing the NailFlow application because it places users' experiences and operational challenges at the center of the design process. By examining the needs of customers and administrators at CV Tjahaya Logam, the design process can produce an interface that addresses problems associated with manual ordering procedures. The five stages of the Design Thinking method applied in designing the NailFlow application are presented in Figure 1.

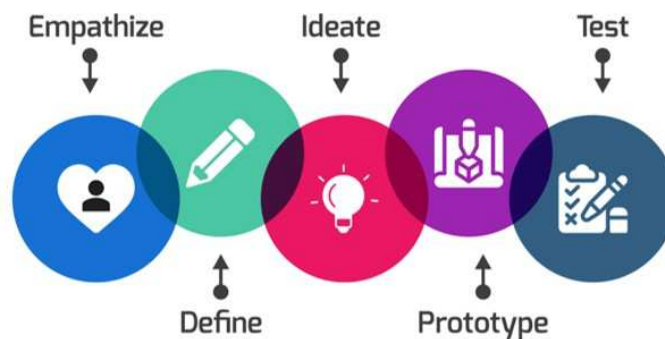


Figure 1. Stages of the Design Thinking Method

a. Empathize

The Empathize stage focuses on understanding the needs, experiences, and challenges of the intended users of the NailFlow application, particularly customers and administrators at CV Tjahaya Logam.

At this stage, data are collected through interviews and observations to identify the difficulties encountered during the existing nail ordering process. The information gathered provides insights into users' expectations, work patterns, and challenges when placing orders, checking stock availability, and monitoring order status. Understanding these aspects enables the design team to develop solutions that are relevant to actual user needs.

b. Define

The Define stage involves analyzing the information collected during the Empathize stage and formulating the main problems that the application design should address. In the context of NailFlow, the problems identified include inefficiencies in the manual nail ordering process, difficulties in monitoring inventory availability, and delays in order processing and confirmation. These issues provide the basis for establishing the design objectives and determining the features required to support a more efficient ordering process. Clearly defining the problems helps ensure that the proposed interface addresses the identified user needs and remains focused on the primary objectives of the application.

c. Ideate

The Ideate stage focuses on generating and exploring potential solutions to the problems identified during the Define stage. Various ideas are developed through creative thinking and brainstorming to identify possible improvements to the existing ordering process. For the NailFlow application, proposed solutions may include digital order placement, order status tracking, inventory information displays, and an intuitive administrative interface for managing order data. These ideas are then evaluated according to their relevance to user needs and their feasibility within the scope of the design. The selected ideas serve as the basis for developing the application's interface structure and determining the features to be represented in the prototype.

d. Prototype

The Prototype stage involves translating the selected ideas into a preliminary representation of the proposed application. The prototype illustrates the interface layout, navigation structure, and presentation of the main features of NailFlow. At this stage, the design may take the form of wireframes, mockups, or an interactive prototype that demonstrates how users would interact with the proposed interface. The prototype is intended to provide a visual representation of the application's design before full system implementation. For NailFlow, the prototype is designed to illustrate the ordering process, order status information, and inventory management interface. The prototype can subsequently be evaluated to determine whether the proposed design is understandable, accessible, and aligned with the needs of customers and company administrators.

e. Test

The Test stage involves evaluating the prototype to determine whether the proposed design meets user needs and addresses the problems identified in the earlier stages. Testing may involve collecting feedback from customers and administrators at CV Tjahaya Logam regarding interface usability, navigation, clarity of information, and the suitability of the proposed features. The feedback obtained is used to identify weaknesses in the design and determine areas that require improvement. Because Design Thinking is an iterative method, the results of testing may lead to revisions to the prototype or a return to earlier stages of the design process. In addition, the Black Box Testing method can be used to evaluate whether the functions of an implemented or testable application behave according to the specified requirements without examining the internal program code. If this method is applied to the NailFlow prototype, the test cases should correspond to the functions that are actually available and testable. The results can then be used to identify functional issues and support further improvements to the application design.

IV. Result and Discussion

4.1. Analysis of Practical Work Results

a. Analysis of the Existing System

The analysis of the existing system aims to understand the nail ordering process at CV Tjahaya Logam and identify the problems encountered during its implementation. Based on interviews and direct observations, the ordering process is still conducted manually through telephone calls or WhatsApp messages. Administrators record customer orders in notebooks or spreadsheet files, which can lead to data entry errors, duplicate records, and delays in order verification, particularly when order volumes increase. Furthermore, customers cannot independently monitor their order status in real time. As a result, communication regarding order details, product availability, and delivery schedules may become inefficient and lead to misunderstandings between customers and company administrators. These limitations indicate the need for a more structured ordering system that facilitates order management and improves information transparency. During the Empathize stage of the Design Thinking method, the author conducted interviews and direct observations involving administrators and customers to identify their needs, challenges, and expectations regarding the existing ordering system. The observations focused on communication between customers and administrators, the manual recording of orders, and the process of verifying order information. The findings from this stage provided the basis for designing the NailFlow application as a proposed digital solution to improve the efficiency and transparency of the nail ordering process at CV Tjahaya Logam.

b. Proposed Solution to the Identified Problems

To address the problems identified in the existing nail ordering system, the author proposes a digital ordering application called NailFlow. The proposed application is designed to enable customers to place orders through a digital interface without having to contact administrators directly by telephone or WhatsApp for every transaction. Through NailFlow, customers are expected to be able to browse product information, place orders independently, monitor order status, and receive notifications regarding order progress and shipping updates. Meanwhile, administrators are expected to be able to manage order information, verify transactions, update order statuses, and maintain product inventory through a more structured interface. The proposed solution is intended to simplify the ordering process, reduce the risk of recording errors, facilitate order monitoring, and improve communication between customers and administrators. However, these benefits represent the intended outcomes of the proposed design and require further validation through prototype evaluation and, where applicable, system implementation.

4.2. System Design

The system design aims to provide a structured solution that enables customers to order nails more easily and efficiently while assisting administrators at CV Tjahaya Logam in managing order data, verifying transactions, and coordinating deliveries. The design process follows the Design Thinking approach, which consists of five stages: Empathize, Define, Ideate, Prototype, and Test. This approach is used to ensure that the proposed application design reflects the needs and expectations of its intended users, including customers and company administrators. In addition, the author uses Unified Modeling Language (UML) to represent the proposed system structure and processes. The UML diagrams discussed in this section include use case diagrams, activity diagrams, and class diagrams. These diagrams illustrate the interactions between users and the system, the sequence of activities involved in the ordering process, and the relationships between the main data entities. The proposed NailFlow design is intended to support more efficient, accurate, and transparent order management at CV Tjahaya Logam while improving the overall customer experience.

a. Flowchart

A flowchart is a diagram used to represent the sequence of activities within a process through standardized symbols. It provides a visual representation of the workflow, making the stages of a process easier to understand, analyze, and evaluate. In this report, the flowchart is used to illustrate the workflow of the proposed NailFlow application, particularly the process of placing orders, verifying order information, checking product availability, and preparing orders for delivery. The diagram helps clarify the sequence of activities and the decisions required at each stage. By presenting the workflow visually, the flowchart provides a clear overview of the proposed system and serves as a reference for subsequent application design and development. It also helps identify potential gaps in the process and ensures that essential steps are considered in the proposed ordering workflow.

b. Use Case Diagram

A use case diagram is a UML diagram used to illustrate the interactions between actors and the functions provided by a system. It identifies the primary users and the activities they can perform within the system. In the proposed NailFlow application for CV Tjahaya Logam, the main actors are the Customer and the Admin. Customers interact with the system to access product information, place orders, complete payment-related activities, and monitor order status. Administrators manage product information, process incoming orders, update inventory, and maintain order-related information. The use case diagram provides an overview of the functional scope of the proposed application and clarifies the responsibilities of each actor. It also serves as a reference for identifying the functions that should be represented in the application interface.

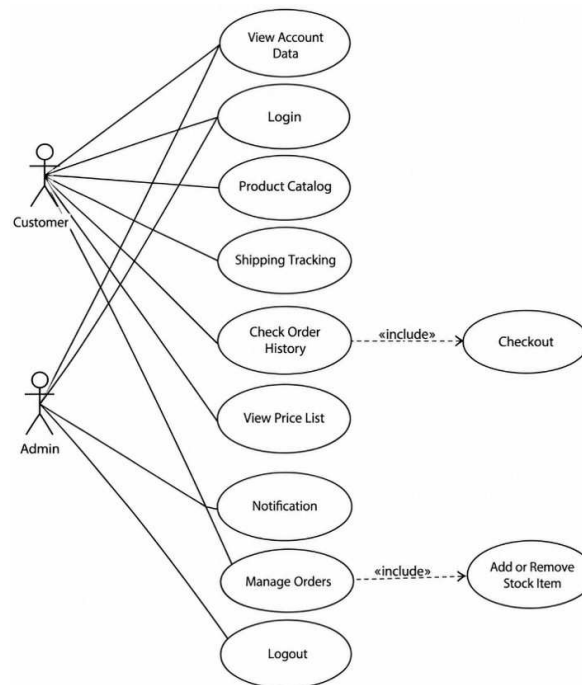


Figure 2. Proposed Use Case Diagram

c. Activity Diagram

An activity diagram is a UML diagram that illustrates the sequence of activities and decisions within a system or business process. It describes how users and the system interact throughout a particular workflow, from the initial action to the completion of a process. In the proposed NailFlow application, activity diagrams are used to represent the workflows associated with customer ordering and administrative order

management. These diagrams help explain the sequence of actions, decision points, and interactions required to complete each process. The main activities represented in the proposed application are described below.

- 1) **Account Registration:** The account registration feature enables new users to create an account by entering the required information, such as their name, email address, telephone number, and password. The information is intended to be stored in the system database and used for account identification and subsequent access to the application.
- 2) **Login:** The login feature allows customers and administrators to access the application by entering their registered email address or username and password. The system is designed to verify the submitted credentials and provide access according to the user's assigned role.
- 3) **Viewing and Ordering Products:** This feature enables customers to browse the available product catalog and view relevant information, including product names, brands, sizes, prices, and stock availability. Customers can then select the desired products and add them to their shopping cart before proceeding to checkout.
- 4) **Checkout and Payment:** The checkout feature allows customers to review their selected products, confirm order quantities, provide delivery information, and select the available payment method. Depending on the proposed payment procedure, customers may complete payment through a bank transfer or cash on delivery (COD). If required, customers may also submit proof of payment through the application. This feature is intended to help customers verify their order details before finalizing the transaction and to support the administrative verification process.
- 5) **Order Tracking:** The order tracking feature is designed to provide customers with information about the progress of their orders. The displayed status may include order processing, preparation for shipment, shipment in progress, and delivery completion, depending on the status categories defined in the system. By providing access to order status information, this feature is intended to reduce the need for customers to contact administrators repeatedly to request updates.
- 6) **Viewing Order History:** The order history feature allows customers to review their previous transactions. The information may include product details, order dates, quantities, order statuses, and relevant payment information. This feature is intended to help customers track their purchasing records and access information about previous orders when needed.
- 7) **Processing Incoming Orders (Admin):** The incoming order management feature enables administrators to review and process customer orders. Administrators can check the submitted order details, verify relevant information, coordinate order preparation, and update the order status as the process progresses. This feature is intended to support systematic order handling and provide customers with updated information regarding their transactions.
- 8) **Managing Product Inventory (Admin):** The inventory management feature allows administrators to update the quantities of available products in the system. Stock adjustments may be required when new products are added, damaged goods are recorded, or inventory quantities change due to other operational activities. This feature is intended to maintain accurate inventory information and help administrators provide customers with relevant stock availability details.
- 9) **Managing Notifications (Admin):** The notification management feature enables administrators to provide customers with relevant information regarding order status changes, shipping progress, and other important announcements. Notifications may also be used to communicate product availability updates or promotional information, if these functions are included in the final application design. This feature is intended to improve communication between the company and its customers and ensure that relevant information can be accessed more conveniently.

d. **Class Diagram**

A class diagram is a UML diagram used to represent the static structure of a system, including its classes, attributes, methods, and relationships. It provides a conceptual overview of the data entities that

support the system and the relationships between them. In the proposed NailFlow application, the class diagram illustrates the relationships between the main entities, including Customer, Admin, Product, Order, and Payment. The Customer class represents users who place orders, while the Admin class represents users responsible for managing products and processing transactions. The Product class contains information about the products offered by the company, the Order class represents customer transactions, and the Payment class contains information related to payment activities. The relationships between these classes provide a conceptual foundation for organizing the application's data and defining how the main entities interact. The class diagram also serves as a reference for further database design and system development. Through the proposed class structure, NailFlow is expected to support more systematic order data management and facilitate the integration of customer information, product records, order transactions, and payment information within a unified application design.

4.3. Design Thinking

a. Empathize

The Empathize stage focuses on understanding user needs, experiences, and challenges associated with the existing nail ordering system at CV Tjahaya Logam. This stage was conducted through interviews with individuals involved in the ordering process, including customers and operational administrators, to obtain a comprehensive understanding of the problems encountered. Five respondents from different departments and user groups were interviewed to explore their experiences with the existing ordering system. The interviews focused on the difficulties associated with order placement, order recording, information transparency, and order status monitoring. The findings indicated that users expected a faster and more transparent ordering process with a lower risk of errors in order recording. The information obtained during this stage served as the basis for identifying user requirements and developing a proposed interface design for the NailFlow application.

b. Define

The Define stage aims to formulate the main problems based on the information collected during the Empathize stage. Interviews with five respondents, consisting of customers and employees of CV Tjahaya Logam aged between 20 and 40 years, revealed several challenges associated with the existing ordering system. These respondents were accustomed to using digital devices, making the accessibility and usability of a digital ordering application relevant considerations in the design process. The identified problems included delays in order processing, limited transparency regarding order status, and recording errors resulting from manual data management. These issues indicated the need for a more structured ordering process supported by a digital interface. Based on these findings, the proposed NailFlow application was designed to facilitate order recording, simplify transactions, and provide customers with access to order status information. These requirements became the foundation for determining the application's main features and interface structure.

c. Ideate

Following the identification of the main problems in the Define stage, the Ideate stage focused on generating potential solutions to address the identified issues. The objective was to develop design ideas that could improve the efficiency of the nail ordering process at CV Tjahaya Logam. During this stage, the author analyzed the identified user requirements and developed ideas for the main features of the NailFlow application. These features included account registration and login, product browsing, digital ordering, shopping cart management, checkout, order tracking, order history, notification management, inventory management, and incoming order management. The proposed features were selected based on their relevance to the identified problems and their potential to support customers and administrators in carrying

out ordering-related activities. Considerations regarding usability, interface simplicity, and the feasibility of the proposed design were also taken into account when determining the application's interface structure.

d. Prototype

The Prototype stage involved translating the ideas generated during the Ideate stage into a visual representation of the proposed NailFlow application. The prototype was designed to illustrate the application's interface, navigation structure, and principal features for both customers and administrators. During this stage, mockups were created to represent the visual appearance and interaction flow of the application. These mockups provided a basis for evaluating the interface layout, information presentation, and accessibility of the proposed features before full system development. The NailFlow prototype was designed to support customers in browsing products, placing orders, monitoring order progress, and reviewing previous transactions. For administrators, the proposed interface included features for managing notifications, updating product inventory, and viewing incoming orders. The main interface components are described below.

1) Registration and Login

The registration and login features enable users to create new accounts and access existing accounts. During registration, users are required to enter information such as their name, email address, password, and telephone number. This information is intended to support account identification and subsequent access to the application. After registering, users can log in using their credentials to access the features available to their respective account roles. These features include order placement, order history, and order tracking for customers, as well as order and inventory management for administrators.

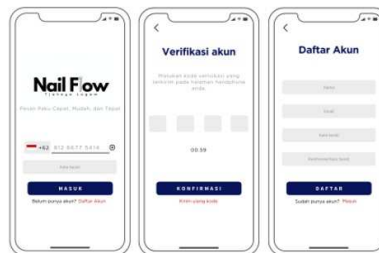


Figure 3. NailFlow Application Interface for the Registration and Login Pages

2) Bottom Navigation Bar

The bottom navigation bar is designed to help users navigate between the application's main sections quickly and intuitively. Positioned at the bottom of the screen, this navigation component provides access to the following sections:

- a) Home: Displays the main page, including the product catalog, promotional information, and relevant company announcements. This section enables users to browse available products and access important information about the company.
- b) Notifications: Provides access to messages and notifications from the administrator, including order confirmations, order status updates, and other relevant information. This feature is intended to help users stay informed about their transactions.
- c) Account: Provides access to personal information and account settings. This section also includes a logout option that allows users to exit the application securely.

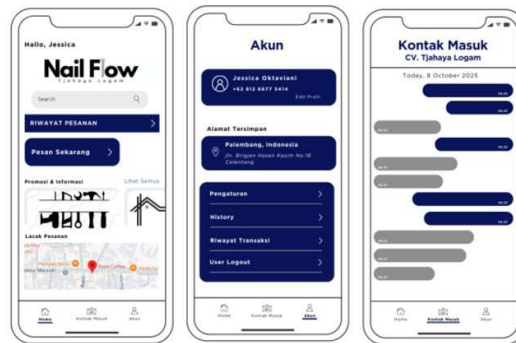


Figure 4. NailFlow Application Interface for the Bottom Navigation Bar

3) Product Ordering

The product ordering feature enables users to browse and select nails available in the application. Products are displayed in a catalog containing relevant information, such as product names, prices, brands, sizes, and weights, depending on the available product specifications. Users can select the desired products, specify the required quantities, and add the selected items to their shopping carts. This feature is designed to simplify product selection and provide customers with a more structured ordering process.

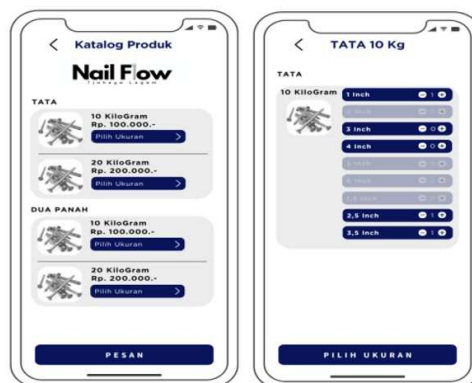


Figure 5. NailFlow Application Interface for the Product Ordering Page

4) Shopping Cart, Checkout, and Order Tracking

The shopping cart allows users to temporarily store selected products before proceeding to checkout. Within the cart, users can review their selected items, adjust product quantities, and view the total order price. During checkout, users can review their order details, provide the necessary delivery information, select an available payment method, and confirm their purchases. This process is designed to help users verify their orders before submitting them. The order tracking feature is designed to provide information about the progress of an order after it has been placed. The proposed interface includes a map-based view intended to display the delivery location and estimated arrival time when supported by the underlying tracking service. This feature is intended to improve order visibility and help customers monitor the delivery process.

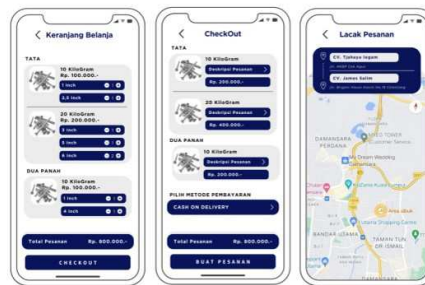


Figure 6. NailFlow Application Interfaces for the Shopping Cart, Checkout, and Order Tracking Pages

5) Order History

The order history feature displays a record of previous customer transactions. The information presented includes the order date, product name, quantity, total payment, and current or final order status, such as processing, shipped, or completed. This feature is designed to help users review their purchasing activities and access information about previous transactions. It also provides a convenient reference for monitoring purchasing patterns and reviewing past orders. In addition, the proposed interface may allow users to reorder previously purchased products without having to select each item again. This functionality is intended to reduce repetitive data entry and simplify the ordering process.



Figure 7. NailFlow Application Interface for the Order History Page

6) Notification Management

The notification management feature is designed for administrators to manage important information communicated to customers. Through this feature, administrators can create, edit, and delete notifications concerning order status changes, product updates, and other relevant announcements. This feature is intended to support effective communication between administrators and customers by making important information easier to manage and access. The availability of specific notification functions depends on the final system requirements and implementation.



Figure 8. NailFlow Application Interface for the Notification Management Page

7) Nail Stock Management

The nail stock management feature is intended for administrators to update product inventory information in the application. Administrators can select products from the available catalog and increase or decrease their recorded stock quantities according to warehouse inventory records and production updates. Accurate inventory updates are important for maintaining consistency between the stock information displayed in the application and the actual availability of products. This feature is intended to help administrators manage inventory more systematically and reduce the risk of accepting orders for unavailable products. When integrated with the appropriate database and inventory management functions, the feature could support more timely stock updates and improve the accuracy of product availability information.

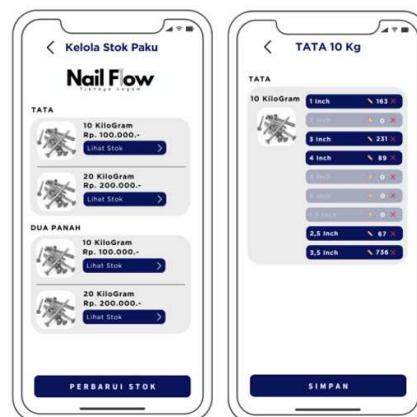


Figure 9. NailFlow Application Interface for the Nail Stock Management Page

8) Incoming Order Management

The incoming order management feature enables administrators to view and manage customer orders submitted through the application. The proposed interface displays relevant order information, including the customer's name, ordered products, quantities, total payment, selected payment method, and order time. The information is organized to help administrators review order details and verify the information required for further processing. Administrators can also use this feature to monitor incoming orders and coordinate product preparation and delivery according to the company's procedures. This feature is intended

to support a more organized order management workflow, facilitate the verification process, and help reduce the risk of delays caused by inefficient order handling.

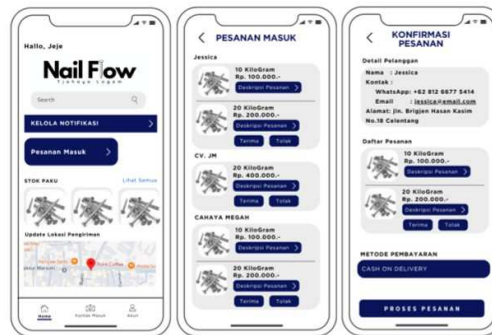


Figure 10. NailFlow Application Interface for the Incoming Order Management Page

e. Test (Black Box Testing)

The Test stage was conducted to evaluate the proposed NailFlow interface based on the interactions and functional flows represented in the prototype. The author used a Black Box Testing approach to examine whether the designed interface responded appropriately to specified user actions without examining the internal program code. Because the application had not yet been connected to a backend system or database for real-time processing, the evaluation focused on the interface behavior and interaction flows available in the prototype. Therefore, the results of this stage should be interpreted as an evaluation of the prototype rather than evidence of the full functional performance of an implemented application. The features considered in the evaluation included login, account registration, product viewing and ordering, checkout and payment, order tracking, notification management, nail stock management, and incoming order management. Testing scenarios were organized into two categories: valid and invalid scenarios. Valid scenarios represented user actions that followed the intended interaction flow, while invalid scenarios represented actions that deviated from the specified requirements or expected sequence. The purpose was to assess whether the interface presented appropriate responses, validation messages, or feedback for the interactions represented in the prototype. Through this evaluation, the author sought to identify potential usability and interaction issues that could be addressed before further development. The findings could then serve as a basis for refining the interface design and preparing the application for subsequent functional testing after the required system components have been implemented.

V. Conclusion

Based on the results of the practical work conducted at CV Tjahaya Logam, it can be concluded that the existing manual nail ordering system has several shortcomings, including the risk of recording errors, delays in order verification, and miscommunication between customers and administrators. These issues reduce operational efficiency and limit transparency throughout the ordering and delivery processes. To address these challenges, the Design Thinking method was applied to conduct a comprehensive analysis of user needs, which served as the foundation for designing a digital solution in the form of the NailFlow application. The NailFlow application is designed to simplify the ordering process by providing features such as independent order placement, informative product displays, real-time order status tracking, and well-documented transaction histories. The design process also incorporates UML diagrams and Black Box Testing to evaluate the interface and its interactions against the expected requirements. The proposed application is expected to improve the efficiency and accuracy of the nail ordering process at CV Tjahaya Logam while providing customers with a better ordering experience.

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