

Implementation of the Iterative Model in Website-Based Household Industry Product Sales Information System

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ARTICLE INFO

Keywords: Information Sistem; Iterative; MSMEs; Website; Blackbox

Received : 24 March

Revised : 25 April

Accepted: 26 May

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ABSTRACT

This study aims to develop a sales system for MSME products using an iterative model as an adaptive and flexible development approach. The system is designed with key features such as login, dashboard, product management, categories, incoming orders, system settings, and users. Each iteration is carried out to perfect the function based on user needs. System testing is carried out using the blackbox method to ensure that all components work according to specifications. The test results showed 100% success without errors on each form tested. This proves that the developed system is able to support the digitalization of MSMEs effectively, efficiently, and sustainably.

INTRODUCTION

The home industry is one of the micro, small and medium enterprises (MSMEs) that has a strategic role in supporting national economic growth. However, despite its great potential, many home industry players still face various obstacles in marketing products, managing sales data, and reaching consumers on a wider scale. (Shen et al., 2024). Most sales activities are still carried out manually or conventionally, such as recording transactions in books, relying on word of mouth promotion, or only relying on local sales around the production site. (Mardian et al., 2024). In today's digital era, advances in information technology offer great opportunities for home industries to increase operational efficiency and market competitiveness. (Putri et al., 2025). One solution that can be implemented is a website-based sales information system. (Gani et al., 2024). This system allows business actors to promote products online, manage stock, process transactions automatically, and provide real-time sales reports. (Lima et al., 2025). With a website, market reach is no longer limited to a physical location, but can extend to national and even international areas. The implementation of a website-based sales information system not only helps speed up the transaction process, but also increases consumer confidence through professional product displays and information transparency. In addition, digitally stored sales data makes it easier for business owners to make business decisions based on accurate data (Pekkaya et al., 2024). By looking at these needs, the development and implementation of a website-based sales information system in the home industry becomes important and relevant. This innovation is expected to encourage digital transformation in the MSME sector and support sustainable local economic growth.

LITERATURE REVIEW

Research related to the sale of household industrial products has been conducted by experts before, including several studies, including the first study, namely a study that discusses the application of the extreme method to a website-based sales information system, concluding that system testing carried out using the blackbox method resulted in 100% conformity, and the extreme method is suitable for implementation in the development of the system. (Ardhana, 2024). The difference in this study is the method used in system development is an iterative model. Another study is the application of the SCRUM method to the sales information system. This study concluded that a responsive, safe, and easy-to-use website-based sales system has been successfully developed. (Syahputra et al., 2024). The difference in this study lies in the model and development method that uses an iterative model. The third study is optimizing tropical food sales in Bali using a website-based system, this study concluded that the blackbox testing carried out on the system ran well and in accordance with the objectives of the system design. (Gede et al., 2024; Syahputra et al., 2024) Another study is a visual data-based marketing information system. This study concluded that website-based sales of goods can be carried out optimally (Aggarwal et al., 2025).

METHODOLOGY

a. Iterative Model

The problem-solving approach in this study uses an iterative model. The iterative model is a software development method that uses small, repetitive development cycles to collect user feedback through testing in order to improve the quality of the software itself. (Patel et al., 2024) (Rahayuda & Santiari, 2018) Iterative models have been proven to help algorithms reduce the complexity of memory usage and the time required for data retrieval processes, namely in the data range of 1-10 million. (Lutfina & Ramadhan, 2019) (Zhang et al., 2025). So as to analyze the use of the right algorithm. The visual depiction of the iterative model can be seen in Figure 1.

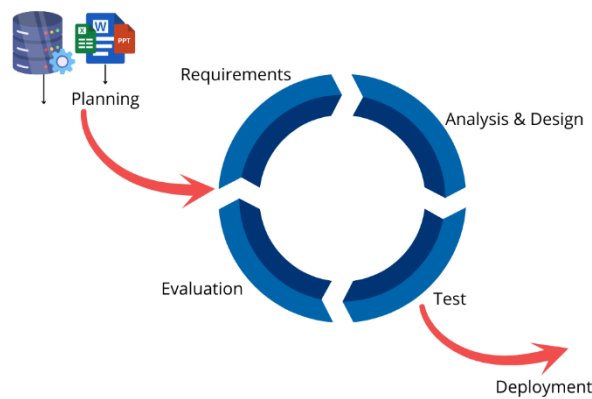


Figure 1. Iterative model system development cycle

The iterative model presented in Figure 3 is a repeated development cycle until the resulting product meets user requirements and the established quality standards. (Vats et al., 2024; Wei et al., 2025). Each iteration gives the development team the opportunity to take feedback from users and adapt the system based on the results of that feedback.

RESEARCH RESULT

a. Use Case Diagram

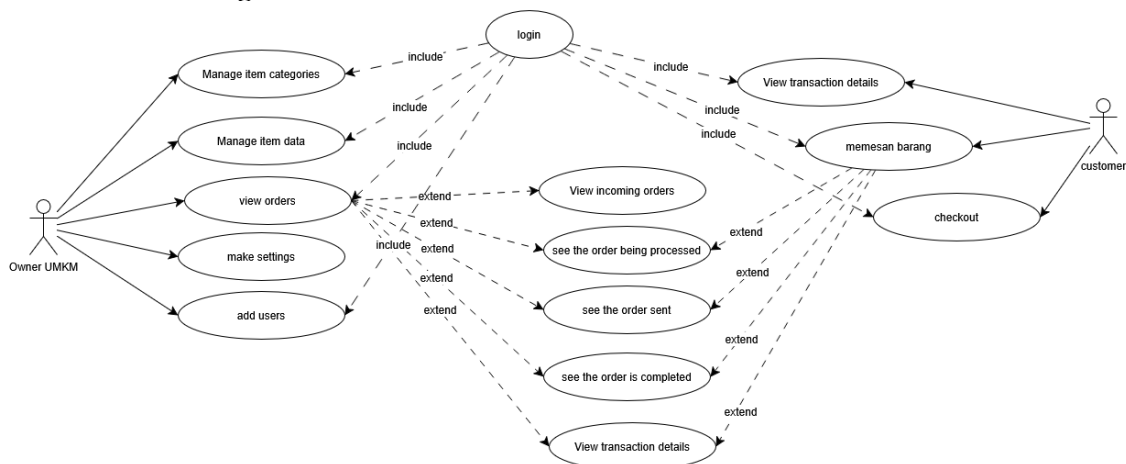


Figure 2. Use Case Diagram

Based on Figure 2, it is a description of the process and activities in the UMKM product sales application, there are 2 actors, namely the UMKM owner who acts as an administrator, and the second actor is the customer. Database Design

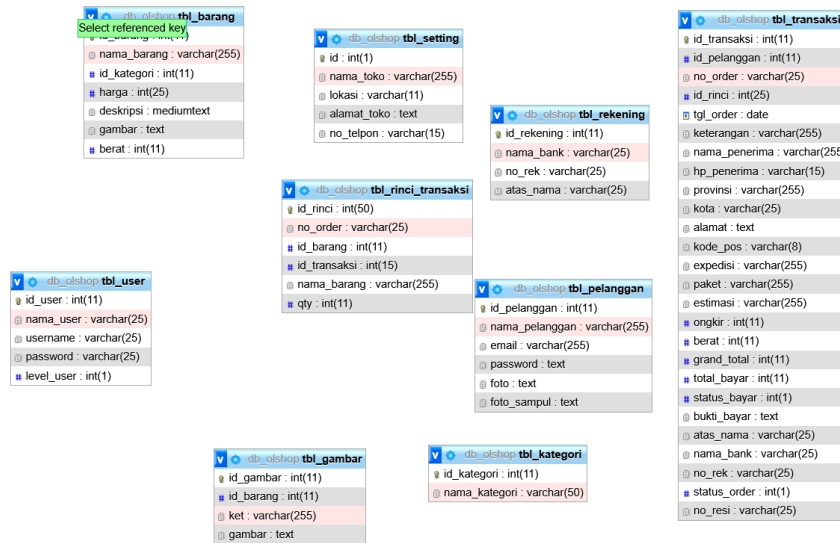


Figure 3. Database Design

Figure 3 shows the database design in the sales information system. There are 9 tables, namely *tbl_barang*, *tbl_setting*, *tbl_transaksi*, *tbl_rinci_transaksi*, *tbl_user*, *tbl_gambar*, *tbl_pelanggan*, and *tbl_kategori*.

b. User Interface

The user interface (UI) design was created with the aim of connecting system users with the information system. The UI includes a login form, dashboard, categories, goods, reports, incoming orders, settings and the main page for buyers.

1. Login Form

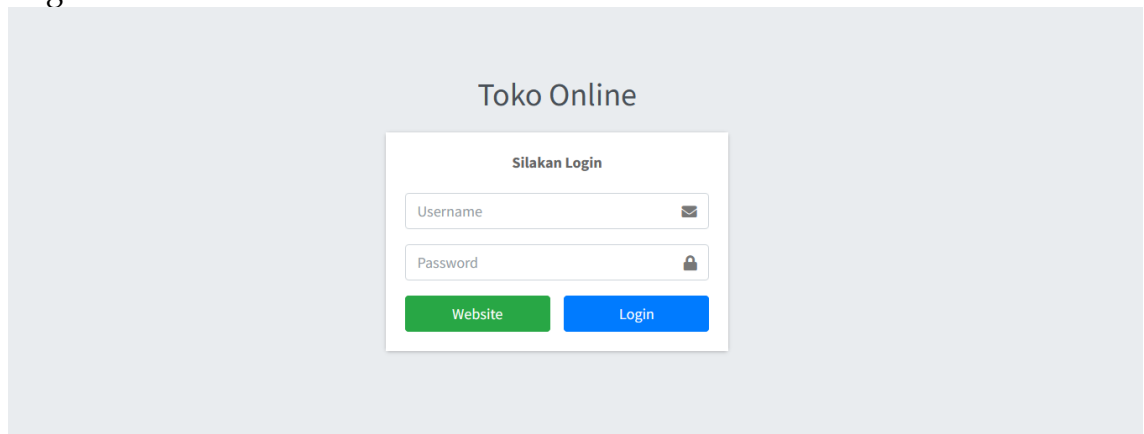


Figure 4. Login Form

The login page is the initial interface that users use to access a system or application. This page usually contains fields for entering a username and password. The goal is to ensure that only authorized users can log in and use the features in the system securely.

2. Dashboard Form

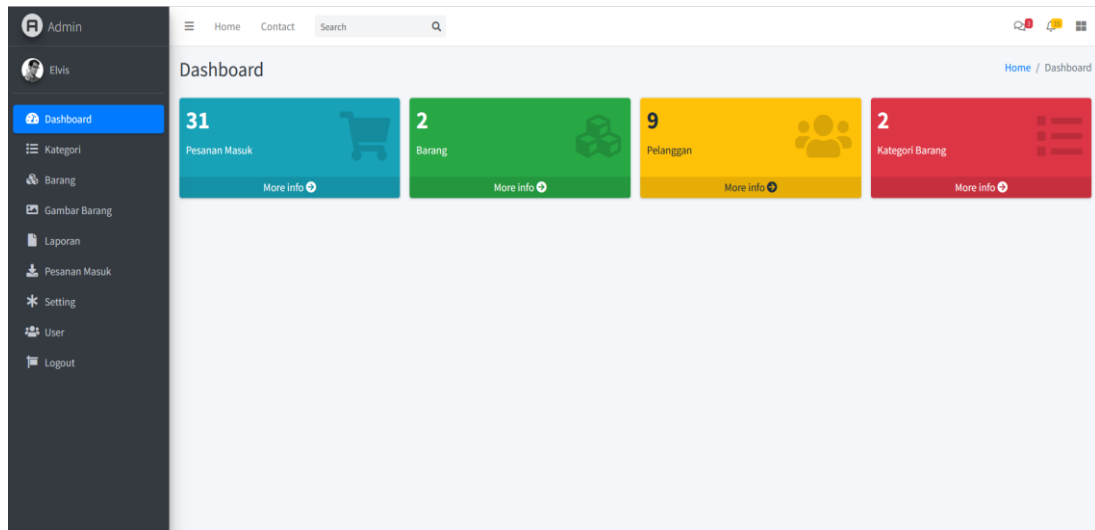


Figure 5. Dashboard Form

In figure 5, the dashboard form is the main display after the user successfully logs in to the system. The dashboard presents a summary of important information, statistics, navigation menus, and main controls centrally. The goal is to make it easier for users to monitor, access features, and manage data or system activities quickly and efficiently.

3. Category Form

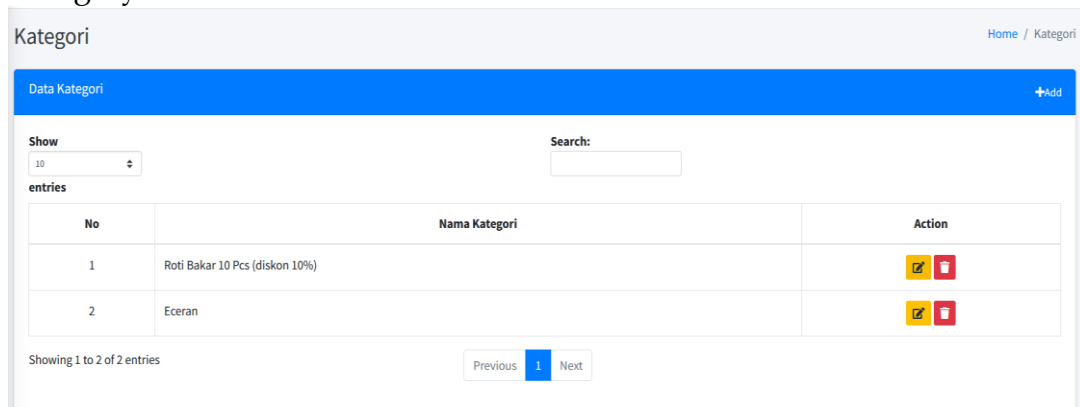


Figure 6. Category Form

In Figure 6, the UMKM goods category page is a display that displays product groupings based on certain types or categories. This page makes it easier for users to search and browse products according to their needs. Each category usually includes several products that have similar functions, types, or uses in UMKM.

4. Item Form

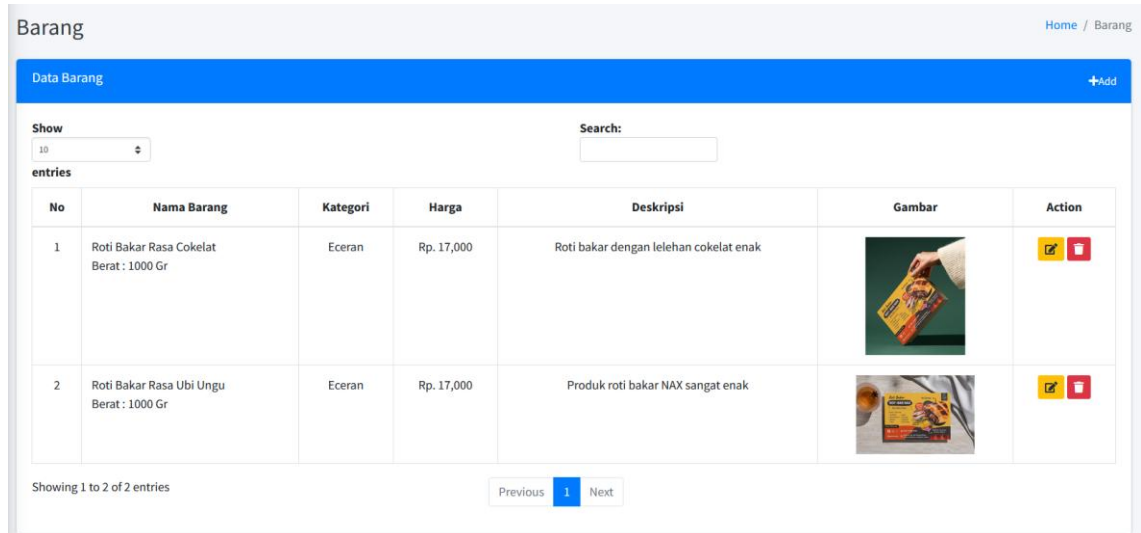


Figure 7. Item form

In Figure 7, the item form is a page or display used to enter, change, or delete item data in the system. This form usually contains columns such as item name, category, price, stock, and description. The goal is to facilitate the management of item data in a structured and efficient manner.

5. Report Form

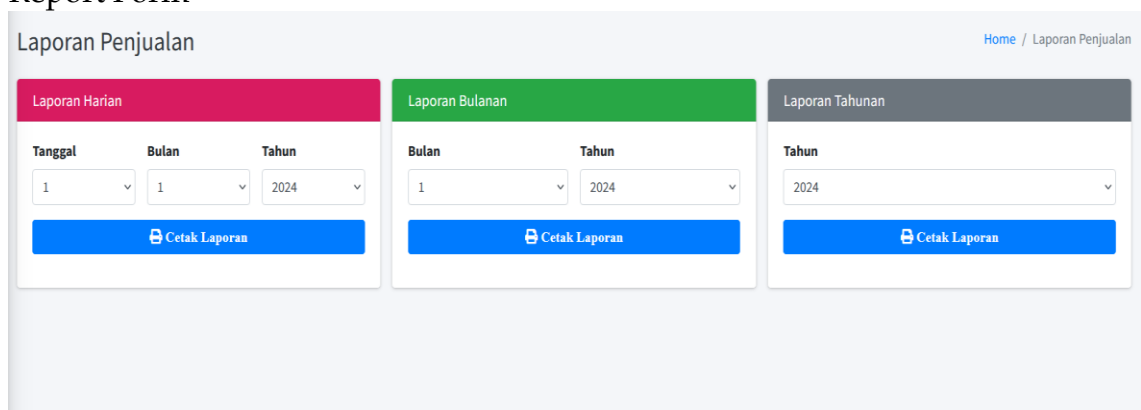


Figure 8. Category Form

The item category form is a display used to add, edit, or delete item category data in the system. This form usually contains a category name and description column. The goal is to group items neatly so that it is easier to search, manage, and report item data.

6. Orders Form

| No Order | Nama Penerima | Alamat Penerima | No. hp | Ekspedisi | Keterangan Pembeli | Total Bayar |
|-------------------|---------------|--|--------------|--|--------------------|--|
| 20210326UXZRK2SW | kiklik | Provinsi : Kalimantan Timur Kabupaten : Kutai Barat Alamat Lengkap : jl. diponegoro no. 10 | 8808008 | jne Paket : OKE Ongkir : Rp. 54,000 | ggjgjjg | Rp. 330,000 Diproses(dikemas) Kirim |
| 20210326UXZRK2SW | kiklik | Provinsi : Kalimantan Timur Kabupaten : Kutai Barat Alamat Lengkap : jl. diponegoro no. 10 | 8808008 | jne Paket : OKE Ongkir : Rp. 54,000 | ggjgjjg | Rp. 330,000 Diproses(dikemas) Kirim |
| 20210326GNN9UMDVS | kiklik | Provinsi : Gorontalo Kabupaten : Boalemo Alamat Lengkap : sskos | 089787656455 | tiki Paket : ECO Ongkir : Rp. 81,000 | ihohokjll | Rp. 181,000 Diproses(dikemas) Kirim |
| 20210225DGYM2038 | kiklik | Provinsi : DKI Jakarta Kabupaten : Jakarta Pusat Alamat Lengkap : | 098900 | jne Paket : REG Ongkir : Rp. 17,000 | | Rp. 1,107,000 Diproses(dikemas) Kirim |

Figure 9. Order Form

In Figure 9, the item category form is a display used to add, edit, or delete item category data in the system. This form contains columns for order number, recipient name, recipient address, telephone number, type of expedition selected, buyer description, and total payment. The goal is to group items neatly so that it is easier to search, manage, and report item data.

7. Setting

Setting Website

Provinsi: --pilih provinsi-- Kota: Jayapura

Nama Toko: Toko Elvis Utama Nomer Telepon: 082250537382

Alamat:

[Simpan](#) [Kembali](#)

Figure 10. System Settings Form

Figure 10 is System Settings is a feature that allows users to manage configurations and preferences in an application or system. Through this menu, users can set accounts, access rights, displays, and other functions. The goal is to adjust the system to run according to the needs of users or administrators.

8. Form User

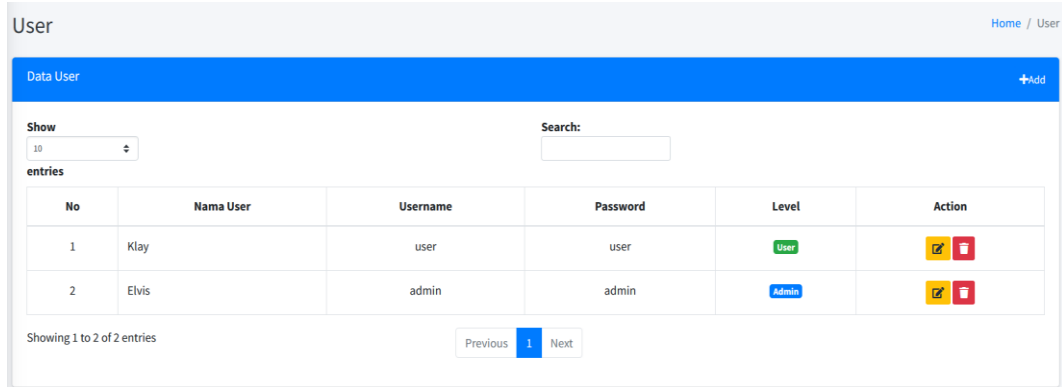


Figure 11. System User Form

Figure 11 is a display of a list of system users who have certain access and rights to use the application or system. Each user can have a different role, such as admin, or customer. Users interact directly with the system to perform functions according to the authority that has been determined in the system.

9. Buyer's Home Page

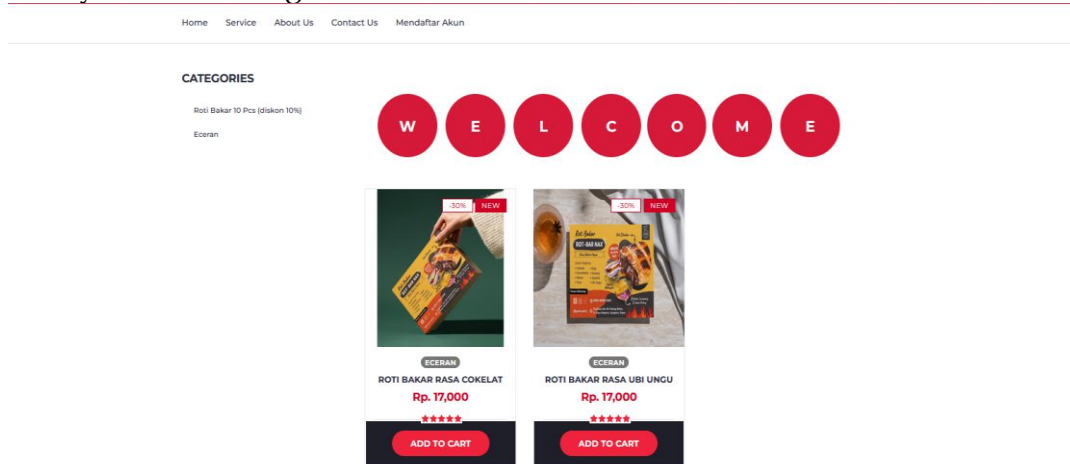


Figure 12. Buyer's Home Page

Figure 12 is the main menu page for ordering UMKM products, the initial display that provides easy access to various product ordering features. Users can view the product list, select a category, add items to the cart, and continue the ordering process. This page is designed to make the ordering process fast, practical, and convenient. Blackbox Testing

Table 1. Blackbox method testing results

| No | Form | Test Case | Input | Expected Output |
|----|------------|-----------------------------------|-----------------------------|--------------------------------------|
| 1 | Login Page | Input valid username and password | Correct username & password | Successfully redirected to dashboard |

| | | | | |
|----|----------------------------|------------------------------|--|---|
| 2 | Login Page | Input incorrect username | Invalid username | Error message "Username not found" appears |
| 3 | Login Page | Input incorrect password | Invalid password | Error message "Incorrect password" appears |
| 4 | Dashboard | Click navigation menu | Click a specific menu item | Selected page opens |
| 5 | UMKM Product Category Page | Select available category | Click on a category | Products of the selected category are displayed |
| 6 | Product Form | Add complete product data | Fill all fields with valid data | Product is saved and shown in the product list |
| 7 | Product Form | Add product with empty field | Leave product name field empty | Error message "Product name is required" appears |
| 8 | Product Category Form | Add new category | Fill in name and description | Category is saved and shown in category list |
| 9 | Product Category Form | Delete category | Click delete category button | Category is deleted and removed from the list |
| 10 | Incoming Orders Form | Input valid order | Fill in customer and product data | Order is saved and shown in the order list |
| 11 | Incoming Orders Form | Input empty order data | Leave all order fields empty | Error message "Order data must be complete" appears |
| 12 | System Settings | Change basic settings | Modify language, theme, or access rights | Settings are saved and applied |
| 13 | System Users | Add new user | Enter valid user data | New user is saved and able to login |
| 14 | System Users | Delete user | Select user and click delete | User is removed and can no longer log in |

| | | | | |
|----|------------------------------|--------------------------------|------------------------------|--|
| 15 | Main Menu Order UMKM Product | Select product and add to cart | Choose product and click add | Product is added to the cart |
| 16 | Main Menu Order UMKM Product | Checkout order | Click checkout button | Order is successfully processed and confirmation appears |

From the blackbox testing on 11 forms of the MSME system, it shows that each form has been tested based on its main function without looking at the internal structure of the application. The test successfully verified that the login form, dashboard, item category, item form, category form, incoming orders, system settings, system users, and the main order menu can function as expected with proper input validation. The system is able to handle valid input and reject invalid input by providing a clear error message. Thus, the system has met the basic needs in terms of functionality and reliability of the user interface to support the MSME product order process effectively.

DISCUSSION

The application of an information system designed with an iterative model in the management of MSME products provides significant benefits in the process of developing and improving the system. The iterative model allows development to be carried out in stages through repeated cycles of planning, designing, testing, and evaluation. Each iteration produces a better version of the system based on user feedback, so that the system is more responsive to real field needs. In the context of MSMEs, this approach is very effective because user needs can change over time. Through iteration, features such as item forms, categories, incoming orders, and system settings can be adjusted dynamically. Blackbox testing is carried out at each iteration stage to ensure that functionality runs as expected. The result is a stable, user-friendly system that is able to increase the efficiency of MSME businesses. With an iterative approach, the development process becomes more flexible, adaptive, and able to produce an information system that truly supports the growth of MSMEs in the digital era..

CONCLUSIONS AND RECOMMENDATIONS

The application of information systems for managing MSME products has proven to be effective in increasing operational efficiency, ease of data recording, and customer service. With login features, dashboards, item forms, categories, and orders, the system runs according to its function based on the results of blackbox testing of 16 forms that have been tested with a success rate of 100%. The application of an iterative model in the development of MSME information systems allows for a continuous improvement process based on user feedback. Each iteration produces a better version of the system that meets needs. This model increases flexibility, development efficiency, and ensures that the system is more adaptive to changes and developments in MSME businesses.

ADVANCED RESEARCH

For further development, it is recommended to add order notification features, automatic sales reports, and digital payment integration. In addition, regular user training is important so that system utilization runs optimally and supports sustainable MSME growth.

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