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Design of a Web-Based Information System for the Sale of Traditional Ulos Weaving from Tarutung at the Dame Ulos Gallery

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Abstract

Ulos weaving is a Batak cultural heritage with high social and aesthetic value. The Dame Ulos Gallery, as a producer of Tarutung ulos, is committed to preserving and introducing ulos to a wider market. However, the manual and simple online sales process (using Word, Excel, and social media) causes problems, such as inaccurate records, unintegrated stock and sales, and rampant fake account fraud. This study designs a web-based sales information system using the Waterfall method to provide product information, online ordering, and special customer requests. This system is expected to maintain reputation and facilitate customer access to ulos products.

Keywords

Ulos Weaving, Dame Ulos Gallery, Sales Information System, website, Waterfall, Batak Culture

Introduction

Ulos weaving is a Batak cultural heritage that is rich in aesthetic and social value, and plays an important role in various traditional ceremonies (Malau et al., 2020). The Dame Ulos Gallery in Tarutung is committed to preserving this culture by producing various types of ulos, including those that are nearly extinct.

Currently, the sales process is still carried out manually through Microsoft Word, Excel, and social media. This method causes obstacles such as data inaccuracy, unintegrated stock, and limited access to product information. In addition, the emergence of fake accounts in the name of Galeri Dame Ulos harms customers and damages the store's reputation.

To overcome these problems, a web-based sales information system is needed that can integrate data, improve efficiency, and make it easier for customers to access product information and place orders. This system is also capable of maintaining brand credibility and supporting business development towards a modern and professional direction.

Methodology

The research method applied in this study is the Waterfall method.

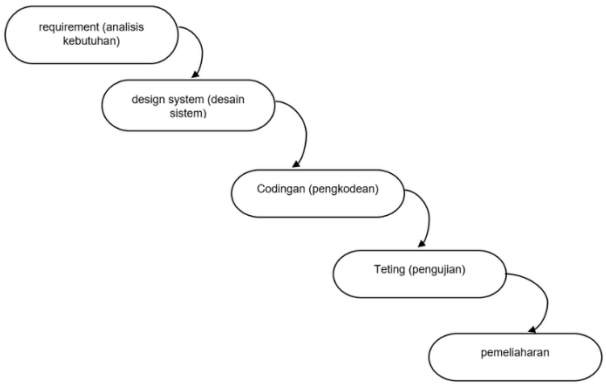

Figure 1. Waterfall

The methods used in designing the sales information system for Tarutung woven ulos at the Dame Ulos gallery are observation, literature study, and interviews, supported by the Waterfall method. The Waterfall method is a linear and sequential software development model, where each stage of development begins after the previous stage is completed. The Waterfall model consists of requirements analysis, system design, implementation, testing, and maintenance. Here's a brief overview of its phases:

a) Requirements Gathering
   This phase involves gathering all the system and user requirements before any design or development work begins. The goal is to understand exactly what the users need from the system.
b) System Design
   Once the requirements are understood, the system's architecture is designed. This includes both high-level design (overall system structure) and detailed design (designing specific components of the system).
c) Implementation
   In this phase, the actual code for the system is written based on the design specifications created earlier. Developers build the software components and integrate them.
d) Verification (Testing)
   After the software is built, it is tested to ensure that it meets the original requirements. This includes functional testing, integration testing, and system testing. If defects are found, they must be fixed before moving on.
e) Deployment (Release)
   Once the system has been tested and validated, it is deployed to the production environment for use by the end-users.
f) Maintenance
   After the system is deployed, maintenance begins. This includes fixing bugs, updating the system, or making improvements based on feedback. The system may require patches or new versions to maintain its functionality.

Findings

1.System Design Analysis

System design analysis refers to the process of evaluating the architecture, components, and processes of a system to ensure that it meets the defined requirements and objectives. This phase plays a crucial role in shaping how the system will function once it is implemented. It involves making decisions about how to structure the system, what technologies to use, and how components will interact to ensure efficiency, scalability, and user satisfaction.

A. Use Case Diagram

During the design phase, user-system interactions are modeled so that the use case scenarios for the system in question can be understood. Use case diagrams are used to illustrate the interactions between actors and the system. The use case diagrams in this study contain three actors who perform three actions or activities within the system, as follows:

Figure *2*.Admin use case diagram

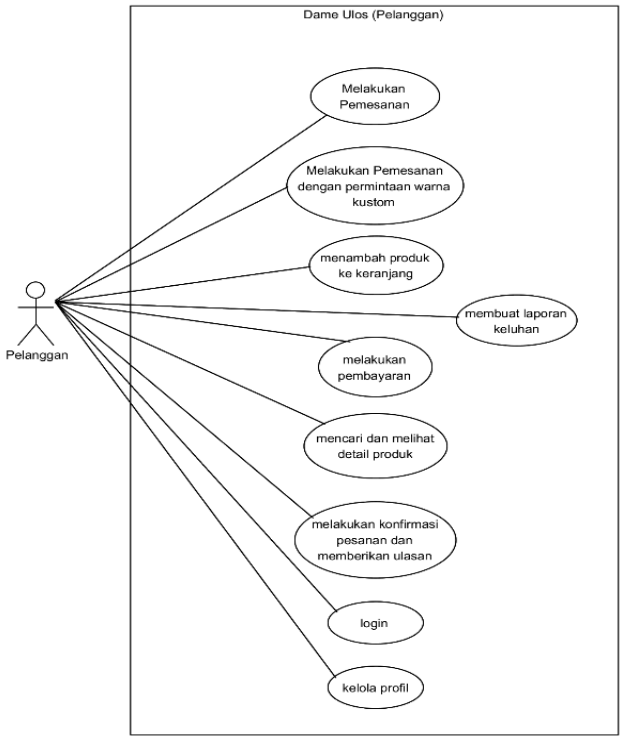

Figure 3. costumer use case diagram

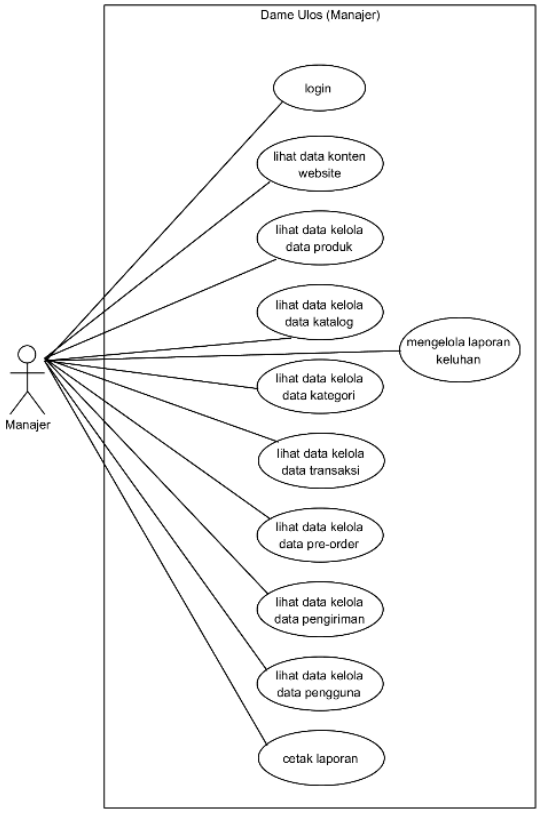

Figure *4*. Manager use case diagram

B. Interface Implementation

1) Home Page

The home page is the first page that all website visitors can access. This page is designed to attract users' attention by displaying the best-selling products and the entire collection of products on offer. This display aims to make it easier for visitors to view products and start shopping.

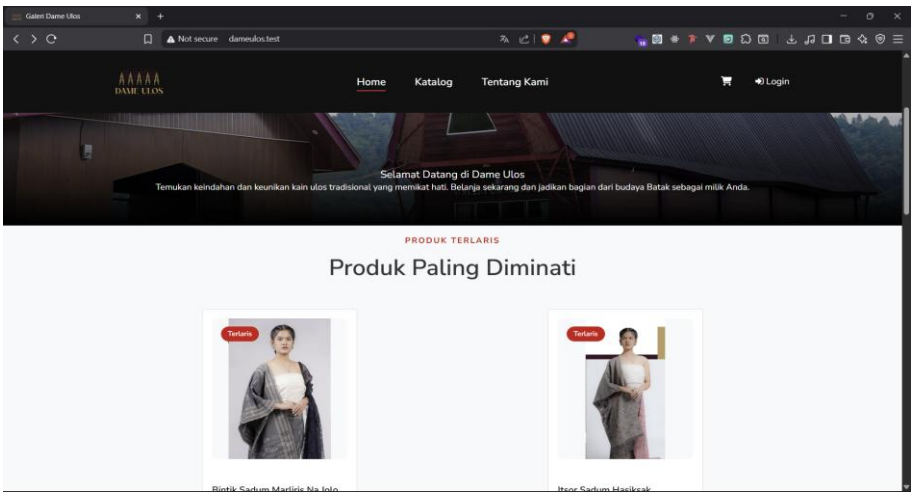

Figure 5 Home Page

2. Login Page

This page serves as the main gateway for users to interact with the system, as all activities in this system begin from the login page. This page provides a form for users to enter their email and password for authentication.

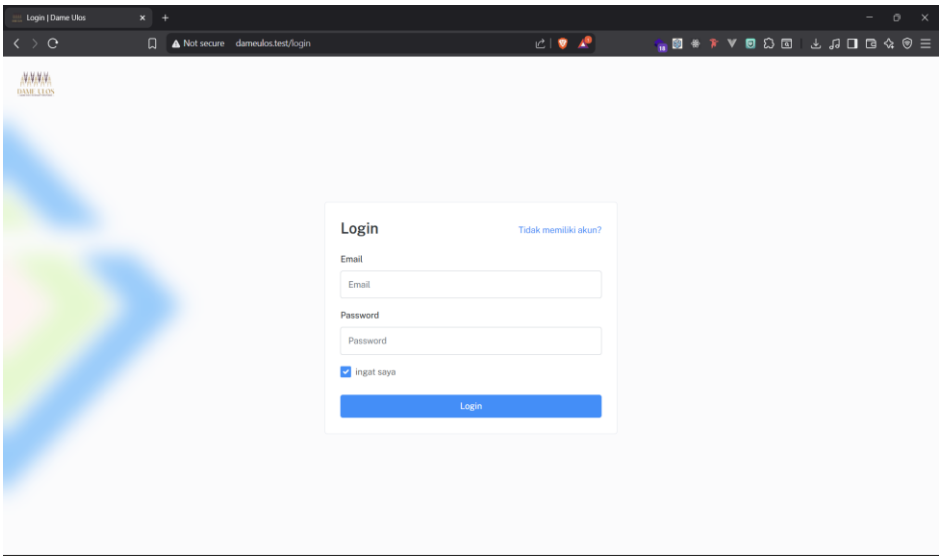

Figure 6 login Page

3. Dashboard Page

The Dashboard page serves as an information and control center for administrators and managers. This display provides a visual summary of important data, including total customers,

monthly revenue, number of transactions, and active products, to support more effective business performance analysis.

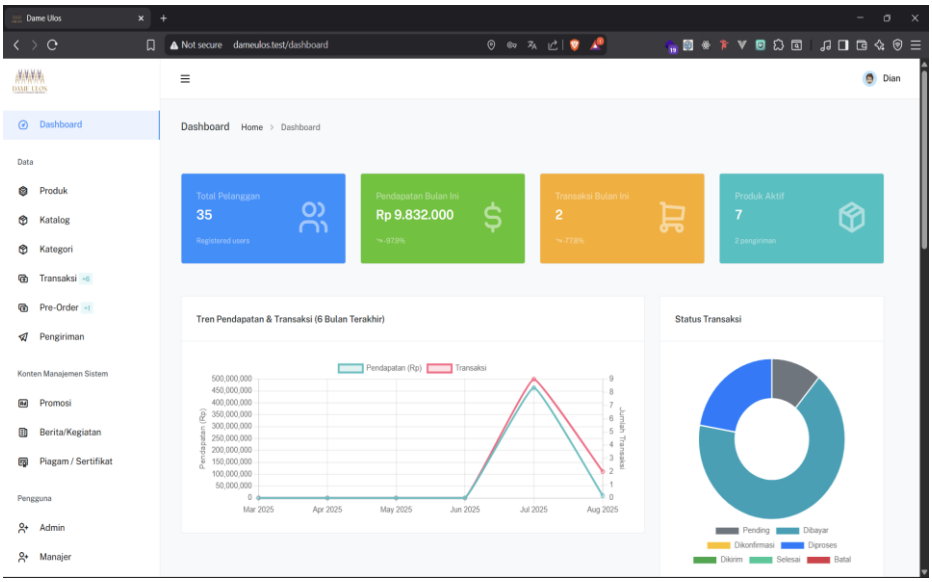

Figure 7 Dashboard Page

4. Costumer Order Page

On this page, customers can view product descriptions, prices, stock availability, and reviews from customers who have made purchases. In addition, this page also features a function for direct ordering or submitting special requests as needed.

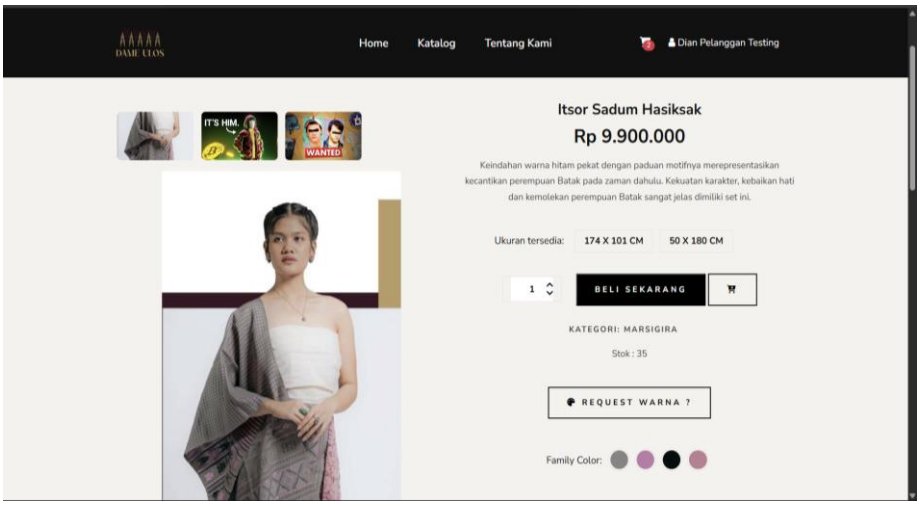

Figure 8 Costumer Order Page

5) Product Color Request Page

This page is designed as an interface that allows customers of Galeri Dame Ulos to easily and efficiently submit product ordering requests. This view facilitates customers to specify their specific color preferences for customized orders.

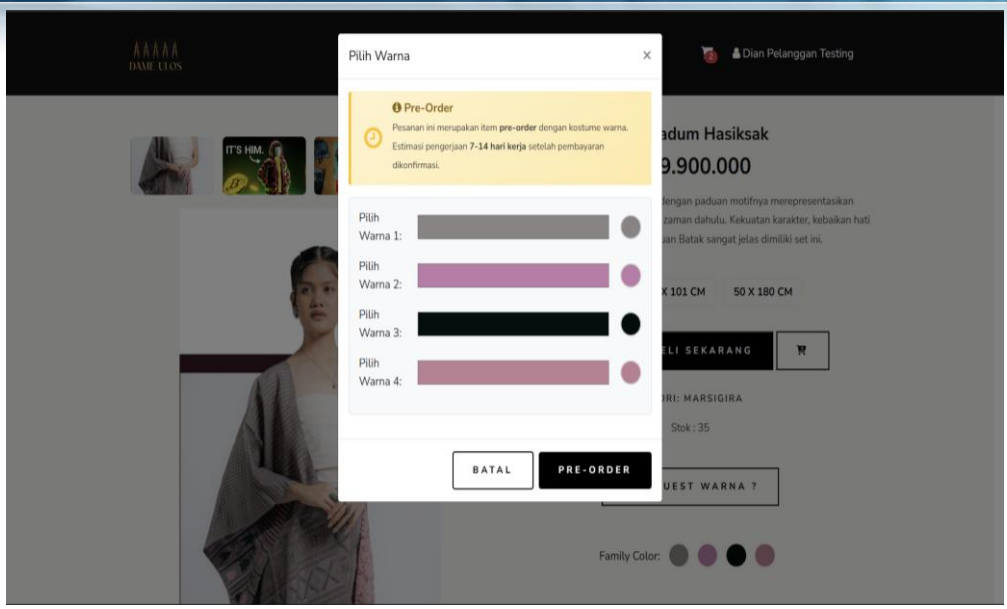

Figure 9 Product Color Request Page

5. Payment Page

On this page, users can view the total cost of their order and confirm payment before completing the transaction. This page will display the various payment methods available for customers' convenience.

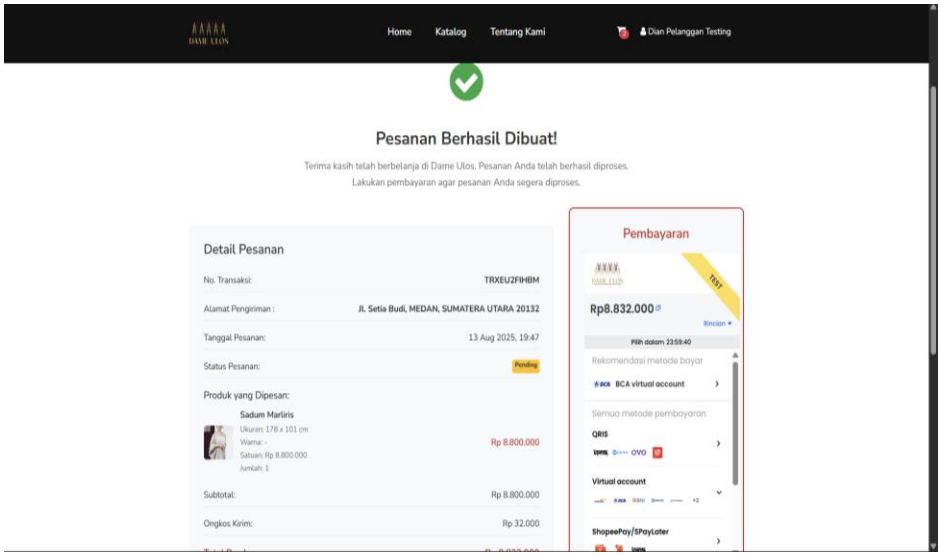

Figure 10 Payment Page

6. Costumer Transaction Page

The My Transactions page displays the transaction history of the user. This page is designed so that customers can monitor the status of their orders, view the details of the products they have purchased, and see the shipping information for each transaction.

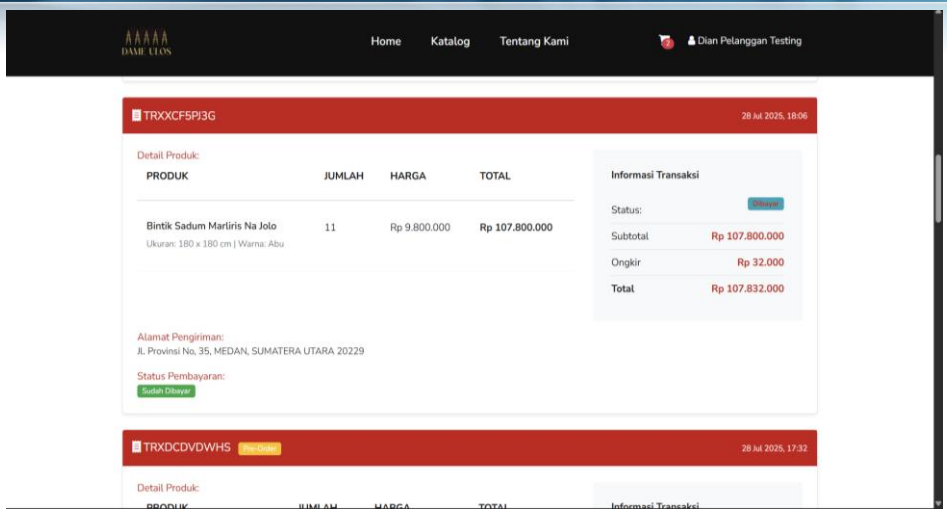

Figure 11 Costumer Transaction Page

Conclusion

The web-based ulos tenun sales information system is designed to improve business management, from product recording and ordering to payment transactions. With this system, customers can easily view product catalogs, place orders, and submit special requests as needed. Additionally, the sales report feature helps business owners analyze transaction data and make better business decisions. The implementation of this system also increases market reach, allowing customers from various locations to purchase woven ulos online more conveniently.

There are still many features needed by the system to make it easier for users to perform activities within the system. For this reason, here are some suggestions I can add to improve the efficiency of this woven ulos sales system:

1. The interface design must be made more intuitive and responsive so that it is easy to use by various types of users, both on desktop and mobile devices.

2. Add an order tracking feature so that customers can find out the delivery status in real time, thereby increasing transparency and customer satisfaction.

3. The woven ulos sales information system should be equipped with promo and discount voucher features to attract buyers. These features can take the form of percentage or nominal discounts, shipping cost promos, and special offers such as product bundling.

References

1. Firmando, H. B. (2020). *Strategi adaptasi pemasaran kerajinan tenun ulos di pasar tradisional, modern, dan online di Tarutung* (Skripsi). Universitas Negeri Medan.

2. Malau, S., Simanjuntak, R., & Sihombing, D. (2020). Makna simbolik kain tenun ulos dalam budaya Batak Toba. *Jurnal Ilmu Sosial dan Humaniora, 9*(2), 112–120.
3. Sembiring, S. B., Manalu, R., & Sinaga, J. (2022). Analisis dan perancangan sistem informasi penjualan tenun ulos berbasis web pada Toko Kembar Ulos. *Jurnal Teknologi Informasi dan Komputer, 8*(1), 45–54.
4. Sutabri, T. (2012). *Sistem informasi manajemen*. Yogyakarta: Andi.
5. Pressman, R. S. (2015). *Software engineering: A practitioner's approach* (8th ed.). New York, NY: McGraw-Hill.
6. Kendall, K. E., & Kendall, J. E. (2011). *Systems analysis and design* (8th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
7. Sommerville, I. (2011). *Software engineering* (9th ed.). Boston, MA: Addison-Wesley.
8. Sembiring, S. B., Manalu, R., & Sinaga, J. (2022). Analisis dan perancangan sistem informasi penjualan tenun ulos berbasis web pada Toko Kembar Ulos. *Jurnal Teknologi Informasi dan Komputer, 8*(1), 45–54.
9. Simanjuntak, P. H. (2021). Perancangan sistem informasi penjualan berbasis web pada usaha mikro kecil menengah. *Jurnal Sistem Informasi, 17*(2), 75–84.
10. Siregar, T., & Napitupulu, D. (2020). Pemanfaatan teknologi informasi dalam pelestarian budaya Batak. *Jurnal Teknologi dan Masyarakat, 5*(1), 33–42.
11. Hasibuan, H. (2019). Implementasi e-commerce pada UMKM berbasis web untuk meningkatkan daya saing. *Jurnal Informatika, 6*(2), 101–110.