Design and Construction of a Website-Based Online Sales Information System for SMEs Processed Soybean Products

Kristina Magdalena, Juliandri, Leni Marlina

Abstract

The development of information technology encourages Micro, Small and Medium Enterprises (MSMEs) to adapt to the sales system digital- based. However, some MSME processed products soya bean still carrying out the sales process conventionally, so that experience limitations in data management, efficiency operational, and reach Marketing. This study aims to design and build a website- based online sales information system that can help MSMEs manage their sales processes in an integrated manner. The research method used is Research and Development (R&D) with a Waterfall system development model, which includes stage requirements analysis, system design, implementation, and testing. The system was developed using web technology with advanced features. main in the form of product management, ordering, transactions, management customers, as well as report sales. System testing was conducted using Black Box Testing and User Acceptance Test (UAT) methods. The results of the study showed that the information system developed is able to run well and according to user needs. This system makes it easier sales data management, improving efficiency operational, and provide convenience for customers in making online purchases. Thus, this website -based online sales information system is worthy implemented as a digital solution for MSME processed products soybean.

Keywords: Information Systems, Online Sales, Websites, MSMEs, Processed Products Soya Bean

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Introduction

The development of information and communication technology today has brought significant changes in various fields. life sectors, including trade and marketing. Digital transformation drives perpetrator efforts to adapt to technology- based systems in order to increase efficiency operational, expanding market reach, as well as repair quality services to consumers (Laudon & Laudon, 2020; Kotler et al., 2021). One of the form transformation This is the use of a sales information system website -based that allows transaction done online without limitations of space and time (Susanto, 2019).

MSMEs (Micro, Small and Medium Enterprises) as an economic sector that plays an important role in supporting economy national, required to be able to innovate keep up with technological developments in order to survive and compete in the digital era (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2022). However, most MSMEs, especially those engaged in sales, processed products soybeans such as tofu, tempeh, soy sauce, and soy milk, are still face various obstacles in the marketing and management process business. Sales activities generally Still done conventionally, namely through kiosks in traditional markets, stalls, or direct sales to consumers. This pattern causes limited market reach, recording unsystematic transactions, as well as the difficulty of monitoring stock and flow real-time sales (Rahman & Hidayat, 2020).

Apart from that, another problem that often arises is dependence on middlemen or intermediaries, which often results in MSME actors obtaining... low profits because the selling price of the product is determined by a third party. Sales data management is still ongoing done manually also causes risk error recording, data loss, and difficulty in composing business financial reports (Sutanto & Nugroho, 2021). On the other hand, the behavior of Modern consumers are increasingly accustomed to making purchases online. a great opportunity that is not yet fully realized utilized by MSME actors (Kotler et al., 2021). The condition the shows the urgency to design and build a website- based online sales information system that can help MSME sellers vegetables and processed products soybeans in expanding the market, increasing efficiency operational, as well as improve data and transaction management systems (Pratama, 2020).

Sales information system website -based has the advantage of providing ease of access for sellers and buyers. For MSMEs, this system allows management stock of goods, customer data, as well report automatic and integrated sales (Susanto, 2019). For consumers, this system makes it easy to order products online, monitor availability of goods, as well as obtain price information more quickly and transparently (Laudon & Laudon, 2020). Therefore, the implementation of a website -based information system can become a strategic solution to support the digital transformation of MSMEs, especially in the sector food fresh and processed products soybeans are easily damaged and require management efficient distribution (Widodo & Setiawan, 2021).

previous studies show that the sales system website -based can have an impact positive impact on improving performance and effectiveness business. For example, research conducted by Pitri and Abdillah (2022) in a study entitled "Usability Testing to Measure Mailo Store Website User Satisfaction " emphasize importance usability aspects in designing online sales systems so that users can operate the system easily, efficiently, and enjoyably. The results of the study show that the higher level convenience the use of the system, the greater the opportunities users to transact and return to using the same platform.

Another study by Cahyaningtyas et al. (2022) entitled " Sales Information System Design also shows that implementation of sales website can increase efficiency of transaction processes, expanding range consumers, as well as helping owners efforts in monitoring stock and financial reports automatically. Findings similar presented in research on the sector agriculture hydroponics that shows that use of sales information systems web- based can speed up transaction between producers and consumers, at the same time increase income perpetrator business (Widodo & Setiawan, 2021).

However Thus, research that integrates processed products Soybeans in an integrated information system is still rarely done. In fact, both types of products have different characteristics. while processed products soybeans have a cycle more production complex and requires careful record keeping. This creates research gaps that are important to fill, namely by designing a system that is able to accommodate management needs sales for both types of products effectively and efficiently (Pratama, 2020).

Based on the description above, it can be concluded that design and development of sales information systems website -based for MSME processed products soya bean become very thing relevant and urgent. This system is expected can help MSMEs in managing sales data, increasing range marketing, minimizing dependence on intermediaries, as well as increase Power competitiveness amidst behavioral changes increasingly digital consumers (Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2022; Kotler et al., 2021). Thus, this research is expected to contribute real in supporting the digitalization of MSMEs and strengthen technology- based economic foundation in the sector food local.

Literature Review
Information Systems and Their Benefits in MSMEs
1. Definition of Information System

System information is combination from technology, people, and designed processes For support operations and retrieval decision in organization. According to O'Brien & Marakas (2011), the system information functioning For collect, process, store, and disseminate useful information for activity organization.

2. Roles of Information Systems for MSMEs

In MSME context, system information help speed up business processes, improve efficiency, reducing manual errors, as well as open opportunity For market expansion. Research by Hanafiah et al. (2019) shows that MSMEs that implement system information capable increase turnover and effectiveness operational.

Website-Based E-Commerce
1. E-Commerce Concept

E-commerce is activity sell buy goods or service through electronic media, especially the internet. Straub (2000) defines e-commerce as transaction ongoing business in a way electronic between individuals, organizations, and components technology his supporters.

2. Websites as Online Sales Platforms

Website is a flexible media For display product, processing transactions, as well as managing customer and order data. Ceci & Gallo (2018) explains that e-commerce websites can equipped module catalog products, shopping cart, system payments and reports integrated sales.

E-Commerce Website Technology and Architecture
1. Frontend

Frontend includes interactive display direct with users. According to Boon (2017), frontend elements must focus on readability information products, convenience navigation, and responsive to various device.
2. Backend

Backend is responsible answer to logic business, data management, and integration systems. Frameworks like Laravel, Django, or Node.js are common. used For designing a secure and efficient backend.

3.   Database

Database plays a role in product, transaction, customer, and stock data storage. MySQL, PostgreSQL, and MongoDB are choice popular based on need data schema.

Research Methodology
Types and Approaches of Research

Study This use approach study engineering device software engineering research with method Research and Development (R&D) Approach This aim For design, build, and test A system information website- based online sales that can used by MSME products processed soya bean.

R&D approach chosen Because study No only focus on analysis phenomenon, but also produces product in the form of system information that can implemented in a way direct For support activity MSME business.

Objects and Subjects of Research

a. Research Object

Object study is system information website - based online sales that include :
1   Management products (processed soya bean),
2   Management order,
3   Management customer,
4   Transaction and reporting processes sale.

b. Research Subjects

Subject study includes :
1.   Owner or MSME managers as a system admin,
2.   Consumer as users who do purchase via the website.

Data Collection Methods

For obtain accurate and relevant data, research This use a number of method data collection as following :

a. Observation

Observation done in a way direct regarding the sales process of MSMEs which is still walk in a way conventional, including :
1.   How to record transactions,
2.   Management stock,
3.   Ordering and payment process.

b. Interview

Interview done with MSME owners to digging :
1   Need system,
2   Constraint in manual sales,
3   Hope to system online sales.

c. Literature Study

Studies literature done with study :
1   Book text system information and e-commerce,
2   Journal scientific related to MSMEs and online sales,
3   Study relevant previous.

Results

This research resulted in an online sales information system based on a website that is specifically designed to support sales activities for MSME processed products soybeans. The system developed is capable of managing business processes main MSMEs in an integrated manner, starting from product management to sales reporting. The system can be accessed via

a browser and shared become two role main, namely admin (UMKM owner) and customer. Each Roles have different access rights and features according to user needs.
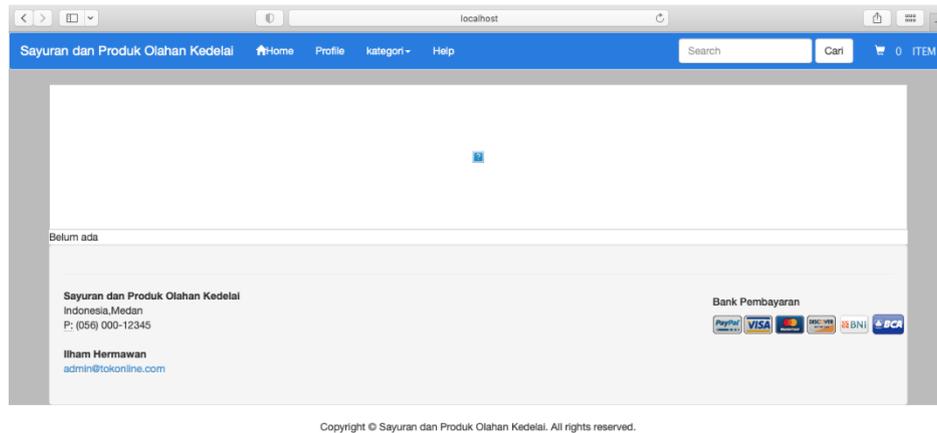

Figure 1. Home page users

Page home page users is appearance main thing that can accessed by website visitors. On the page This there is a navigation menu like Home, Profile, Category, Help, Features search products, as well as basket shopping. Information general about shop, contact, and method Payment is also displayed in the footer. Page This functioning as means information beginning for users For see and search as well as processed available soybeans.
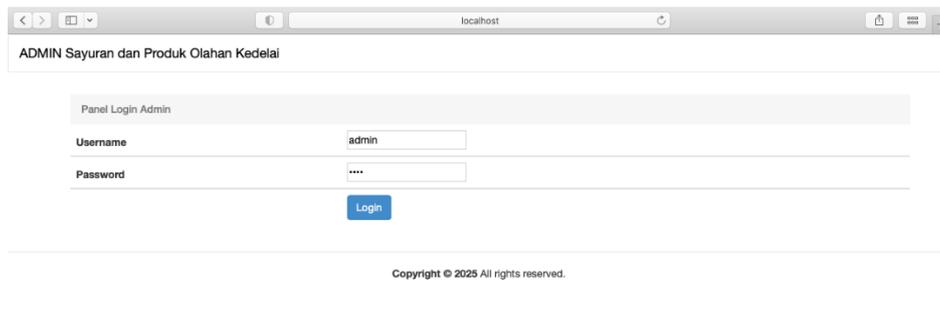

Figure 2. Administrator Login Page

The administrator login page is used as a security system to restrict access to the data management page. Admins are required to Enter a valid username and password to log in to the system. Purpose The purpose of this page is to ensure that only users with administrator access rights can perform system data management processes.
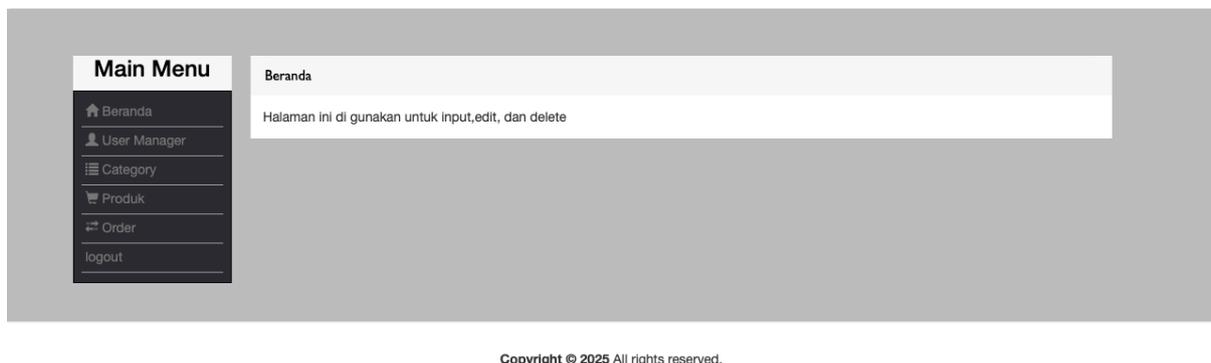

Figure 3. dashboard page

After successfully logging in, the admin will directed to the dashboard page. This page displays the main system menu which consists of from Home, User Manager, Category,

Product,   and   Order.
The dashboard serves as a central administrator control in managing all data contained in the system, including the process of input, editing and deleting data.

Figure 4. Admin Data Page

The admin data page is used to manage administrator accounts. This page displays a list of registered admins in the system along with an Add Admin button. This feature makes it easy to use. system manager in adding or managing administrator data who has access to the backend system.
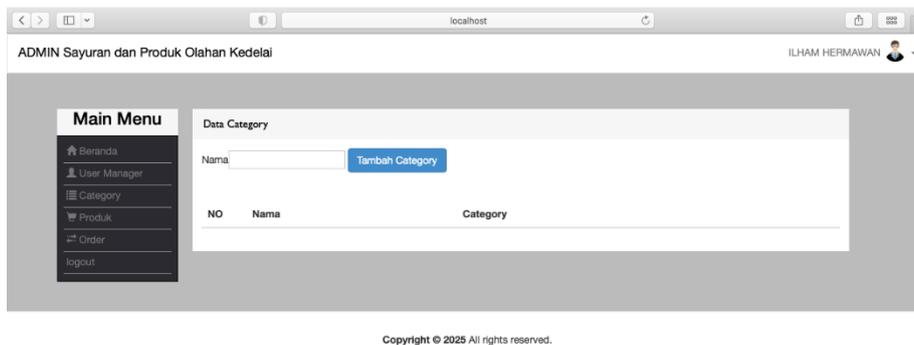

Figure 5. Category Data Page

Category data page functions to manage product category. Admin can add new category through the available input form as well as View a list of categories that have been created. Group products by category aims to facilitate users in searching for products and helping the system in managing product data in a structured manner.
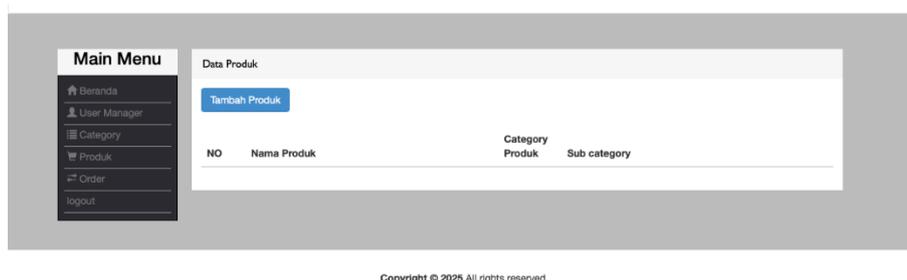

Figure 6. Product Data Page

The Product Data page is used by administrators to manage vegetable and processed product data. Soybeans. This page features a navigation menu on the left side. as well as Add Product button to add new data. Product data is displayed in the form table containing number, product name, product category, and subcategory.
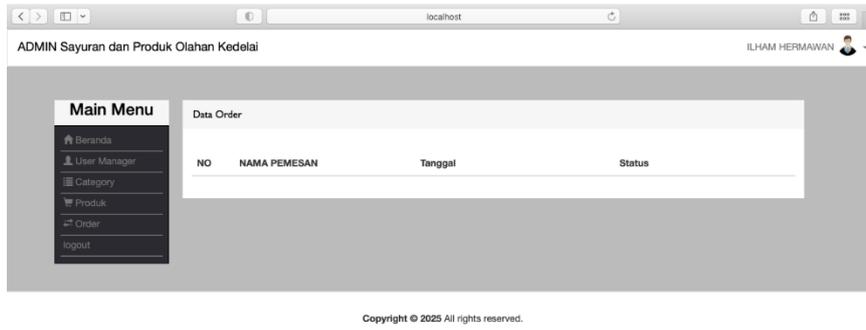
Figure 7. Order Data Page

The Order Data page is used to display order data. customers. On this page available table containing information on numbers, names orderer, order date, and order status. This page helps administrators monitor and manage the ordering process.

Black Box Test Results

Black Box testing is carried out For ensure that every functions in the system walk in accordance with need without notice structure program code. Testing focused on input, process, and output from every feature main system.

Table 1. Black Box Testing of Online Sales Information System

No	Tested Features	Scenario Testing	Input	Expected Output	Test Results	Information
1	Home Page	Access the main page of the website	Website URL	Home page appears with the Home, Profile, Category, Help, Search, and Cart menus	In accordance	Valid
2	Product Search	Search for products by name	Product name	Searched product displayed	In accordance	Valid
3	Shopping cart	Add product to cart	Click the add button	The product goes into the shopping cart	In accordance	Valid
4	Administrator Login	Login with valid data	Username & password are correct	Admin successfully logged in to the dashboard	In accordance	Valid
5	Administrator Login	Login with invalid data	Incorrect username/password	The system displays an error message	In accordance	Valid
6	Admin Dashboard	Access the dashboard after logging in	Click the dashboard menu	The admin dashboard appears	In accordance	Valid

No	Tested Features	Scenario Testing	Input	Expected Output	Test Results	Information
7	Admin Management	Adding new admin data	Complete admin data	Admin data is saved and displayed	In accordance	Valid
8	Management Category	Add product category	Category name	New category saved	In accordance	Valid
9	Product Management	Adding new products	Name, category, price, stock	Products are saved and displayed the table	In accordance	Valid
10	Product Management	Editing product data	Data changes	Product data successful updated	In accordance	Valid
11	Product Management	Delete product	Click delete	Product deleted from the system	In accordance	Valid
12	Order Data	View order data	Access the order menu	Customer order data come on stage	In accordance	Valid
13	Order Status	Change order status	Update status	Order status changed	In accordance	Valid
14	Admin Logout	Exit the system	Click logout	Admin logs out and back in	In accordance	Valid

1. Analysis of Black Box Testing Results

Based on results Black Box testing has been done done, all feature main system information online sales running in accordance with designed function. No found error functional in the input process, data processing, and system output.

This result show that system:
   a. Capable handle the online sales process with Good,
   b. Fulfil need users both admin and customer,
   c. Worthy For implemented in MSME products processed soya bean.

2 Conclusions of Black Box Testing

Black Box testing proves that system information website- based online sales have :
   1. Functioning in accordance specification need system,
   2. Produces accurate output,
   3. Stable at the moment used in scenario normal operations.

With Thus, the system stated valid in functional.

Conclusion

Based on results design, implementation, and testing the system that has been done, can concluded that system information website - based online sales developed capable support the business processes of MSME products processed soya bean in a way more effective and structured. System This succeed integrate product data managament, transactions sales, customers, and report sale in one easy platform accessed. Results Black Box testing shows that all over function main system walk in accordance with requirements and specifications that have been determined. In addition that, the results of the User Acceptance Test (UAT) show

that system assessed easy used, have appearance simple interface, as well as capable help MSME owners in accelerate the sales process and digital data management. With its implementation system This, MSMEs get benefit in the form of improvement efficiency operational, reduction error recording transactions, as well as expansion range marketing through online media. Therefore that, the system information this website - based online sales stated worthy For used and implemented as digital solutions for MSME products processed soya bean.

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