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Web Based Sales Information System for Crackers Products Using Laravel Framework

Muhammad Firosulhaq[1], Agus Athok Mftahuddin[2]
[1] Information Systems, Universitas KH. A. Wahab Hasbullah
Email: firosulhaq8@gmail.com

ABSTRACT
Home Industry Glagahan, which produces traditional kerupuk (crackers), faces several challenges in managing sales, stock recording, and product distribution, as these processes were previously carried out manually, leading to errors in record-keeping, loss of transaction data, and difficulties in generating structured sales reports. To address these issues, this study developed a Web-Based Sales Information System for Kerupuk Products using the Laravel framework supported by a modular e-commerce package, applying the Waterfall development method that includes requirements analysis, design, implementation, testing, and evaluation stages. The system provides features such as an online product catalog, automated transaction recording, integrated stock management, and sales reports based on specific periods, while system functionality was tested using the Black-box Testing method to ensure that it meets user requirements. The results show that the system successfully assists the business owner in managing sales and stock data more effectively compared to the previous manual method, although limitations remain, such as the lack of fully implemented online payment integration and a relatively simple user interface. In the future, this system can be further enhanced by integrating courier services, digital payment methods, and a more flexible user interface to support wider market expansion.

Keywords: *Information System, Sales, E-Commerce, Laravel, Waterfall*

INTRODUCTION
Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in supporting Indonesia's economy. However, many MSMEs still face obstacles in managing sales and inventory due to the use of manual systems. This condition often results in errors in recording transactions, difficulties in monitoring stock, and the absence of structured sales reports that can support decision-making. Such problems are also found in Home Industry Glagahan, Jombang, which produces traditional crackers (kerupuk).

Previous studies have shown that web-based information systems can significantly improve the efficiency of MSME operations. For example, Pratiwi and Heriadi (2023) developed a web-based financial management system using Laravel, which improved transaction accuracy and reporting efficiency in a retail business. Similarly, Khairunnisa, Arwani, and Hanggara (2022) implemented a Point of Sale (POS) system with Laravel for Meetup Station, resulting in more structured inventory control and faster transaction processing. In the same line, Rahmadhani and Maryam (2024) built a Laravel-based POS system for Faafoo Store, tested with black-box methods, which demonstrated effectiveness in supporting MSME sales operations. Furthermore, Angel et al. (2025) highlighted that a Laravel-based e-commerce platform tested with the Waterfall approach successfully supported MSME digital transformation, with more than 95% functionality performing as expected.

Despite these developments, many MSMEs, including Home Industry Glagahan, still do not have an integrated web-based sales information system. Existing research has primarily focused on financial management systems, POS applications, or general e-commerce platforms, leaving a gap in research that specifically addresses the sales and inventory needs of small-scale food industries such as traditional cracker producers.

Therefore, this study aims to design and develop a web-based sales information system for Home Industry Glagahan using the Laravel 12 framework and the Waterfall development model. The system is expected to provide an online product catalog, automated transaction recording, real-time stock

management, and structured sales reports, thereby improving efficiency, accuracy, and supporting market expansion for MSMEs in the food sector.

METHOD

This research is classified as development research with the objective of building a web-based sales information system for Home Industry Glagahan. The study applied the Software Development Life Cycle (SDLC) using the Waterfall model, which consists of sequential phases: requirement analysis, design, implementation, testing, and evaluation.

Research Design and Approach

The study used a qualitative-descriptive approach combined with system development. The focus was to identify business needs, design the solution, and implement a functional prototype for MSME operations.

Research Subject

The research subject was *Home Industry Glagahan*, a small-scale cracker production business in Jombang. The owner served as the main respondent since business operations and decision-making are centralized.

Procedure

1. **Requirement Analysis** – Data were collected through interviews and observations of sales and stock recording activities. Problems identified included manual transaction records, difficulty tracking inventory, and lack of structured reports.
2. **System Design** – The system was modeled using flowcharts, Data Flow Diagrams (DFD), and Entity Relationship Diagrams (ERD). Laravel's MVC (Model–View–Controller) architecture was adopted to ensure modularity and maintainability.
3. **Implementation** – The system was developed using Laravel 12 with MySQL as the database. Modules included product catalog, transaction management, stock management, and sales reporting. Development tools used were Visual Studio Code, Composer, XAMPP, and PHP 8.2.
4. **Testing** – Functionality was verified using the Black-box Testing method to ensure that each feature worked according to requirements, including login, product management, checkout, and reporting.
5. **Evaluation** – The system was evaluated through user feedback sessions with the business owner to measure efficiency, accuracy, and usability compared to the previous manual process.

Data Analysis

The analysis was conducted by comparing system functionality against predefined requirements and by interpreting qualitative feedback from the business owner. The results were then matched with prior studies to highlight the novelty and effectiveness of the developed system.

RESULT AND DISCUSSION

Result

The developed web-based sales information system was successfully implemented using the Laravel 12 framework and MySQL database. The system provided four main features:

1. Online Product Catalog: Products were displayed with details such as name, price, stock availability, and description. Only products with available stock were shown, preventing invalid orders.
2. Automated Transaction Recording: Every purchase was recorded digitally and stored in the database, ensuring reduced errors compared to manual recording.
3. Real-Time Stock Management: Stock levels were automatically updated after each transaction, providing accurate monitoring for the business owner.
4. Sales Reporting: Reports could be generated daily, weekly, or monthly, providing structured insights into sales performance.

System testing was conducted using Black-box Testing, and the results are summarized in Table 1.

Table 1. Black-box Testing Results

Feature	Input/Process	Expected Output	Result
Login Admin	Username & Password valid	Redirected to dashboard	Success
Add Product	Complete product data	Product appears in catalog	Success
Checkout	Product selection confirmed	Transaction saved, stock reduced	Success
Sales Report	Select time period	Report generated based on filter	Success

The evaluation process showed that the system increased efficiency compared to manual recording. Transaction input time was reduced, stock mismatches were minimized, and the business owner was able to access historical sales reports more easily.

Discussion

The results of this study demonstrate that implementing a web-based information system for MSMEs can significantly improve operational efficiency and data accuracy. Before implementation, Home Industry Glagahan relied on manual record-keeping, which often caused transaction errors and difficulties in generating reports. After the system was deployed, transaction accuracy improved, stock updates became automatic, and sales reporting became more structured.

These findings are consistent with previous studies. For example, Pratiwi and Heriadi (2023) showed that a web-based financial management system built with Laravel improved efficiency and accuracy in transaction processing. Similarly, Khairunnisa, Arwani, and Hanggara (2022) found that Laravel-based POS systems simplified stock management and accelerated transaction handling. Rahmadhani and Maryam (2024) confirmed that Laravel-based POS systems tested with Black-box methods provided reliable features that supported MSME sales. Furthermore, Angel et al. (2025) demonstrated that a Laravel-based e-commerce platform designed using the Waterfall model achieved more than 95% functional performance, highlighting the effectiveness of this approach in MSME contexts.

Table 2 Comparison with Previous Studies

Study	Focus	Method	Main Findings	Relevance to This Study
Pratiwi & Heriadi (2023)	Web-based financial management system using Laravel	Waterfall, case study on retail store	Improved transaction accuracy and reporting efficiency	Confirms that Laravel can increase accuracy in financial data management
Khairunnisa, Arwani & Hanggara (2022)	POS system for Meetup Station using Laravel	Black-box Testing	Structured inventory management, faster transaction processing	Supports the use of Laravel for inventory and sales management
Rahmadhani & Maryam (2024)	POS system for Faafoo Store using Laravel	Agile & Black-box Testing	Reliable POS features with acceptable usability (SUS = 75.5)	Highlights the effectiveness of Laravel-based POS for MSMEs
Angel et al. (2025)	E-commerce platform for MSMEs using Laravel	Waterfall & Black-box Testing	Achieved >95% functional performance	Demonstrates that Laravel with Waterfall ensures stable MSME systems
This Study	Web-based sales information system for Home Industry Glagahan (crackers)	Waterfall & Black-box Testing	Automated transaction recording, real-time stock, structured reports	Provides an integrated solution for traditional food MSMEs with specific focus on cracker production

The novelty of this study lies in its specific application for a traditional food MSME (cracker production). While prior research has focused on financial systems, general POS applications, or broader e-commerce platforms, this study addresses the unique needs of small-scale food producers by combining product catalog, sales, stock, and reporting features into one integrated system.

However, the system still has some limitations. Online payment integration was not fully implemented, and the user interface remained simple. These findings suggest that while Laravel-based systems are highly effective for MSMEs, continuous improvements—such as adding payment gateways, integrating delivery services, and enhancing user experience—are needed to support scalability and market expansion.

This comparison highlights that while previous studies focused on financial systems, POS, or general e-commerce platforms, the current study contributes by designing a sales information system tailored for a traditional food MSME, integrating catalog, sales, stock, and reporting in one system.

CONCLUSIONS

This study successfully developed a web-based sales information system for *Home Industry Glagahan* using the Laravel 12 framework and the Waterfall model. The system addressed key operational challenges by providing automated transaction recording, real-time stock management, and structured sales reports. These features improved efficiency, reduced errors from manual processes, and enabled the business owner to make data-driven decisions.

The findings confirm that the application of web-based systems can significantly enhance MSME performance, consistent with prior studies on financial management systems, POS applications, and e-commerce platforms. The novelty of this research lies in its specific contribution to the traditional food sector, particularly in cracker production, which has not been extensively studied in earlier works.

Despite its contributions, the system has limitations, including the absence of full integration with online payment gateways and the use of a basic user interface. Future research may focus on enhancing user experience, integrating courier services and digital payment systems, and scaling the platform to support broader market access. Such improvements would strengthen the system's role in accelerating the digital transformation of MSMEs.

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