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Web-Based Sales and Distribution Information System: A Case Study of UD Mikado

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ABSTRACT
This study aims to design and implement a web-based sales and distribution information system for ball products at UD Mikado, a regional trading and manufacturing enterprise in Jombang, to digitalize business processes that were previously carried out conventionally. The main problems faced by the company include errors in recording daily cashier transactions due to the use of paper-based receipts, discrepancies between recorded and actual stock of finished products and raw materials, and the absence of real-time tracking for the internal distribution of raw materials to production units. The system was developed using the Waterfall software development method, consisting of requirement analysis, system design, implementation, testing, and maintenance stages. Data were collected through in-depth interviews, direct observation at the company's warehouse and production site, and document study. The resulting application, built with the Laravel framework and MySQL database, integrates a Point of Sales (POS) module, automatic real-time stock deduction, raw material withdrawal recording, and PDF report export. Functional testing using the Black Box Testing method achieved a 100 percent success rate, indicating that the system is highly feasible for implementation. The system enables UD Mikado to eliminate paper-based recording, improve inventory data accuracy, simplify raw material allocation monitoring, and accelerate operational reporting for management decision-making.

Keywords: *Information System; Sales; Raw Material Distribution; Web; Laravel; Waterfall; Black Box Testing*

INTRODUCTION
The rapid advancement of information and communication technology has fundamentally transformed business operations across sectors, pushing enterprises to shift from manual, conventional methods toward integrated, real-time digital ecosystems. Web-based information systems have become a strategic instrument that determines the competitiveness and long-term efficiency of business entities (Saputra et al., 2024). One sector experiencing highly dynamic market demand is the sporting goods retail and manufacturing industry, particularly ball products such as footballs, volleyballs, and basketballs, whose fluctuating demand requires synchronized supply chain management covering sales, warehouse inventory, and raw material distribution to production units (Triyanto et al., 2020).

UD Mikado is a regional trading and manufacturing enterprise engaged in the supply, production, and sale of various ball products. Despite its growing daily transaction volume, the company's core operational processes are still carried out conventionally. Sales transactions are recorded on paper receipts, which are prone to loss and complicate historical data retrieval. Stock reconciliation between finished products and raw materials, such as EVA sponge, rubber, and PE plastic beads, relies solely on periodic manual checks, frequently resulting in discrepancies that cause overstock or stockout conditions (Susanto et al., 2023). Furthermore, the internal distribution of raw materials from the warehouse to production units is not tracked in real time, hindering management's oversight of material allocation.

Based on these problems, this study proposes the design and development of a web-based sales and distribution information system that integrates sales transactions, inventory management, and internal raw material distribution for UD Mikado, aiming to eliminate paper-based recording and improve the accuracy and speed of operational data.

METHOD

This study applies the Waterfall software development life cycle (SDLC), consisting of requirement analysis, system design, implementation, testing, and maintenance stages, chosen for its structured and sequential nature. Data were collected through two main techniques. Primary data were obtained through in-depth interviews with the owner and operational staff of UD Mikado regarding the sales transaction flow, raw material allocation to production units, and reporting needs, as well as direct observation of daily cashier, warehouse, and production activities. Secondary data were obtained from the company's internal documents, such as physical sales receipts and stock records, as well as literature studies on related frameworks and prior research.

The system was implemented as a web-based application using the PHP programming language with the Laravel framework and MySQL as the database management system. Functional testing was carried out using the Black Box Testing method, focusing on the login authentication, master data management, raw material withdrawal, sales transaction, and operational reporting modules.

RESULT AND DISCUSSION

Result

The web-based sales and distribution information system for UD Mikado was successfully implemented using the Laravel framework, PHP, and a MySQL database. The system can be accessed through a web browser and is used by the Administrator to manage sales, inventory, and raw material distribution activities. The implemented system consists of the following main features.

- **Login page.** Provides secure authentication for the Administrator before the system can be accessed. The Administrator is required to enter a registered email and password, which the system verifies against the database; upon a successful match the Administrator is redirected to the dashboard, while an invalid match triggers an error message.
- **Admin dashboard.** Serves as the system's navigation hub and displays real-time metric widgets, including total products, total revenue, paid transactions, and total raw material stock, together with a sales trend chart, low-stock alerts, and summary tables of recent sales transactions and raw material stock.
- **Raw material module.** Manages and monitors raw material inventory, such as plastic beads, EVA sponge, and rubber, through a table listing each item's supplier, storage location, unit, purchase price, and remaining stock, complemented by a form for registering new raw material records.
- **Raw material withdrawal module.** Records the withdrawal of raw materials from the warehouse to production units, displaying the withdrawal history, quantity withdrawn, withdrawal date, destination production unit, and allocation status. Every saved withdrawal transaction automatically deducts the corresponding raw material stock in the database.
- **Finished product module.** Manages the catalog of finished ball products, such as footballs, volleyballs, and sponge balls, showing the product code, category, selling price, and available stock, along with a form for registering newly produced items that automatically updates the product catalog and stock quantity.
- **Sales transaction module.** Provides a point-of-sale form for recording customer purchases, selecting the customer, calculating the total payment, and generating a sales invoice. Each completed transaction automatically updates the corresponding finished product stock in real time.
- **Operational reporting module.** Presents recapitulations covering the Sales Report, Product Stock Report, Raw Material Report, and a combined report for a selected date period, and includes a PDF export feature that allows the Administrator to save or print the recapitulation for management purposes.

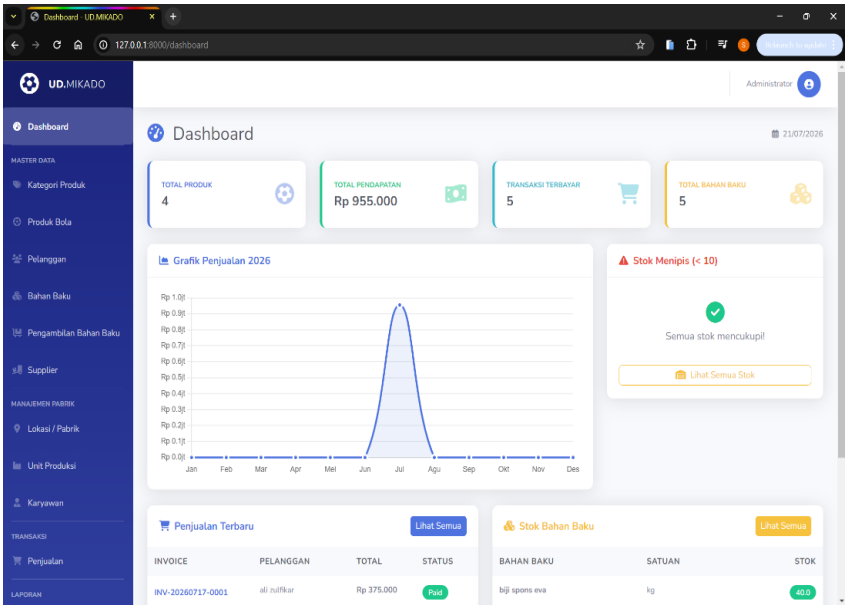


Figure 1. Dashboard Module Displaying Sales and Stock Overview

Figure 1 shows the main dashboard, which presents real-time metrics such as total revenue, annual sales trends, and low-stock alerts, giving management an at-a-glance view of business performance.

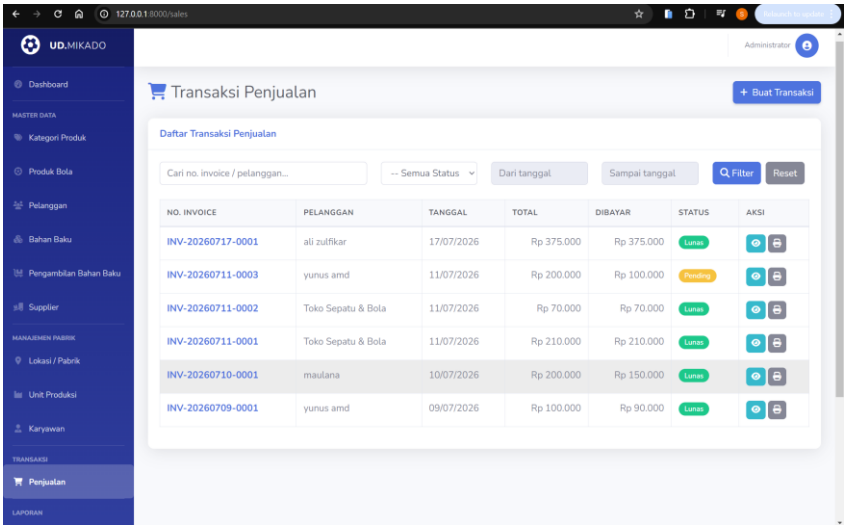


Figure 2. Sales Transaction (Point of Sales) Module

Figure 2 shows the Point of Sales (POS) module used by cashier staff to record sales transactions, in which the system automatically deducts the corresponding finished-product stock upon each completed transaction

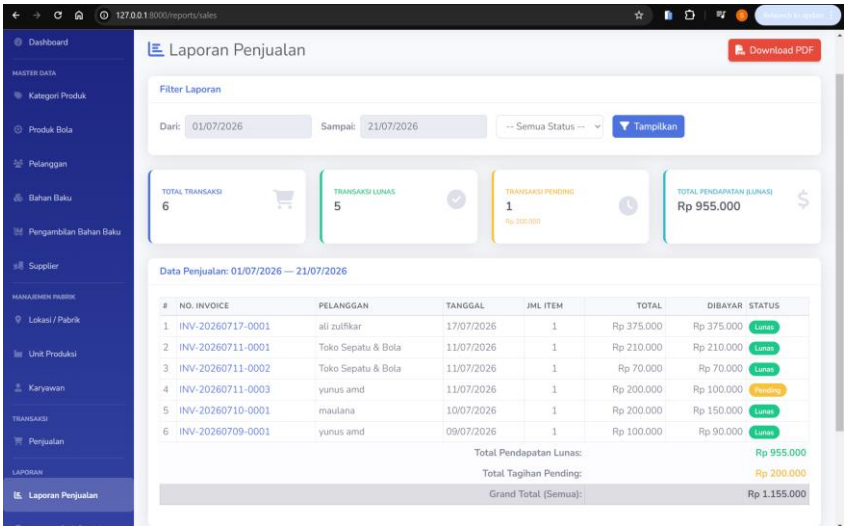


Figure 3. Operational Report Module with PDF Export

Figure 3 shows the operational reporting module, which allows management to filter reports by date period and export sales, stock, and raw material reports to PDF format for documentation and decision-making purposes.

Functional testing was conducted using the Black Box Testing method across the main feature groups of the system. A summary of the testing results is presented in Table 1.

Table 1. Summary of Black Box Testing Results

No	Tested Module	Testing Focus	Result
1	Authentication	Login validation with correct/incorrect credentials and empty fields	Pass
2	Raw Material Data	Add, view, edit, delete, and input validation	Pass
3	Raw Material Withdrawal	Add transaction, view detail, cancel/return stock	Pass
4	Finished Product & Sales	Product data management and sales transaction recording	Pass
5	Operational Reporting	Sales, stock, and combined report generation and PDF export	Pass

Overall, the Black Box Testing evaluation achieved a 100% success rate, placing the system in the "Very Feasible" category.

Discussion

The testing results indicate that all core modules of the system operate stably and in accordance with UD Mikado's business processes. The authentication module successfully restricts data access to verified users, addressing the company's earlier vulnerability to unauthorized access. In the inventory and manufacturing domain, the raw material data and withdrawal modules resolve the discrepancy issues previously caused by manual bookkeeping, since every material movement from the warehouse to production units is automatically deducted from the database in real time. Similarly, the sales module automatically updates finished product stock and records the payment status of each transaction.

These findings are consistent with previous studies showing that web-based sales information systems can reduce recording errors and improve inventory accuracy compared to manual, paper-based processes (Fitria et al., 2025; Indriani et al., 2024). Compared to Susanto et al. (2023), who developed a web-based sales and stock management system without an integrated production allocation module, the system developed in this study extends prior work by incorporating raw material distribution tracking for internal production units, addressing a supply-chain gap not covered in earlier sales information system research (Anjelita et al., 2025). This is also in line with Fakhrun Nuha and Nurdewanto (2026), who found that digitalizing point-of-sale transactions through a web-based system significantly improves the operational efficiency of micro and small enterprises.

The system offers several advantages, including centralized operational data integration, automatic real-time stock updates, and PDF-based reporting for management decision-making. Its reliance on a stable web-based database also aligns with the emphasis on well-optimized relational

database management for transactional systems (Šušter & Ranisavljević, 2023). However, its performance depends heavily on user input accuracy and stable network connectivity, and its current scope does not yet cover online payment gateways or third-party shipping logistics integration, which represent opportunities for future development.

CONCLUSIONS

This study successfully designed and implemented a web-based sales and distribution information system for UD Mikado that digitalizes and integrates point-of-sales transactions, finished product inventory management, and internal raw material distribution to production units. The system replaces conventional paper-based recording with a centralized, real-time digital process. Functional testing using the Black Box Testing method achieved a 100 percent success rate, confirming that the system is highly feasible for operational use. Future development may incorporate an online payment gateway, third-party shipping logistics integration, and more granular role-based access control for cashier, warehouse, and production staff.

REFERENCES

Anjelita, A., Murti, H., & Diartono, D. A. (2025). Design and construction of a web-based product sales information system using the Waterfall and tracking methods (case study of the Sumber Rejeki Grocery Store). *Journal of Information Technology and Computer Science (INTECOMS)*, 8(4).

Fakhrun Nuha, M., & Nurdewanto, B. (2026). Digitalisasi transaksi UMKM melalui sistem point of sale berbasis web. *Journal of Information System and Application Development*, 4(1), 161–168. https://doi.org/10.26905/jisad.v4i1.16919

Fitria, S. H., Hamdani, F., Yuliadi, Y., & Julkarnain, M. (2025). Rancang bangun sistem informasi penjualan berbasis web untuk pemasaran pada Pizza Chitha. *Digital Transformation Technology*, 5(1), 531–537. https://doi.org/10.47709/digitech.v5i1.6766

Indriani, A., Pramudito, D. K., & Suherman. (2024). An agile development method of employee co-op shop web-based sales information system. *Jurnal Informasi Dan Teknologi*, 123–132. https://doi.org/10.60083/jidt.v6i2.538

Saputra, R., Desanti, R. I., & Tjahjana, D. (2024). Transformasi proses penjualan dan distribusi melalui solusi digital berbasis web pada perusahaan fashion. *G-Tech: Jurnal Teknologi Terapan*, 8(4), 2190–2200. https://doi.org/10.70609/gtech.v8i4.4815

Susanto, B. A., Puspitasari, D. E., Alhamri, R. Z., Informatika, M., Kediri, K., & Malang, P. N. (2023). Sistem informasi penjualan dan manajemen stok berbasis web studi kasus Silver Cell Group. *Jurnal Informatika & Multimedia*, 15(1).

Šušter, I., & Ranisavljević, T. (2023). Optimization of MySQL database. *Journal of Process Management and New Technologies*, 11.

Triyanto, R., Stekpi, J., Trilogi, Kalibata, T., & Selatan, J. (2020). Rancang bangun aplikasi penjualan berbasis website (studi kasus: Toko Waroeng Bola). *Jurnal Sistem Informasi Dan Sains Teknologi*, 2(1).