

Online version at <https://journal.lenterailmu.com/index.php/jafotik>**JAFOTIK**

E-ISSN: 3031-2698, DOI prefix: 10.70356

**Jurnal Sistem Informasi
dan Teknik Informatika**

Design and Development of a Web-Based Sales Information System for Pempek Cek Ana Store

Dinda Despita Sari¹, Edi Supratman^{2,*}

^{1,2} Program Studi Sistem Informasi, Universitas Bina Darma, Palembang, Indonesia

ARTICLE INFO

Article history:

Received xx August 2026

Accepted 28 August 2026

Published 31 August 2026

Keywords:

Information system

Pempek sales

Web-based

Waterfall model

Black Box Testing

ABSTRACT

The sales process at Toko Pempek Cek Ana previously faced challenges in managing products, transactions, orders, and sales reports, highlighting the need for a computerized system to support sales activities. This study aims to design and develop a web-based sales information system for Toko Pempek Cek Ana. The Waterfall development method was applied through the stages of requirements analysis, system design, implementation, and testing. The system was developed to support customers, employees, and the owner in managing products, orders, payments, sales reports, and inventory monitoring. System testing using the Black Box Testing method showed that all tested functions operated according to the specified requirements. The results indicate that the developed system can facilitate sales activities and manage sales data in a more structured and efficient manner. Furthermore, the system can improve customer service and assist employees and the owner in managing and monitoring sales activities.

This is an open access article under the [CC BY-SA](#) license.



1. Introduction

The rapid development of information technology has influenced various business sectors, including micro, small, and medium enterprises (MSMEs) [1]. The adoption of information technology in business activities can improve the effectiveness of data management, accelerate service processes, and facilitate the delivery of information to customers [2]. One form of technology that can be implemented in the retail sector is a web-based sales information system. Such a system can support the management of product information, sales transactions, customer data, and sales reports in a more structured and computerized manner [3].

Pempek is one of Palembang's traditional foods and has attracted consumers from both local communities and outside the region [4]. The increasing demand for pempek has encouraged sales activities to extend beyond conventional in-store transactions through the use of digital media. This development highlights the importance of providing easily accessible product information and efficient transaction management to ensure that sales activities can be conducted quickly, accurately, and conveniently for customers [5]. Toko Pempek Cek Ana is a business engaged in the sale of various types of pempek. In its daily operations, product records, sales transactions, and other business data are still subject to challenges associated with

* Corresponding author: Edi Supratman

E-mail address: edi_supratman@binadarma.ac.id

manual management [6]. Manual recording can increase processing time, create a higher risk of data-entry errors, and make it difficult for the owner to obtain timely information about transactions and sales performance. Furthermore, customers require more accessible product information, including product types, prices, and availability, to support their purchasing decisions [7].

These challenges indicate the need for an integrated information system to support sales management at Toko Pempek Cek Ana. A web-based sales information system can provide customers with accessible product information while enabling the store to manage product data, orders, transactions, and sales reports more systematically. The implementation of a computerized system is expected to improve the efficiency and accuracy of data processing and reduce errors in transaction management [8]. Based on these problems, this study aims to design and develop a web-based sales information system for pempek at Toko Pempek Cek Ana. The proposed system is intended to facilitate customers in accessing product information and placing orders while assisting employees and the owner in managing products, transactions, inventory, and sales reports. The system is expected to improve the efficiency and structure of sales management, enhance customer service, and support the owner in monitoring sales activities and obtaining timely business information.

2. Method

This research adopts the Waterfall method, a system development methodology that follows a sequential process consisting of requirements analysis, system design, implementation, testing, and maintenance. This method was selected because the requirements of the sales system at Pempek Cek Ana Store had been clearly identified [9]. The research stages are described as follows:

a. Requirements Analysis

This stage was conducted through observation, interviews, and a literature review to identify existing problems, understand the current sales processes, and determine the functional and non-functional requirements of the proposed sales system.

b. System Design

At this stage, the system design was developed based on the identified requirements. The design includes business process modeling, database design, and user interface design. Unified Modeling Language (UML) was used to model the system, while Figma was used to design the user interface.

c. Implementation

In this stage, the system design was translated into a web-based sales information system. The system was developed according to the requirements and specifications established during the analysis and design stages.

d. Testing

The developed system was tested using Black Box Testing to verify that each system function operates according to the specified requirements. The testing focused on the functionality of the system from the user's perspective without examining the internal source code.

e. Maintenance

The maintenance stage involves identifying and resolving errors, making necessary system improvements, and adjusting the system when new requirements emerge after implementation and use. This stage ensures that the system continues to operate effectively and meets the needs of the users.

3. Result and Discussion

3.1 Results

a. Use case diagram

The Use Case Diagram illustrates the interactions between the actors and the web-based sales information system developed for Pempek Cek Ana Store. The system involves three main actors: Customer, Employee, and Owner (Figure 1).

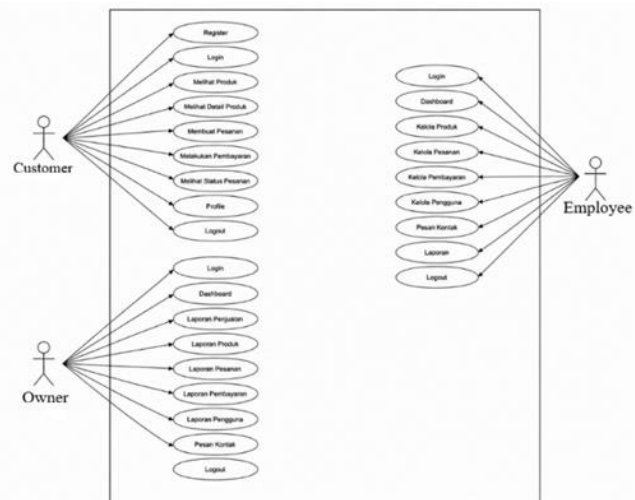


Fig. 1 – Use case diagram

In the Use Case Diagram, the Customer can register, log in, view products and product details, place orders, make payments, check order status, manage their profile, and log out. The Employee can log in, view the dashboard, manage products, manage orders, manage payments, manage customer information, view contact messages, view reports, and log out. Meanwhile, the Owner can access the dashboard and various reports, including sales reports, product reports, order reports, payment reports, and customer reports. The Owner can also view contact messages and log out of the system. The division of access rights is designed according to the roles, responsibilities, and needs of each actor. This role-based access control ensures that each user can access only the system features relevant to their respective responsibilities.

b. Class diagram

The Class Diagram illustrates the structure of the classes within the system and the relationships among them (Figure 2).

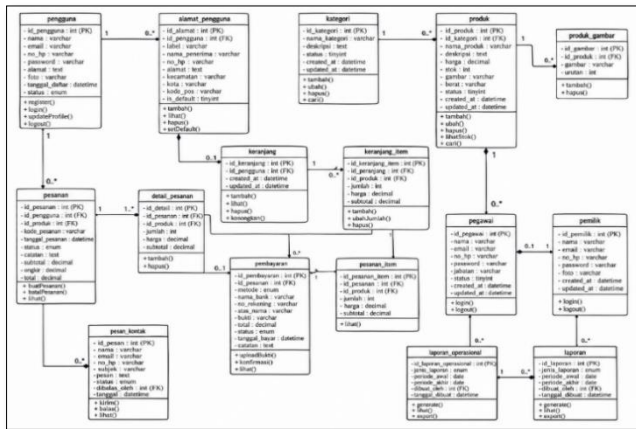


Fig. 2 – Class diagram

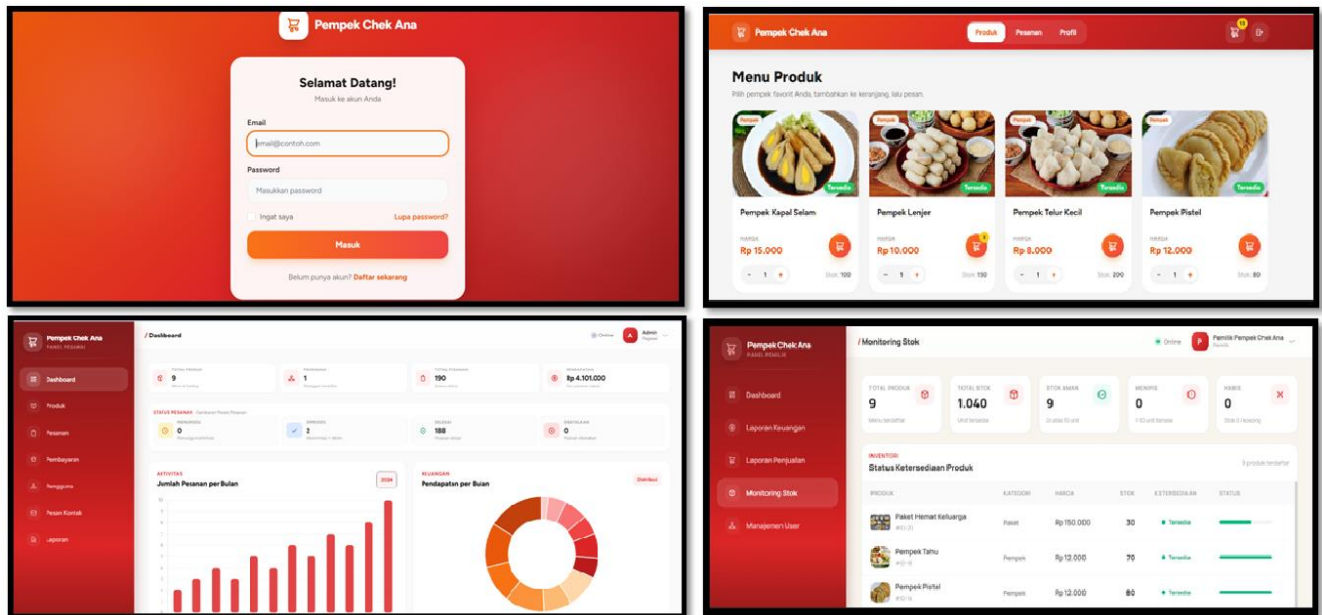


Fig. 3 – System Interface

The Login Menu allows users to access the system by entering their email address and password. The system validates the entered credentials and directs users to the main page if the information is correct or displays an error message if the credentials are invalid. The Product Menu allows users to view a list of available pempek products. The information displayed includes product images, categories, product names, prices, stock quantities, and availability status. Users can specify the desired quantity and add products to the shopping cart. The Employee Dashboard displays a summary of products, users, orders, revenue, and order status, along with graphs showing the number of orders and monthly revenue. The Owner Stock Monitoring Dashboard allows the Owner to monitor the total number of products, stock quantities, safe-stock levels, low-stock items, and out-of-stock items.

The relationships between the classes represent the data management processes within the system. Users are associated with addresses, shopping carts, orders, and contact messages. Categories are associated with products, while each product can have multiple images. Orders consist of order details and payment information. Employees are responsible for managing product, order, payment, user, and report data. Meanwhile, the Owner has access to system information and reports generated by the system. The Class Diagram serves as a basis for designing the database structure and implementing the web-based sales information system for Pempek Cek Ana Store.

c. System Interface

The user interface enables customers to access and interact with the system, including logging in, viewing products, placing orders, making payments, checking order status, and managing their profiles (Figure 3).

3.2 Black Box Testing

Black Box Testing was conducted to determine whether the functions of the Web-Based Sales Information System for Pempek Sales at Toko Pempek Cek Ana operate according to the specified requirements (Table 1). The testing was performed by providing inputs to each system function and observing the resulting outputs without examining the internal structure or source code of the program. The testing involved three types of actors: users, employees, and the owner, each of whom tested the system functions relevant to their respective roles.

The Black Box Testing was conducted on 28 test scenarios involving three actors: users, employees, and the owner. The tested functions included registration, login, product management, ordering, payment, reporting, stock monitoring, user management, profile management, and logout. The results showed that all tested functions operated according to the

specified requirements. Based on the testing results, all 28 test scenarios passed, with no failed tests, resulting in a 100% success rate. These results indicate that the Web-Based Sales Information

System for Pempek Sales at Toko Pempek Cek Ana is functionally feasible and can support the sales and administrative activities of the store.

Table 1 – Black box testing results

No.	Actor	Feature Tested	Test Scenario	Expected Result	Result
1	User	Registration	Enter valid registration data and click the Register button.	The system successfully registers a new user account.	Pass
2	User	Login	Enter a valid email address and password.	The system authenticates the user and displays the user interface.	Pass
3	User	Product	Open the product menu and select a product.	The system displays the available product information.	Pass
4	User	Cart	Add a product to the shopping cart.	The selected product is successfully added to the shopping cart.	Pass
5	User	Order	Proceed to checkout for the selected product.	The system displays the checkout page and order details.	Pass
6	User	Payment	Select a payment method and submit the payment.	The system processes the payment and records the transaction.	Pass
7	User	Order History	Open the order history menu.	The system displays the user's previous orders and transaction details.	Pass
8	User	Profile	Update profile information.	The system successfully saves the updated profile information.	Pass
9	User	Logout	Click the Logout button.	The system logs out the user and redirects to the appropriate login or home page.	Pass
10	Employee	Login	Enter a valid email address and password.	The system authenticates the employee and displays the employee dashboard.	Pass
11	Employee	Dashboard	Open the dashboard.	The system displays the employee dashboard and relevant information.	Pass
12	Employee	Product	Add, update, and delete product data.	The system successfully adds, updates, and deletes product data.	Pass
13	Employee	Order	View orders and update their status.	The system displays order information and successfully updates the order status.	Pass
14	Employee	Payment	Add and update payment methods.	The system successfully adds and updates payment method information.	Pass
15	Employee	User	View user data.	The system displays registered user information.	Pass
16	Employee	Contact Message	View messages submitted by users.	The system displays messages submitted by users.	Pass
17	Employee	Report	Select a period and view the transaction report.	The system displays the transaction report according to the selected period.	Pass
18	Employee	Export Report	Export the report in CSV and PDF formats.	The system successfully generates and downloads the report in CSV and PDF formats.	Pass
19	Employee	Profile	Update account information.	The system successfully saves the updated employee account information.	Pass
20	Employee	Logout	Click the Logout button.	The system logs out the employee and redirects to the appropriate login or home page.	Pass
21	Owner	Login	Enter a valid email address and password.	The system authenticates the owner and displays the owner dashboard.	Pass
22	Owner	Dashboard	Open the dashboard.	The system displays the owner dashboard and relevant information.	Pass
23	Owner	Financial Report	Select the financial report period.	The system displays the financial report according to the selected period.	Pass
24	Owner	Sales Report	Select the sales report period.	The system displays the sales report according to the selected period.	Pass
25	Owner	Stock Monitoring	Open the stock monitoring menu.	The system displays current product stock information.	Pass
26	Owner	User Management	Open the user management menu.	The system displays user management information.	Pass
27	Owner	Account Settings	Update account information.	The system successfully saves the updated	Pass

28	Owner	Logout	Click the Logout button.	account information. The system logs out the owner and redirects to the appropriate login or home page.	Pass
----	-------	--------	--------------------------	--	------

3.3 Discussion

The results of the study indicate that the Web-Based Sales Information System for Pempek at Toko Pempek Cek Ana operates according to the specified requirements. Based on the results of Black Box Testing [10], all functions associated with the Customer, Employee, and Owner actors produced successful results. The system supports various processes, including user registration and login, product management, shopping cart management, ordering, payment processing, order management, report generation, stock monitoring, and account management. These results indicate that the research objective of developing an information system to support sales processes and data management at Toko Pempek Cek Ana has been achieved [11].

The use of the Waterfall method enabled the development process to be carried out systematically through the stages of requirements analysis, system design, implementation, and testing. This approach provided a structured development process in which the system requirements were identified and translated into system designs before implementation and testing. The findings are consistent with previous studies showing that the implementation of web-based sales information systems can help MSMEs improve transaction efficiency, stock management, and report generation [12]. The use of Black Box Testing was also appropriate for verifying that each system function produced outputs according to the specified requirements. Furthermore, the division of access rights among Customers, Employees, and the Owner enables the system to support operational activities while providing relevant information for business monitoring [13].

This study contributes to the development of a web-based sales information system specifically tailored to the operational needs of Toko Pempek Cek Ana as a culinary business [14]. However, the study has several limitations. The evaluation was limited to functional testing using Black Box Testing and did not measure other important aspects, such as usability, user satisfaction, security, and system performance [15]. Therefore, future research could evaluate these aspects to provide a more comprehensive assessment of the effectiveness, quality, and sustainability of the developed system.

4. Conclusion

Based on the research and testing results, the Web-Based Sales Information System for Pempek Sales at Toko Pempek Cek Ana was successfully designed and developed using the Waterfall method. The developed system supports computerized sales and data management processes, including product management, ordering, payment processing, order management, report generation, and stock monitoring. The results of Black Box Testing for the Customer, Employee, and Owner actors show that all tested functions operated as expected and met the specified requirements. The developed system is expected to improve the

efficiency and organization of the sales process and facilitate Customers, Employees, and the Owner in carrying out their respective activities. Future development could include usability and user acceptance testing, as well as the addition of sales analysis features, enabling the system to provide more comprehensive information to support evaluation and decision-making at Toko Pempek Cek Ana.

Acknowledgements

The authors would like to thank the individual who provided financial support for this research.

REFERENCES

- [1] M. M. Gultom and M. Maryam, "Sistem Informasi Penjualan Material Bangunan Pada Toko Bangunan Berkah," *Jurnal Teknik Informatika (Jutif)*, vol. 1, no. 2, pp. 79–86, 2020, <https://doi.org/10.20884/1.jutif.2020.1.2.19>.
- [2] E. Rahwanto and S. Sudaryono, "Perancangan Sistem Informasi Penjualan Berbasis Web Pada Pt. Inter Aneka Plasindo," *PANDAWA*, vol. 2, no. 3, pp. 335–358, 2020, <https://doi.org/10.36088/pandawa.v2i3.864>.
- [3] Y. Anggraini, D. Pasha, A. Setiawan, and A. Setiawan, "Sistem informasi penjualan sepeda berbasis web menggunakan framework CodeIgniter (studi kasus: Orbit Station)," *Jurnal Teknologi Dan Sistem Informasi (JTSI)*, vol. 1, no. 2, pp. 64–70, 2020, <https://garuda.kemdiktisaintek.go.id/documents/detail/1940299>.
- [4] M. H. Lumbangaol and M. R. Ridho, "Rancang bangun sistem informasi penjualan dan penyewaan properti berbasis web di kota batam," *Computer and Science Industrial Engineering (COMASIE)*, vol. 3, no. 1, pp. 83–92, 2020.
- [5] Y. Mulyanto, F. Hamdani, and H. Hasmawati, "Rancang Bangun Sistem Informasi Penjualan Pada Toko Omg Berbasis Web Di Kecamatan Empang Kabupaten Sumbawa," *Jurnal Informatika Teknologi dan Sains*, vol. 2, no. 1, pp. 69–77, 2020, <https://doi.org/10.51401/jinteks.v2i1.560>.
- [6] A. Sudianto, H. Ahmadi, and A. Alim, "Rancang Bangun Sistem Informasi Penjualan Sparepart Motor Pada Bengkel Vinensi Motor Berbasis Web Sebagai Guna Meningkatkan Penjualan dan Promosi Produk," *Infotek: Jurnal Informatika dan Teknologi*, vol. 3, no. 2, pp. 115–122, 2020, <https://doi.org/10.29408/jit.v3i2.2289>.
- [7] W. Warjiyono, F. Fandhilah, A. N. Rais, and A. Ishaq, "Metode FAST & Framework PIECES: Analisis & Desain Sistem Informasi Penjualan Berbasis Website," *Jurnal Khatulistiwa Informatika*, vol. 6, no. 2, pp. 172–181, 2020, <https://doi.org/10.31294/ijse.v6i2.8988>.
- [8] R. M. N. Halim, "Sistem Informasi Penjualan Pada TB Harmonis Menggunakan Metode FAST," *Jurnal Sisfokom (Sistem Informasi Dan Komputer)*, vol. 9, no. 2, pp. 203–207, 2020, <https://doi.org/10.32736/sisfokom.v9i2.868>.
- [9] A. Fauzi and D. Wulandari, "Rancang Bangun Sistem Informasi

- Penjualan Obat Berbasis Website dengan Menggunakan Metode Waterfall,” *Jurnal Khatulistiwa Informatika*, vol. 6, no. 1, pp. 71–82, 2020.
- [10] Y. Aryani, “Sistem informasi penjualan barang dengan metode regresi linear berganda dalam prediksi pendapatan perusahaan,” *Jurnal Riset Sistem Informasi Dan Teknologi Informasi (JURSISTEKNI)*, vol. 2, no. 2, pp. 39–51, 2020, <https://doi.org/10.52005/jursistekni.v2i2.47>.
- [11] H. I. T. Simamora, “Perancangan Sistem Informasi Penjualan Cv Mitra Tani Menggunakan Metode Prototype,” *JURTEKSI (Jurnal Teknologi dan Sistem Informasi)*, vol. 6, no. 2, pp. 173–178, 2020, <https://doi.org/10.33330/jurteks.v6i2.552>.
- [12] N. Nestary, “Perancangan sistem informasi penjualan pada toko Stock Point Lily berbasis PHP MySQL,” *Jurnal Ilmu Komputer Dan Bisnis*, vol. 11, no. 1, pp. 2320–2337, 2020, <https://doi.org/10.47927/jikb.v11i1.30>.
- [13] S. C. Fadilah, H. Rianto, and T. Hartati, “Implementasi Framework Code Iqinter Menggunakan Metode Waterfall pada Sistem Informasi Penjualan PT. Supreme Jaya Abadi,” *Journal Of Information System, Informatics and Computing*, vol. 4, no. 1, pp. 134–140, 2020.
- [14] R. Adriansyah, “Perancangan Sistem Informasi Penjualan Pada Toko Udin Makasar,” *Jurnal Fasilkom*, vol. 10, no. 3, pp. 277–281, 2020, <https://doi.org/10.37859/jf.v10i3.2282>.
- [15] M. Maslim, S. P. Adhithama, and A. H. T. Nugroho, “Pembangunan Sistem Informasi Penjualan Pada Usaha Mikro, Kecil, Dan Menengah (Studi Kasus: Pahala Fotokopi dan Digital Printing),” *DINAMISIA-Jurnal Pengabdian Kepada Masyarakat*, vol. 4, no. 1, pp. 95–105, 2020, <https://doi.org/10.31849/dinamisia.v4i1.3363>.