



Volume 11 Issue 1 Year 2026 | Page 288-297 ISSN: 2527-9866

Received: 02-12-2025 / Revised: 25-12-2025 / Accepted: 10-02-2025

## Website Utilization to Optimize Kurnia Laundry's UMKM Business Operations in Ogan Ilir

Apriansyah<sup>1</sup>, Dedi Haryanto<sup>2</sup>, Arka Dafa Haqiki<sup>3</sup>, Zulhipni Reno Saputra<sup>4</sup>

<sup>1,2,3,4</sup> Muhammadiyah University of Palembang, Paalembang, Indonesia, 30263

email: [apriansyah@um-palembang.ac.id](mailto:apriansyah@um-palembang.ac.id)<sup>1</sup>, [dedi\\_haryanto@um-palembang.ac.id](mailto:dedi_haryanto@um-palembang.ac.id)<sup>2</sup>, [dafaarka610@gmail.com](mailto:dafaarka610@gmail.com)<sup>3</sup>, [zulhipni\\_enosaputra@um-palembang.ac.id](mailto:zulhipni_enosaputra@um-palembang.ac.id)<sup>4</sup>

\*Correspondence: [apriansyah@um-palembang.ac.id](mailto:apriansyah@um-palembang.ac.id)<sup>1</sup>

**Abstract:** The ever-evolving information technology has a significant impact on many industries, one of which is micro, small, and medium enterprises (MSMEs). Kurnia Laundry is an MSME in Ogan Ilir, still using a manual system in recording transactions, stock management, and customer service, which causes inefficiencies and operational delays. The main purpose of the research focuses on the development of a website-based Point of Sale (POS) system that can optimize Kurnia Laundry's business operations. This research adopts the Research and Development (R&D) method with a waterfall model approach which includes the phases of analysis, design, implementation, system testing, and maintenance. The results of the study show that the POS system is able to increase the efficiency of transaction recording, speed up the service process, and provide transparent service information to customers. The implementation of this system also helps business owners monitor business performance in real-time, manage customer data, and optimize stock management. Thus, the use of the website as a POS system has a significant impact on increasing the efficiency and competitiveness of Laundry MSMEs.

**Keywords:** Website, Point of Sale, MSMEs, Laundry, Operational Efficiency

### 1. Introduction

Information technology that continues to develop has a significant impact on many industries, one of which is micro, small, and medium enterprises (MSMEs). The use of technology services, especially website-based systems, allows business processes to run faster, more efficiently, and more integrated. For MSMEs, the implementation of web-based information systems can increase productivity, expand customer reach, and improve real-time data management [1]. Digitization of business processes also helps business actors in reducing recording errors, increasing information transparency, and accelerating services to customers [2]. According to Ayni's research, the use of web-based information systems using the waterfall method can increase administrative efficiency and minimize data input errors in laundry services [3]. In addition, Maulida et al. explained that the use of the black box testing method can ensure the reliability and completeness of the functions of the web-based system as a whole before being applied to users [4].

Kurnia Laundry as one of the MSMEs operating in the laundry service sector in Ogan Ilir Regency still uses a simple system in its operational process. All transaction activities, customer data recording, and stock management are carried out conventionally using a simple notebook. This condition causes various problems, such as inaccurate transaction recording, delays in the service process, and limitations in monitoring the status of customer orders. This results in low work efficiency and decreased customer satisfaction levels. Referring to these problems, the author considers that therefore this study develops an information system that can help integrate data quickly, accurately and integrated.

Brilliant et al. Showing that the implementation of the E-Laundry system can optimize transactions, tracking laundry status, and profitability of MSMEs laundry services in the Pesawaran area [5]. The same thing was conveyed by Mulyani, that the implementation of a web-based system can reduce recording errors and significantly improve customer service [6].

In line with that, the research of Apriansyah and Zulhipni Reno Saputra explained that the application of the Waterfall method in the development of mobile-based applications at PT Indonesia Connets Plus is able to create an effective, efficient, and structured system in handling customer complaints digitally. The study also confirms that the use of UML and good interface design can improve the effectiveness of data communication and customer service in a service-based enterprise environment [7]. Several previous studies have examined the application of websites in laundry services. Research conducted by Stevani et al. to develop a website using the waterfall method has contributed to improving the quality of service systematically and efficiently [8]. Furthermore, research by Shabrina also designed a website-based laundry business information system to improve transaction accuracy and speed up the customer service process [9]. Meanwhile, Cahyono implements a web-based laundry management system that has the ability to manage customer data and financial statements in a structured and transparent manner [10].

The results of Kumara et al.'s research show that the development of a website-based information system with the CodeIgniter framework can automate the recording of transactions and customer data reports quickly and reduce operational errors [11]. A similar approach was also applied by Hadi who utilized the SDLC Waterfall method and UML modeling to produce an efficient and transparent web-based tracking system [12]. In addition, Barizki and Putri revealed that laundry MSME actors in Bekasi are able to increase the speed of transactions and customer communication by implementing digital POS applications [13]. That web-based systems can reduce miscalculations and speed up the process of generating transaction reports [14].

The purpose of the research is focused on the development of a web-based information system for Kurnia Laundry MSMEs using the Waterfall development model. This system is expected to improve operational efficiency, minimize recording errors, increase transparency of service information, and support digital marketing strategies. The novelty of this research lies in the application of an integrated web system to manage transactions, stock, and customer information simultaneously on the MSME scale, so that it can make a real contribution to increasing business competitiveness in the digital era. In addition, Simatupang. explained that the use of interactive technology is able to increase the effectiveness of digital learning and data management through a Research and Development-based approach [15]. An adaptive digital approach like this is an important basis in building an MSME information system that is oriented towards efficiency and sustainable innovation.

## **2. Literature Review**

The Literature Review provides the theoretical and empirical foundation of the study. This section summarizes relevant theories, prior research, and research gaps that justify the need for the present study. Authors should highlight how previous works relate to the proposed research and identify the contributions the current study intends to make. A well-structured literature review also demonstrates how the study aligns with existing knowledge while addressing unresolved issues or limitations found in earlier studies.

## **3. Methods**

In this study, data was obtained using three methods, namely observation, interviews, and literature studies.

a. Observations

Carried out directly at the Kurnia Laundry location to learn about the ongoing operational process. From the results of observations, it was found that the entire process was still carried out manually, starting from recording orders, transactions, to financial reporting, so that it often caused errors and delays in service.

b. Interview

It is carried out with business owners to find out the obstacles in data management and the expected need for new systems. Information from interviews is used to determine key features of the system such as customer management, services, and financial statements.

c. Literature study

Researching journals related to the development of website-based laundry information systems and Waterfall development methods. Several previous studies indicate that the implementation has contributed to improving the efficiency of business processes and the accuracy of financial statements [16]. The purpose of this data collection is to obtain a real picture of user needs as a basis for analysis and design of systems in accordance with field conditions.

A. System Development

The application of the waterfall model in this study was chosen according to the needs of system development because this model has a systematic, structured, and very suitable flow to systems whose functional needs have been clearly defined [17]. This approach is used because each stage in Waterfall has an output that is input for the next stage, so that the development process can be carried out sequentially and well documented. In addition, this model has also been widely used in the development of a website-based laundry information system in various similar studies [18], [19].

The stages of the Waterfall model applied in this study are as follows:

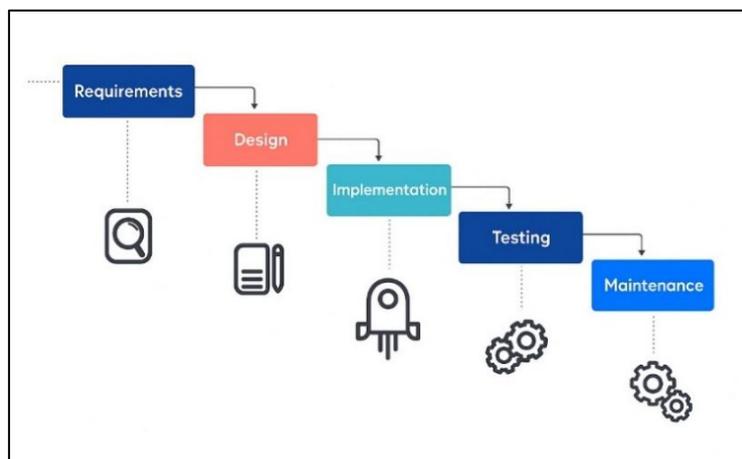


Figure 1. Waterfall model

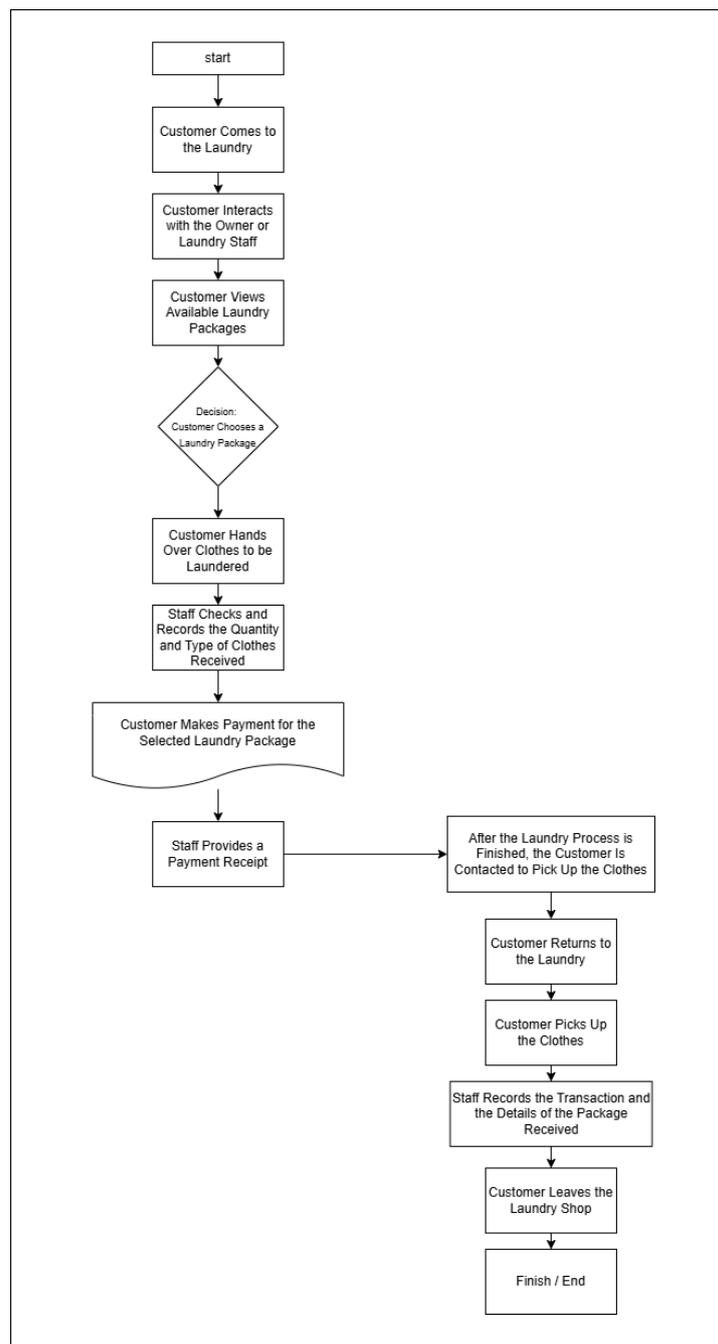
During the analysis stage, the need to identify the system’s functional and non-functional requirements was obtained through the author’s observations and interviews. Next, in the planning stage, a system design was prepared that describes the structure, workflow, and user interface to be developed. The implementation stage was carried out by translating the design into program code using PHP, HTML, CSS, and JavaScript. After that, the testing stage was conducted to ensure that the system runs as expected using the Black Box Testing method. Finally, the maintenance stage was performed in the form of bug fixes and feature updates after the system was implemented and used.

The Waterfall approach was chosen because it has advantages in terms of documentation and good process control. With a clear structure, each stage can be evaluated before moving on to the next, so that errors can be minimized. Several studies have also proven that this model is effective in using website-based laundry information systems because it provides stable and manageable results [16], [19].

**B. System Analysis**

**1. Running System**

The business process at Kurnia Laundry is still used conventionally, transaction and customer data is recorded using book media, without digital storage. This process leads to the risk of data loss, miscalculations, and difficulty tracking the laundry status. This condition was also found in other studies that highlighted manual systems in laundry services that were not yet efficient [18]. The Flowchart system running in the Kurnia Laundry business is presented as follows:



**Figure 2.** Flowchart system runs

## 2. Proposed System

The proposed new system is designed to be website-based to be accessible to admins, cashiers, and business owners with different access rights. The system includes automated management of customers, services, transactions, and financial reports. The implementation of a website-based system has been proven to be able to increase data transparency and accuracy in similar business processes [11]. The flowchart for the development of a laundry business system using the Point of Sale Application is shown below:

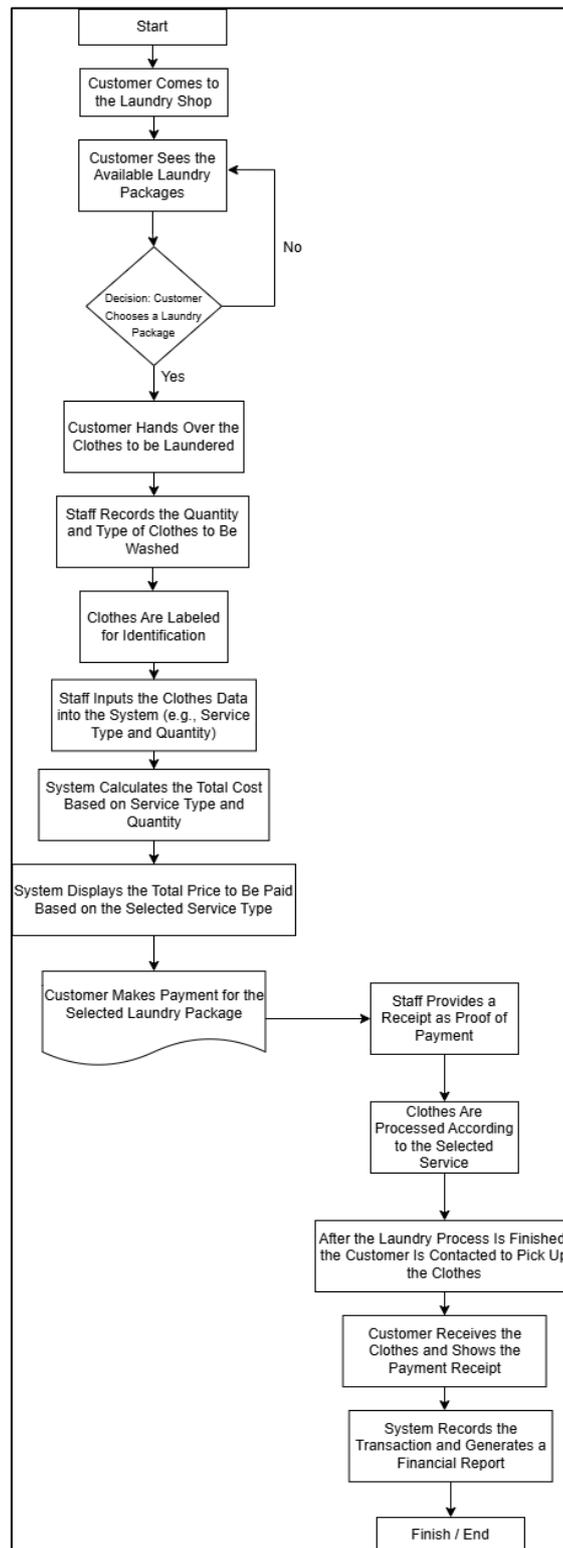


Figure 3. Proposed System Flowchart

### C. System Planning

This study adopts an object-oriented approach of *Unified Modeling Language (Uml)* used in the system development stage. The built model includes a *use case diagram* and a *class diagram*.

#### Use Case Diagram

Describe the interaction between actors (admins, cashiers, owners) and the system. Each actor has different access rights according to the needs of the laundry information system [20].

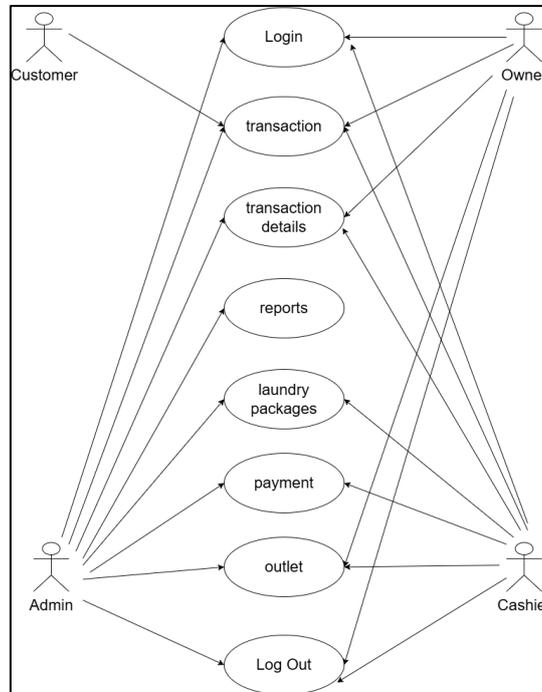


Figure 4. Use Case Diagram

#### Class Diagram

Shows the relationships between classes in a system such as customers, transactions, services, and payments. This diagram serves to illustrate the logical structure of the developed system [11].

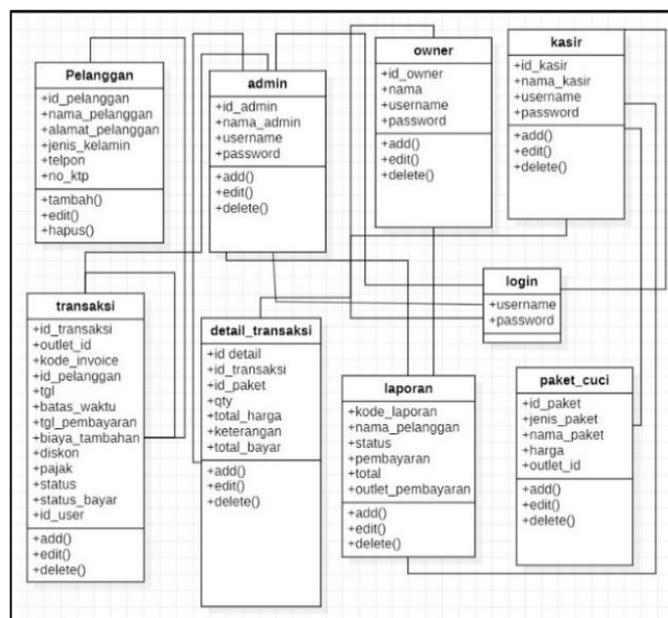


Figure 5. Class Diagram

### 3. Results and Discussion

The results of this research are presented through discussion and are complemented by illustrations as shown below.

#### A. System Interface Design

The results of the implementation of the development of this website-based laundry information system are in the form of several user interface displays, namely Admin, Cashier, and Owner. The system interface is designed with the principles of simplicity, ease of navigation, and consistency of display in mind so that users can interact with the system efficiently [16]. This interface design is compiled based on the results of the analysis of system needs, where each user has different roles and access rights according to their responsibilities in the Kurnia Laundry business process.

##### 1. Login Page

The login page is designed as the initial access of users (admins, cashiers, and owners) to interact in the system. Each user is required to enter the username and password that has been registered, then the system will validate the user's data according to the role



Figure 6. Login Page

##### 2. User Dashboard

The dashboard serves as an information center for each user.

1. Admins can see the number of customers, active services, and recent transactions.
2. The cashier can access the laundry order list and change the transaction status.
3. Owners can view revenue and customer count reports in real-time.



Figure 7. Dashboard Admin



Figure 8. Cashier Dashboard

B. System Testing

The implementation of *Blackbox Testing* focuses on testing the functional system to function according to the user's expectations. This method was chosen because it focuses on testing the input and output of the system without the need to check the code structure [17]. Here are the test results of some of the main functions of the system:

Table 1. Testing of the kurnia laundry website

Tested Features	Test scenarios	Expected Results	Test Results	Remarks
Login	User enters a valid username and password	The system displays dashboards according to user roles	Successful	Conform
Add Customer Data	Admin adds new customer data	Data is stored and appears in the customer list	Successful	Conform
Add Transactions	The cashier records the customer's order	Data stored with a status of "Delivered"	Successful	Conform
Transaction Status Update	The cashier changes the status to "Washed" and "Done"	Status changes in automated reports	Successful	Conform
Print Report	The owner selects the report period	The system displays reports by period	Successful	Conform

4. Conclusions

This research succeeded in producing a website-based laundry information system designed to assist in operational management at Kurnia Laundry. The system includes key features such as customer data management, service management, transactions, payments, financial reports, and multiuser access for admins, cashiers, and owners. With the implementation of Waterfall's development method, the system is able to provide a structured and easy-to-maintain workflow. The test results using the Black Box Testing method show that all system functions run well according to user needs without any logic errors or operational disruptions. The implementation of this system has been proven to be able to improve the efficiency of laundry business processes, reduce recording errors, and accelerate customer service. In addition, web-based data integration makes it easier for owners to monitor business activities in real-time and produce accurate financial reports. Based on the final results of the implementation of the website at Kurnia laundry, it is effective to support business digitalization and increase competitiveness

in the era of digital transformation. In the next stage of development, this system can add automatic notifications for customers, mobile-based system integration, and cloud-based data management to improve performance, flexibility, and user convenience in accessing services as a whole.

## References

- [1] F. Teknik and U. D. Nusantara, "Laundry Based Website Case Study on," vol. 7, no. 3, pp. 766–776, 2023, doi: 10.52362/jisamar.v7i3.1156.
- [2] C. Juliani and I. Zufria, "Laundry Management Information System Using Web-Based Customer Relationship Management (CRM) Method," *Indonesia. J. Comput. Sci.*, vol. 11, no. 3, pp. 1082–1091, 2023, doi: 10.33022/ijcs.v11i3.3119.
- [3] S. N. Ayni, I. Yunita, Z. Fatah, S. Teknologi, and U. Ibrahimy, "Application of the Waterfall Method of Laundry Service Information System Using Php Mysql Abstract," *Sniv Semin. Nas. Inov. Vocation*, vol. 3, no. 1, pp. 434–442, 2024.
- [4] M. Maulida, F. Zahro, R. Hakim, M. S. Akbar, and U. N. Surabaya, "Black Box Testing on the Krispy Chicken Shop Online Ordering Website System," *J. Media Akad.*, vol. 3, no. 5, pp. 1–13, 2025.
- [5] Tedyyana A, Ratnawati F, Handayani D. Web-Based Mapping of Bengkalis Regency MSMEs (Micro, Small and Medium Enterprises). *Scientific Research Journal of Engineering and Computer Sciences*. 2022 Jan;2(1):1-4.
- [6] S. Mulyani, F. Hariadi, and A. C. Talakua, "Web-Based Laundry Service Information System Design for Leslie Laundry Business," *JTIF| J. Inov. WACANA*, vol. 01, no. 3, pp. 2962–5998, 2022.
- [7] A. Apriansyah, Z. R. Saputra, and A. A. Khoir, "Design of Mobile-Based Icon+ Customer Complaint Service Application at PT. Indonesia Comnet Plus SBU Palembang," *J. Ilm. Inform. Glob.*, vol. 13, no. 3, 2022, doi: 10.36982/jiig.v13i3.2687.
- [8] R. A. Stevani, Rifka Anrahvi, Ahmeid Aqeil, "IJIRSE: Indonesian Journal of Informatic Research and Software Engineering Design of Information System for Business Bahagia Laundry Pekanbaru," *IJIRSE Indones. J. Inform. Res. Softw. Eng.*, vol. 4, no. 2, pp. 105–117, 2024.
- [9] Nur Shabrina Meutia, Dike Bayu Magfira, Endang Sulistiyani, and Ima Kurniastuti, "Implementation of Laundry Service Information System for MSMEs in Banyu Urip Village, Surabaya City," *Komatika J. Pengabd. Kpd. Masy.*, vol. 4, no. 1, pp. 09–15, 2024, doi: 10.34148/komatika.v4i1.700.
- [10] Damar Eko Cahyono, "Implementation of Laundry Service Management Information System," *J. Ekon. and Tek. Inform.*, vol. 12, no. 1, pp. 15–20, 2024.
- [11] Y. D. D. Abhinaya Sigit Kumara and S. N. Wahyuni, "Designing a Web-Based Information System at D'lofa Laundry Using the Waterfall Method," *Indonesia. J. Comput. Sci. Res.*, vol. 3, no. 1, pp. 10–17, 2024, doi: 10.59095/ijcsr.v3i1.85.
- [12] H. S. Hadi, W. Yahyan, and M. Sabriani, "Application of UML and Waterfall Method on Web-Based Land Certificate Tracking Systems," *J. Informatics Manag. Inf. Technol.*, vol. 5, no. 3, pp. 292–301, 2025, doi: 10.47065/jimat.v5i3.648.
- [13] A. Point and P. O. S. Revelle, "Socialization and Training of Business Communication on the Use of Shoe Laundry in the Bekasi - West Java Region *Journal of National Service (JPN) Indonesia*," vol. 6, no. 3, pp. 768–774, 2025.
- [14] A. S. Paiso and I. Yuniarto, "Designing a Web-Based Laundry Service Information System at Laundry Cucimania Depok," *JUPITER J. Comput. Inf. Technol.*, vol. 3, no. 2, pp. 86–95, 2022, doi: 10.53990/jupiter.v3i2.82.
- [15] T. M. Dewi Simatupang, Nurlinda Safitri, "Development of interactive multimedia based on Lectora Inspire in science learning at SD Negeri Cibungbulang 01 Bogor Regency," *J. Ilm. Educators. Basics*, vol. 10, 2025, [Online]. Available:

- <https://journal.unpas.ac.id/index.php/pendas/article/view/27039/12919>
- [16] L. S. Helling, "Waterfall Method in the Design and Construction of Laundry Service Information System in Fast Clean Bogor," *JAIS - J. Account. Inf. Syst.*, vol. 3, no. 2, pp. 43–49, 2023, doi: 10.31294/jais.v4i2.2943.
- [17] I. D. Pratiwi et al., "Analysis and Design of a Website-Based Laundry Information System Using the Waterfall Method of Duta Bangsa University of Surakarta, Indonesia Managing Transactions, Customer Data, and Financial Statements, which are prone to customer default," 2025.
- [18] [18] F. F. Pradana and Hermansyah, "Development of a Web-Based Laundry Information System with the Waterfall Method (Case Study on Permata Laundry)," *J. Educator. Tambusai*, vol. 8, pp. 6350–6362, 2024, [Online]. Available: <https://www.jptam.org/index.php/jptam/article/view/13365/10269>
- [19] J. Purnomo, G. A. Ramadhani, and R. Juliansyah, "Designing a Web-Based Laundry Application System with the Waterfall Method," *Scientica*, vol. 3, pp. 774–779, 2024.
- [20] R. N. Rohid Nabawi, "Website-Based Laundry Cashier Management Information System (Case Study of the Raudlatul Mushofa Islamic Boarding School Cooperative)," *J. Inform. and Tek. Electro Therapy*, vol. 13, no. 3, 2025, doi: 10.23960/jitet.v13i3.7107.