Jurnal Media Teknik Elektro dan Komputer
Vol. 01, No.02 (July - December, 2024)
E-ISSN: 3063-2927

Web-Based Information System for PLN ULP Helvetia Inventory Repair

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ABSTRACT

This study develops a web-based system to support the repair and handling of damaged items at the Helvetia Customer Service Unit (ULP) of PLN. Previously, the recording and monitoring of damaged items at ULP Helvetia were conducted manually, often resulting in repair delays and inaccurate information. This web-based system is designed to streamline the reporting, recording, and tracking processes of repair statuses in real-time. With a user-friendly interface, users can easily report damages, monitor repair statuses, and access the repair history of each item. Implementation results indicate that this system successfully improves work efficiency, reduces handling time, and provides more accurate data for management. This system is expected to enhance operational performance at ULP PLN Helvetia and can be implemented in other PLN units.

Keywords: Repair, Damage Handling, Web-Based System, PLN ULP Helvetia

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1. INTRODUCTION

Based on the daily workings at PLN Helvetia Customer Service Unit (ULP), it is known that there is a need for office equipment and goods, namely machines, computers, printers and supporting tools with electronic devices that work to support customer service. These items are in great shape and smooth and effective the service will be. But ongoing heavy usage also leads to a relatively high incidence of equipment failure, and this will require an appropriate repair and maintenance regime.

To resolve these issues, an application is required that specifically caters to the customer complaint lifecycle, including all stages of processing customer complaint data. With this application, employees who are responsible for receiving and processing customer complaint data do not need to use paper media to record it and process it using Microsoft Excel software, employees only need 1 application that can handle all matters related to managing customer complaint data, dividing duties of field workers and the process of making reports. This application is expected to be able to manage customer complaint data faster, more accurately and more structured according to the respective job descriptions. Also, with this application customer no longer needs to go to Indotechno company office when they want to (Casro et al., 2020).

From filing damage reports to addressing them, this issue highlights the need for a technology-based solution that may help expedite and streamline the process. (Cindy et al., 2020). Because of its accessibility, adaptability, and capacity to combine multiple procedures into a single platform, a web-based system is the best option. It is intended that the PLN ULP Helvetia Office's damaged goods handling and repair procedure will function more efficiently, openly, and efficiently with the use of a web-based system.

2. LITERATURE REVIEW

2.1. Construction Design

Design is an assessment of how well a system is translated into a programming language to convey the findings of an analysis and to provide a detailed description of the implementation of the system's components. Although the idea of developing a system either develops a new system or enhances an existing system entirely or in part.

2.2. Website

A website is a collection of all web pages with the purpose of displaying different types of information from a domain that is formed in a series of related images, sounds, and writing (Kinaswara et al., 2019). An internet browser may access a website, which comprises a collection of interconnected pages holding information in the form of text, images, videos, and other interactive components. Websites function as digital embodiments for enterprises, providing details on corporate profiles, offerings, and contact information for customers, business associates, or prospective clients. The website serves as an efficient medium for communication, promotion, and interaction between the company and its audience. Companies can cultivate a professional image, enhance exposure, and broaden their market reach via a website, transcending geographic constraints.

A company's website functions as an informational platform, facilitating client awareness of available services or products, serving as a digital marketing instrument for business promotion, and providing an interactive mechanism for direct communication via features such as contact forms or online customer care. Moreover, websites function as e-commerce platforms for businesses that retail things online, enabling customers to execute transactions swiftly and securely. The influence of a corporation utilizing a website is substantial, both operationally and strategically. Websites enhance communication efficiency with customers, broaden market reach, and facilitate digital marketing techniques at a comparatively cheaper cost than traditional approaches.

2.3. Grievances

The procedure by which the appropriate party (user, employee, or client) reports or notifies the party in charge of the item's upkeep or repair of damage to an item or asset is known as a complaint in repairs. In order to guarantee that the harm or issue encountered may be adequately addressed, this complaint is the initial stage of a sequence of reparations procedures (Yahya, 2022).

2.4. Taking care of Damaged Items

Using web-based applications for broken equipment reporting management offers numerous benefits to companies, enabling them to manage and monitor equipment conditions more effectively, efficiently, and transparently. One of the main advantages is the ease of reporting equipment damage in real time. With the web-based application, employees or users can directly report damaged

equipment through the system without having to go through time-consuming manual processes, such as filling out physical forms or fragmented communicationThis expedites the transmission of information to the accountable party, enabling prompt repairs and reducing the potential for losses resulting from postponed repairs.ed.

In addition, this application supports more accurate and structured data collection. We will systematically record every incoming damage report, including details such as equipment type, location, reporting time, cause of damage, and repair status. The management or maintenance team can access this data at any time, facilitating easier monitoring of repair progress and prioritization of equipment repairs. With centralized information in one system, companies can also minimize data loss or duplication of reports that often occur in manual management. Another virtue is transparency and accountability in the reporting and repair process. The web-based system allows all relevant parties, such as management, technicians, and users, to monitor the status of equipment breakdowns directly through dashboards or automated reports generated by the application. This creates a more transparent process and reduces the potential for negligence or errors in handling problematic equipment. With a well-documented reporting history, companies can analyze damage patterns, evaluate equipment performance, and plan preventive maintenance more optimally.

Furthermore, web-based applications enhance accessibility by being accessible from any location and at any time, provided they have an internet connection. This is especially helpful for companies with multiple branches or dispersed work sites, where breakdown reports can be submitted and followed up on centrally. This efficiency in breakdown handling not only reduces equipment downtime but also contributes to increased productivity and long-term operational cost savings. In order to minimize response time, handling damaged products entails detecting damage and assessing the degree of repair. It is crucial to have a system that can record damage reports in real-time. In order to preserve service quality, damaged items like working machinery or electronic gadgets in PLN must be handled quickly (Siregar, 2019).

3. METHODS

The System Development Life Cycle (SDLC) research approach was selected by the writers of this study to be applied to Felindo Comm's system development. Identification and selection, project planning and initialization, analysis, logical design, physical design, implementation, and maintenance make up this SDLC, which is a system development cycle (Fransisca, 2019).

3.1. Phases of Research

Data collecting is the first step in this study process, and from this data collection, the following data is required:

1. Study literature
   Finding theoretical references that are pertinent to the situation or issue at hand is another way to define literature study. Books, journals, research report articles, and websites on the internet can all provide these references. The collection of references that are pertinent to the formulation of the problem is the result of this literature study (Pilendia, 2020).
2. Observation
   Conduct firsthand observations at the Pln office to learn about the challenges that exist there. The international research scene has long been dominated by observation-based research, which relies on the visual sense of sight as a superior instrument to the auditory sense of hearing, which is still inferior and rarely used (Ichsan, 2020).
3. Interview
   interviewing relevant persons directly about the program we developed

4. Survey
   Observe the office's lack of access.

3.2. Method of System Development

One of the SDLC models that is frequently applied in the creation of software or information systems is the waterfall model. This strategy employs a methodical and sequential process. This model's phases are executed in phases, beginning with the planning phase and ending with the maintenance phase. Developers must learn more about the waterfall model's features and how the system development process works if it is used (A. A. Wahid, 2020). The waterfall method is a type of application development model that belongs to the classic life cycle and provides a sequential or ordered approach to software lifecycle (Arvita, 2021).

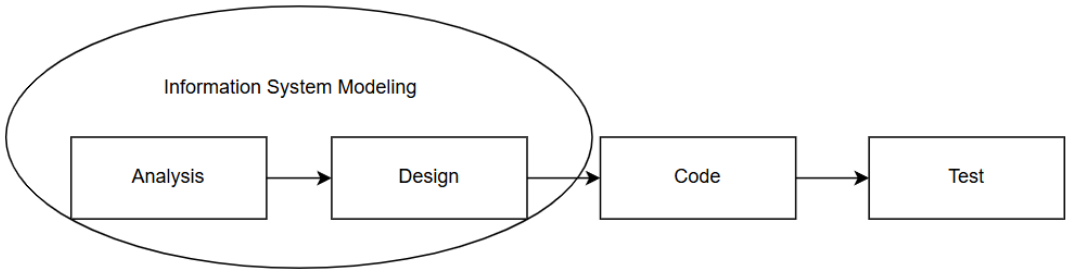


Figure 1. Waterfall's Diagram

1. Analysis
   Analysis of Sentiment Sentiment analysis is the process of evaluating, processing, summarizing, and drawing conclusions from a subjective text. Currently, there are two categories for sentiment analysis: rule-based classification methods and machine learning classification (Rahma et al., 2023). Machine learning techniques use emotion words as feature classification, and emotion dictionaries can be used to quickly and effectively select sentiment characteristics (Magdalena et al., 2020).

2. Design
   Design is something that is logically acceptable and makes sense. Architecture design is a complex process that is based on multiple agreement points rather than existing independently. The process of developing, organizing, or designing a form, item, system, or idea in order to accomplish a particular objective is known as design. Aesthetic, functional, and visual components are combined in design to meet the demands and context of the user or the intended outcome (Irawan, 2024). The network of consensus, which includes things like mass composition tactics, composing programs, managing scale, making proportions, and how to read the site, is a collection of comprehensive relationships that aims to construct spatial configurations in a plural logic that is acceptable (Sutanto, 2020). Generally speaking, design is the planning or design process that comes before creating an object, system, component, or structure. The purpose of this planning or design is to ensure that the system or product produced has value and features that people may find beneficial (Zen et al., 2022).

3. Coding
   The completed design needs to be submitted to the program. The result of this step will be a computer program that represents the design step (Priharsari, 2021). Researchers need to prepare the data into text form before they can begin coding. For instance, the audio recording

of the interview needs to be turned into a transcript if the data is in the form of an interview (Kinaswara et al., 2019).

4. Testing
   The purpose of the testing phase is to minimize errors and generate output that meets expectations. All of the application's components and functionality can be tested from a logical and functional standpoint. In order to test the functionality of the system being developed, the blackbox testing method was employed in this study (Permatasari, 2020). A sequence of organized, staged, and defined operations that treat experimental units in order to address the issues under study through statistical analysis and hypothesis testing is known as experimental design (Malau, 2023).

4. RESULTS AND DISCUSSION

4.1. Customer Complaint Assistance Display of the Home Page

Figure 2, When a client, administrator, or technician logs in, the complaint management procedure begins. Users are taken to their appropriate roles once the login process is successful. Consumers are able to file complaints and track their progress. A flowchart is a diagram that shows the systems, processes, and internal controls that the business (Tuasamu et al., 2023). The administrator is responsible for handling customer, technician, and device data, processing complaints, and allocating technicians to resolve issues. After being assigned, the technician will assess the issue, fix it, and provide the administrator with a resolution report (Tampilang et al., 2023). The flowchart display can be seen in Figure 2.

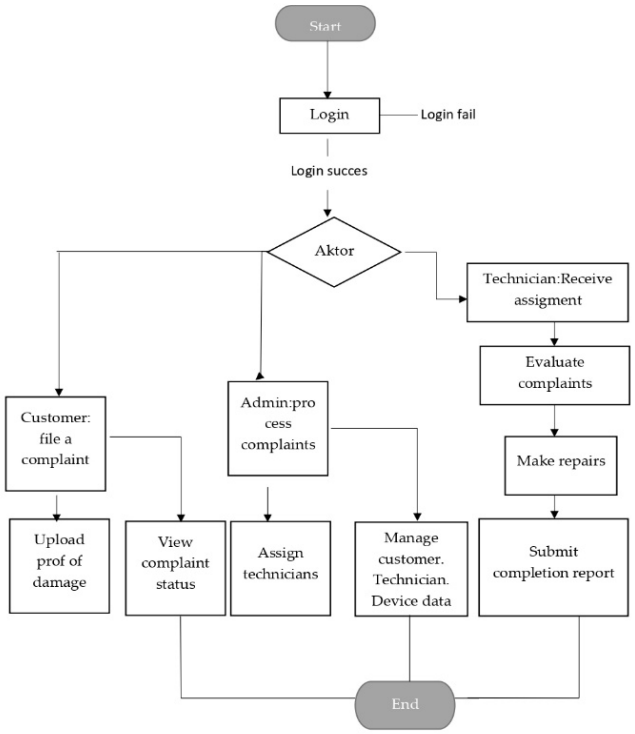


Figure 2. Flowchart

4.2. Use case

Figure 3, A system with multiple actors and varying roles and responsibilities is depicted in this use case diagram. While clients use the system to update their profiles and submit concerns, administrators have the most control over data. The jobs of directors and technicians are highly specialized and pertain to administrative data and device management.

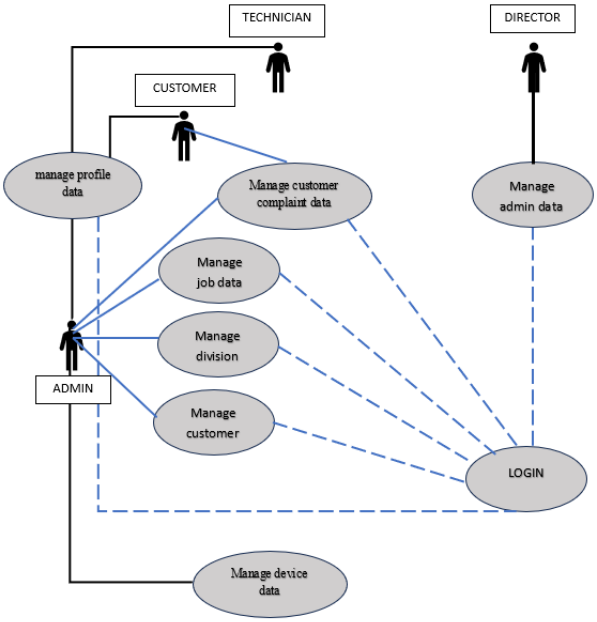


Figure 3. Usecase Diagram

4.3. Home Page

Users may effortlessly report inventory damage and track the status of submitted complaints on the homepage of the Broken Inventory Reporting System. This page features a contemporary, professional, and responsive experience, characterized by a clean and intuitive layout that initiates with a status check for the complaint. Figure 4, As an administrator, the first thing that users notice when they want to log in to the system is the initial display of the application.

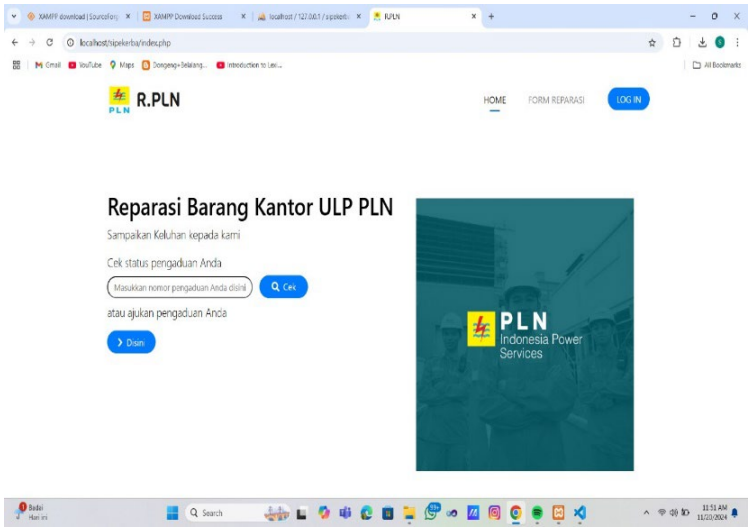


Figure 4. View of the App Start

4.4. Information Gathering

Figure 5, In this study, the staff can determine what exactly has to be fixed in this PLN and determine how much is needed.

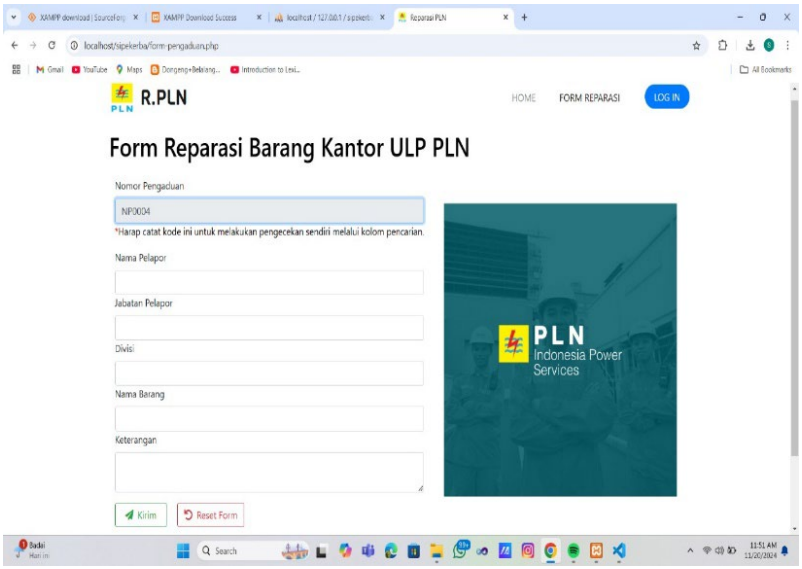


Figure 5. Display of Information Complaints

4.5. Status of the Complaint

Figure 6, A view of the PLN web-based complaint system's Your Complaint Status page. Information about the complaint status of users who have reported issues or damage is shown on this page. Users can easily reach the main page, complaint form, or log-in by selecting the HOME, REVARATION FORM, and LOG IN choices from the navigation menu located at the top right of the page. An illustration showing the exchange between a consumer and a service representative is included with this presentation.

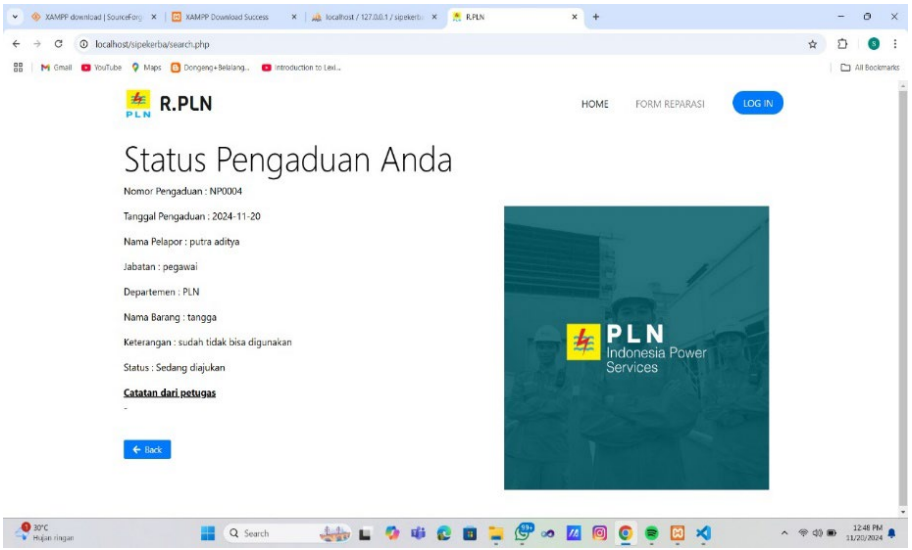


Figure 6. List of Complaints

4.6. Login Page Display

Figure 7, In order to access the application, the administrator must provide their username and password on the Login Page. The administrator will be redirected to the login page and required to enter the username and password until they are correct based on what has been entered in the databases if the system indicates that the username or password is incorrect.

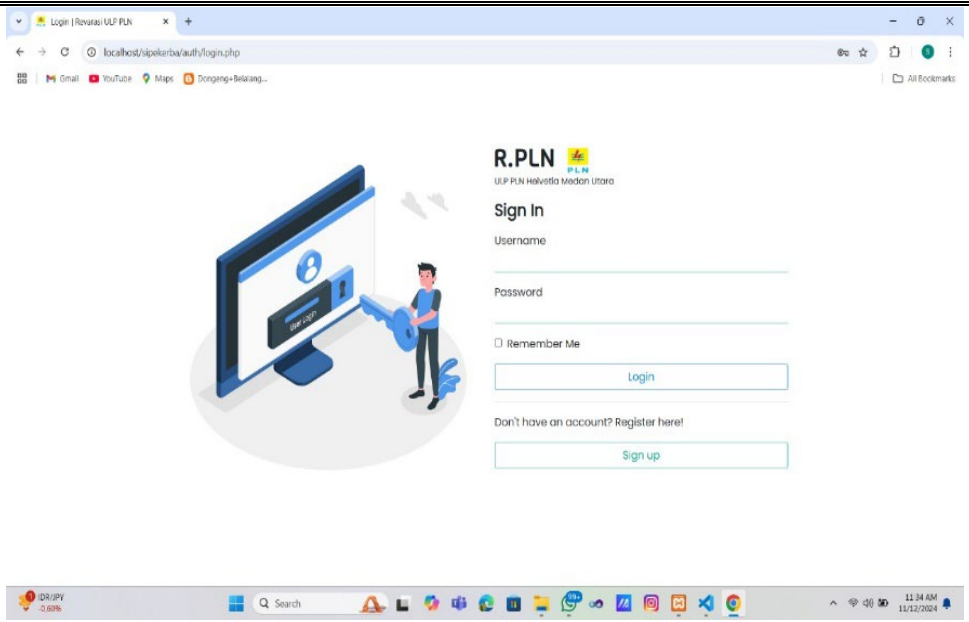


Figure 7. View of Login

4.7. View of Dashboard

Figure 8, After logging in as shown in the previous image, we will view the admin user in the web application in the dashboard view before moving on to the next step.

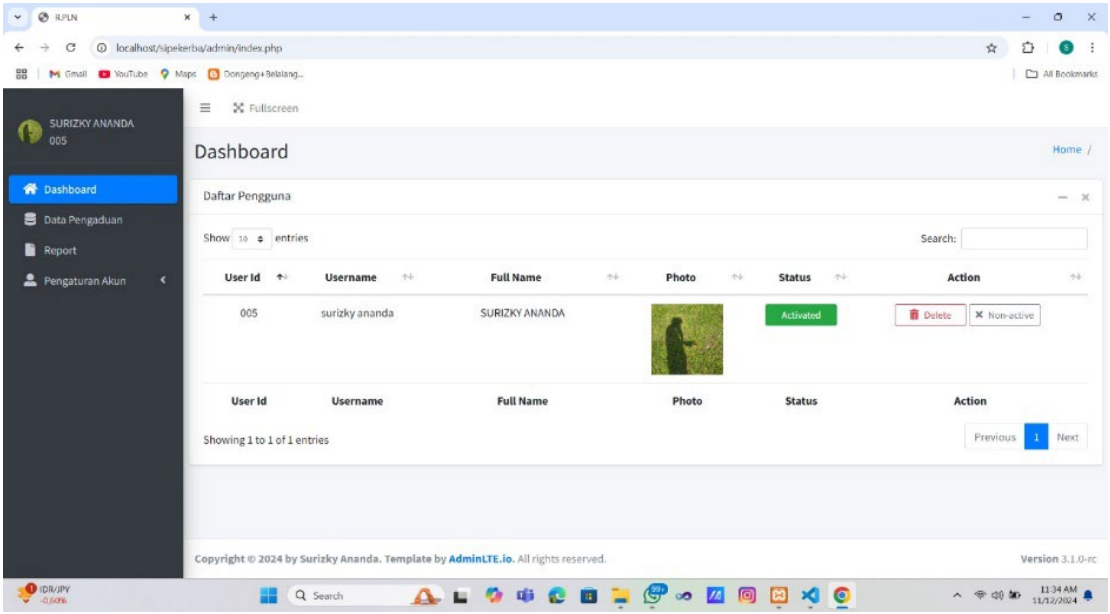


Figure 8. View of Dashboard

4.8. Fix the Data Display

Figure 9, Shows the user interface of the web-based application used by the PLN ULP office to handle complaints and damaged items. The navigation menu on the left, which includes Dashboard, Complaint Data, Report, and Account Settings options, is one of the primary components.

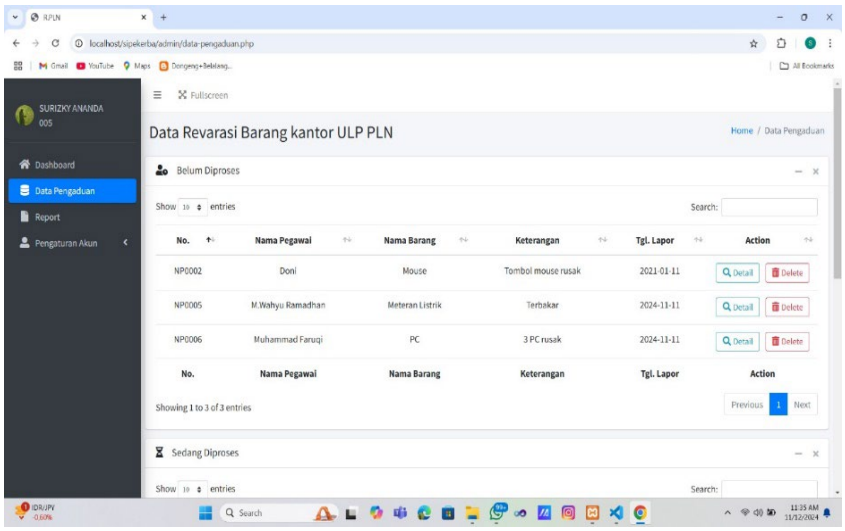


Figure 9. Retrieved repair information

4.9. View of Master Data

Figure 10, Displays the Report Filter interface of a web-based tool that the PLN ULP Office uses to create reports. A number of options, including Dashboard, Complaint Data, Report, and Account Settings, are displayed in the navigation menu on the left side. These options allow users to access a number of different system capabilities. To view daily reports, users can choose a range of dates. Along with Search buttons to look for reports and Reset to change the date selection, there are "From Date" and "To Date" columns to specify the time frame. There is also a note explaining that if you only want to display a one-day report, you can select the same date in both columns.

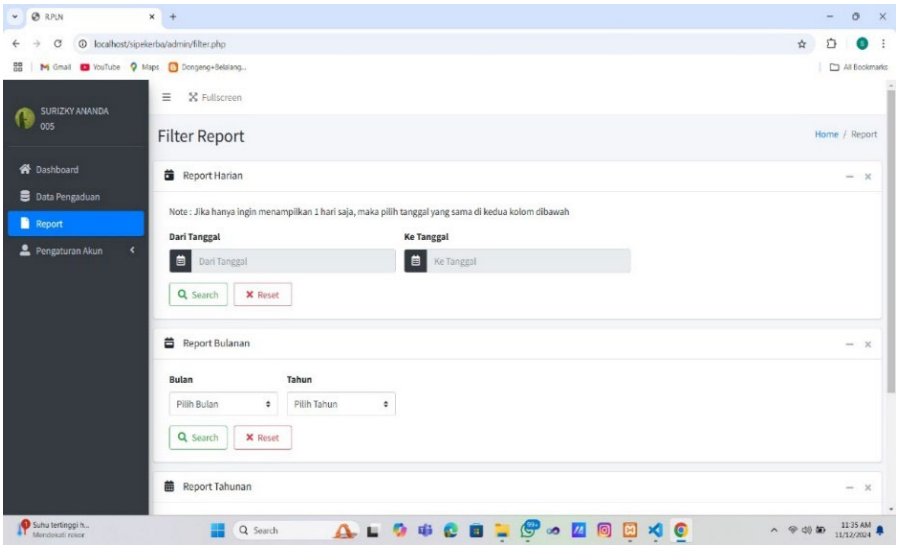
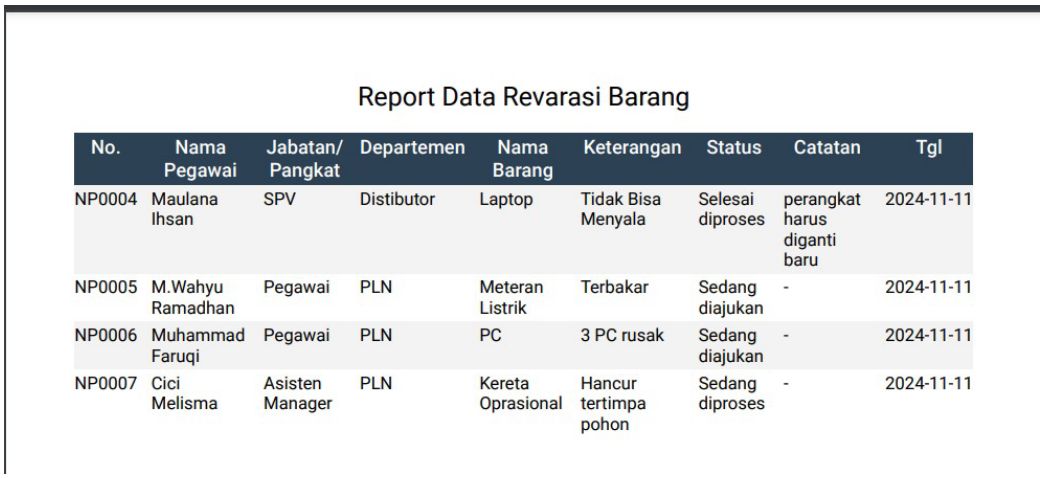


Figure 10. Master Information

Figure 10, an item repair data report that, using employee information, documents several repairs on particular goods. Identification number, employee name, department, rank, object name, damage description, processing status, extra notes, and date are all included in this report. An example of recorded data is when Maulana Ihsan, an SPV employee in the distributor department, reports

damage to a laptop that is unable to switch on. The gadget is marked as "Completed processing" and has to be replaced.



Report Data Revarasi Barang

No.	Nama Pegawai	Jabatan/ Pangkat	Departemen	Nama Barang	Keterangan	Status	Catatan	Tgl
NP0004	Maulana Ihsan	SPV	Distibutor	Laptop	Tidak Bisa Menyala	Selesai diproses	perangkat harus diganti baru	2024-11-11
NP0005	M.Wahyu Ramadhan	Pegawai	PLN	Meteran Listrik	Terbakar	Sedang diajukan	-	2024-11-11
NP0006	Muhammad Faruqi	Pegawai	PLN	PC	3 PC rusak	Sedang diajukan	-	2024-11-11
NP0007	Cici Melisma	Asisten Manager	PLN	Kereta Oprasional	Hancur tertimpa pohon	Sedang diproses	-	2024-11-11

Figure 11. Print PDF

5. CONCLUSION

Based on this study, PLN ULP's web-based application system for managing customer complaints has been developed with a number of user-friendly interfaces that facilitate the management and tracking of complaints. Through a number of features, every stage of the procedure—from the application's first look to tracking the complaint's status—can be easily accessed. All things considered, this web-based solution greatly aids PLN ULP in managing customer complaints, expediting the repair procedure, and boosting operational effectiveness. Officers may more easily gather information, track the progress of complaints, and produce organized reports thanks to the technology.

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