



Development of Digital Agreement Contracts Case Study of Customary Clothing Rental Information System

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ABSTRACT

This study aims to address problems in the traditional clothing rental process, which is still manual and often leads to misunderstandings between renters and owners. The proposed solution is a web-based information system equipped with digital contract features. The development method used is Agile, which emphasizes gradual iterations, user collaboration, and continuous improvement. The system features include user registration, clothing selection, down payment, transfer proof upload, contract approval, digital signature (JSigPDF), and PDF printing. Test results show that the system functions effectively and meets all functional requirements. It simplifies administration, speeds up the rental process, and enhances trust through legally valid digital contracts. Future development is recommended to include integration with official identity verification and electronic certificates.

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1. Introduction

The development of information technology has driven digitalization in various sectors, including the traditional clothing rental industry. Rental information systems are now being used to simplify the reservation process, inventory management, and transactions. However, in practice, many traditional clothing rental service providers still lack formal digital agreement support systems. This poses risks of disputes, such as damage to items, late returns, or even loss of rented clothing. Indonesia is known as a country rich in customs and culture. Although Indonesia has diverse customs and cultures, Indonesian society can live harmoniously and respect the diversity that has existed and developed in Indonesian society up to the present day. As mentioned in journal [1]. This traditional clothing rental application was developed to replace inefficient manual processes. The system was built using the Agile method, through the stages of analysis, design, testing, and implementation. Its main features include registration, clothing selection, down payment, upload of transfer proof, digital contract, signature using JSigPDF, and PDF printing. Development also includes UI design, MySQL database, and UML diagrams for system modeling. The goal is to create an efficient, transparent, and structured system.

A rental contract is important to guarantee the rights and obligations between the owner and the tenant. Without a contract, potential problems such as damage, loss, or denial of responsibility are difficult to resolve legally. Digital contracts make agreements more organized, easily accessible, and legally valid through electronic signatures. The absence of a contract can lead to misunderstandings, losses, and a decline in customer trust. This thesis presents a case study of a traditional clothing rental system focused on the digitization of the rental process up to the digital contract. The application is designed to address issues such as lack of transparency and cumbersome manual processes. The system covers registration, clothing selection, payment, and digital contracts. This study shows that integrating information systems with legal aspects can improve the efficiency and professionalism of services.

The concept of “digital signature” known in the world of computer security is the result of applying computer technology to information. Signatures are used to legalize documents and guarantee their authenticity. This signature is unique and indicates that someone agrees with the contents of the signed document. Digital signatures are used to guarantee the authenticity of electronic documents and prevent the sender from denying that they sent the document [2]. Electronic/digital contracts are contracts that have arisen as a result of developments in technology and information, whereby sales transactions are now conducted via electronic or online media. Because they are not created in the same way as conventional agreements, clear regulations are needed regarding the validity and legal force of electronic contracts [3]. Manual rental of traditional clothing often leads to misunderstandings due to the absence of a formal contract. Therefore, a digital system with legally valid contracts and electronic signatures in accordance with the ITE Law is needed.

Agreements are an important part of society, especially for business people. Almost all business activities are carried out through agreements, but there are still many people and business people who do not fully understand the importance of understanding agreements properly. Sometimes agreements are considered merely a formality or proof that an agreement has been reached between the parties. However, when problems arise, people realize the importance of agreements. In such situations, agreements serve only as a repressive measure, not as a preventive one [4].

This paper aims to design a web-based traditional clothing rental system with digital contracts. This system provides a solution to the lack of legal evidence, potential disputes, and slow manual processes. With electronic contracts and signatures, the rental process is more orderly, efficient, and legally binding, thereby enhancing professionalism and trust between renters and owners.

2. Method

The business process begins with user registration and login. After that, users select clothing, fill out a rental form, and upload proof of payment. The system will display a digital contract that must be approved and signed electronically. Once the admin has verified the payment, the contract can be downloaded in PDF format complete with signatures and a QR code. The process ends when the clothing is picked up according to schedule. All data is automatically stored for easy management.

LibreOffice is a free office application similar to Microsoft Office that can be used without a license. In the traditional clothing rental system, LibreOffice is useful for easily creating and saving contract documents in PDF format. It is suitable for use because it is practical, free, and supports document digitization. JSigPDF is a free Java-based application used to digitally sign PDF files. In the traditional clothing rental system, JSigPDF is used to electronically sign contracts, making the documents legal, secure, and unalterable.

JSigPDF's main benefits in this app are:

1. Makes documents more secure, because contract contents can't be changed after signing.
2. Saving time and costs, as there is no need to print and sign paper documents manually.
3. Simplifying the verification process, as digital signatures can be verified for authenticity.
4. Supporting electronic law, as digital signatures are legally recognized in Indonesia if they meet the requirements of the ITE Law.

The application is web-based and accessible via a browser. There are two main users: administrators and tenants. The rental process is conducted online, from registration to payment and digital contracts. The system automatically generates PDF contract documents that are digitally signed using JSigPDF to ensure they are valid and secure. All data is stored on the server, making the rental process fast, practical, and professional without the need for manual signatures. The following is the flow or stages of the Agile method:



Figure 1. Agile Method

Overview of the System

This information system is designed to simplify the process of renting traditional clothing digitally. This web-based system can be accessed by two types of users, namely administrators (business owners) and renters. The main features of the system include: user registration and login, viewing the catalog of available traditional clothing, placing orders or rentals, uploading proof of payment, and signing digital contracts. On the admin side, the system provides features for managing clothing data (add, edit, delete), verifying

payments, approving rentals, and generating contract documents in PDF format. These documents are digitally signed using tools like JSigPDF, then stored on the server and can be downloaded by renters. The system is designed with a simple yet secure workflow. After the renter selects the clothing and fills in the rental data, the system processes this data into a rental agreement. The renter must approve and digitally sign it for the process to be considered valid. With this system, the rental process becomes more practical, faster, and supported by valid and structured contract evidence.

Functional Requirements

The following system requirements analysis details the requirements of users of the traditional clothing rental system:

1. Customers

This system is designed to make it easier for customers to find information about traditional clothing rentals. A search feature is provided so that visitors can find clothing data that suits their needs.

2. Admin/Owner

The admin has full access to the system, including managing clothing data and transactions. After the renter uploads proof of payment, the admin verifies and approves the digital contract. The system then adds a digital signature and generates a QR Code as proof of authenticity.

Non-Functional Requirements

The following are the specifications of the hardware and software used in the development of the Website for the Digital Contract Agreement Development Case Study of the Traditional Clothing Rental Information System:

1. Hardware

The following hardware was used for system development:

- a. Processor: AMD Ryzen 7 5700U with Radeon Graphics 1.80 GHz
- b. Memory: 8.00 GB (7.34 GB available)
- c. HDD: 125 GB
- d. CPU: AMD Ryzen 7 5700U

2. Software

The software used to assist in system development is as follows:

- a. Windows 11 Pro version 24H2 (Build OS 26100.3775)
- b. Google Chrome
- c. Visual Studio Code
- d. XAMPP v3.3.0
- e. MySQL Connector

f. Draw.io

g. Mendeley Reference Manager Version 2.132.2

3. Result and Discussions

Figure 2 shows the main page of the traditional clothing rental website. At the top are the logo, navigation menu, and Login/Register button. The middle section displays a promotional banner and a “More” button that leads to the clothing list. Below that are traditional clothing items complete with pictures, rental prices, and brief descriptions. This display makes it easy for users to select clothing quickly and conveniently.

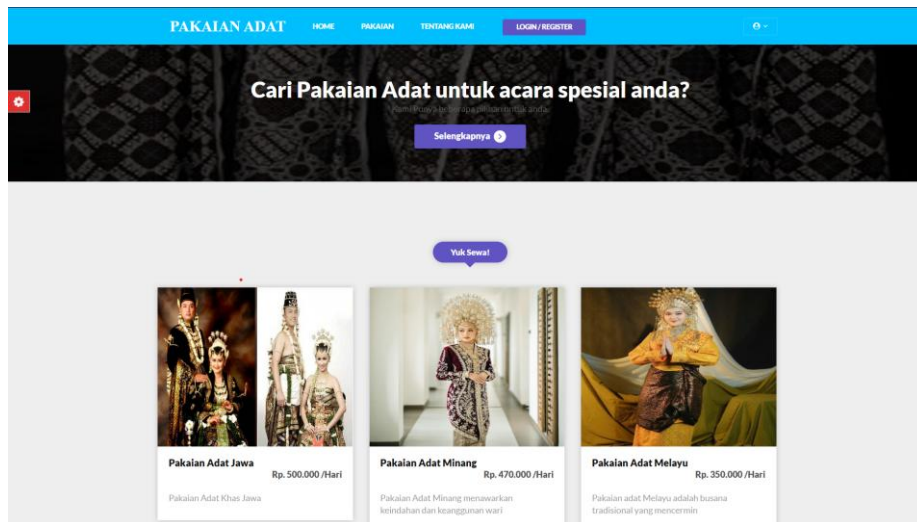


Figure 2. Home Page Display

The display in Figure 3 shows a login box that appears in the middle of the screen. Users simply enter their email and password, then click the Login button. If they don't have an account yet, they can click 'Register here' to create a new account.

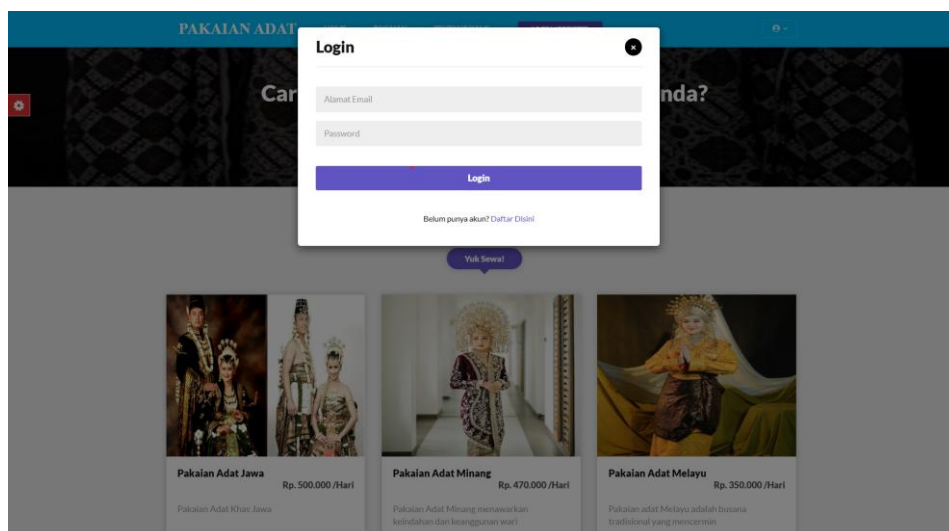


Figure 3. User/Tenant Login Display

The display in Figure 4 shows the Clothing List page on the traditional clothing rental website. This page displays the collection of traditional clothing available for users to rent. Each traditional clothing item is displayed in a horizontal row, consisting of an image on the left side and a brief description on the right side. The information displayed includes the name of the clothing item, the rental price per day, and a purple “View Details” button that directs users to view the complete information about the clothing item.

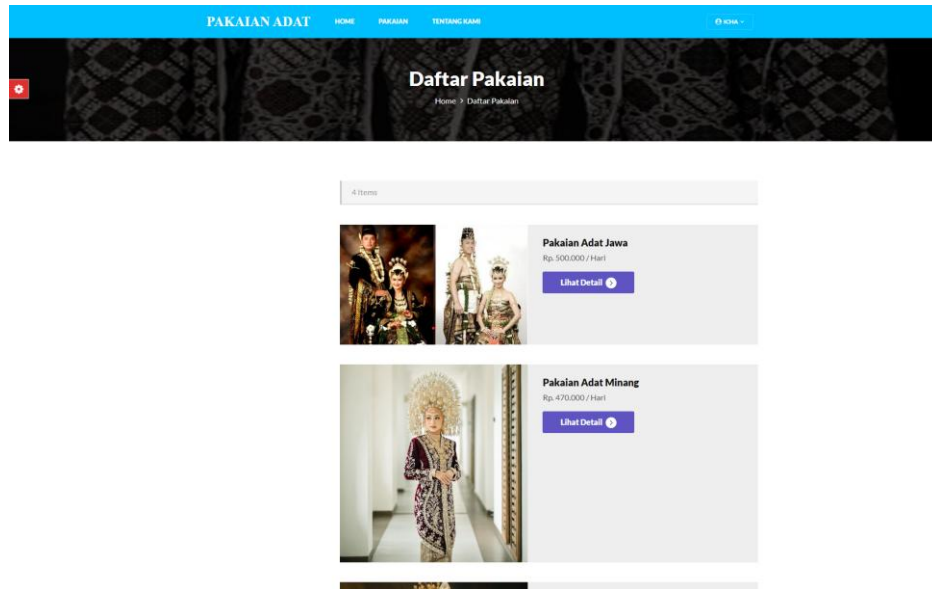


Figure 4. Traditional Clothing List Display

This page displays complete details of Minang Traditional Clothing, including enlarged photos, clothing names, and a rental price of Rp470,000 per day. There is a “Rent Now” button for direct booking. At the bottom, there is a brief description explaining that this clothing is suitable for weddings, traditional events, and photo shoots. This display makes it easy for renters to understand the details before renting.

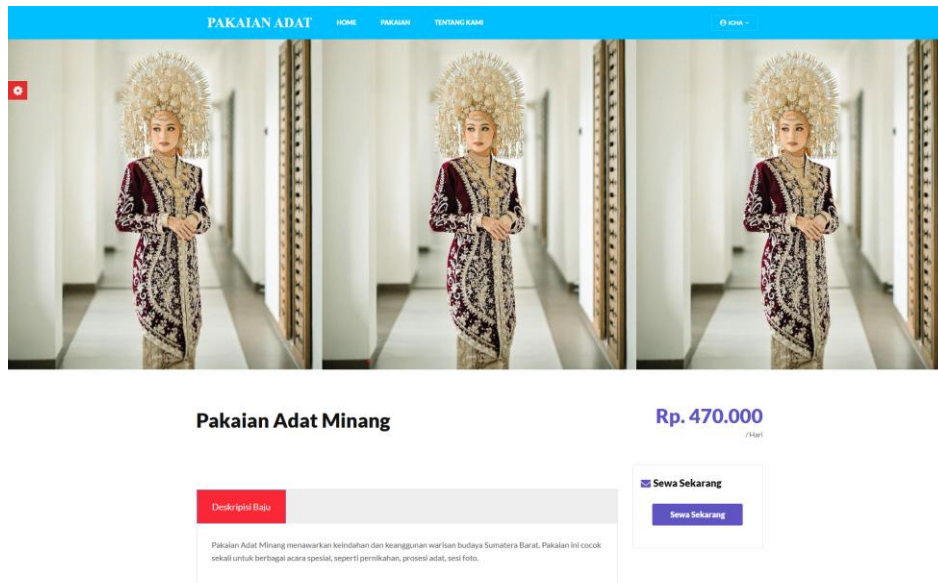


Figure 5. Traditional Clothing Details Display

This page displays the Minang Traditional Clothing rental form. On the left are images, names, and rental prices of Rp470,000 per day. On the right is a form containing the Start Date, End Date, and Clothing Size. Once filled out, users can press the “Check Availability” button. This display is designed to be simple so that the rental process is quick and easy.

Figure 6.Traditional Clothing Order Form

This page displays a summary of rental transactions, such as rental code, clothing name, rental date, duration, and total cost in read-only form. Below that is the destination account information, payment deadline, and “Payment” button. This display helps users confirm rental details before paying.

Figure 7. Rental Details Form Display

This page displays the payment form for Minang Traditional Clothing worth Rp6,110,000. Users select a payment method (Card, OVO, GoPay, Dana) and fill in the details according to the selected method. The “Pay Now” button is used to complete the transaction. This display is designed to be simple so that the payment process is fast and secure.

Figure 8. Traditional Clothing Payment Form Display

The rental history page displays a complete list of rentals with rental codes, clothing names, dates, durations, costs, and payment statuses. Users can also upload proof of payment and create agreement letters. This display makes it easy to monitor rental history neatly on one page.

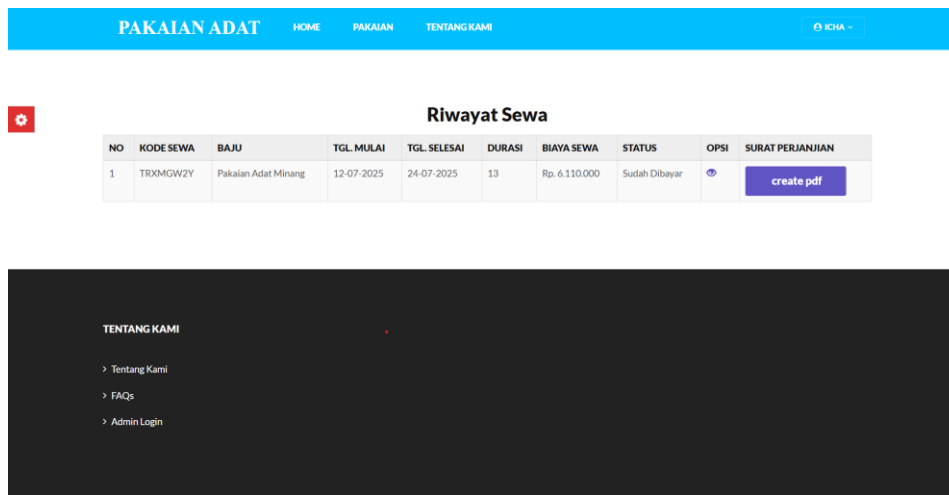


Figure 9. Traditional Clothing Rental History Display

This page displays the “View Agreement Letter” modal when the PDF button is pressed in the Rental History. The contents of the agreement letter are displayed directly via an iframe, complete with data from both parties. A “Download PDF” button is available to download the document. This display makes it easy for users to read and save the letter without opening a new tab.

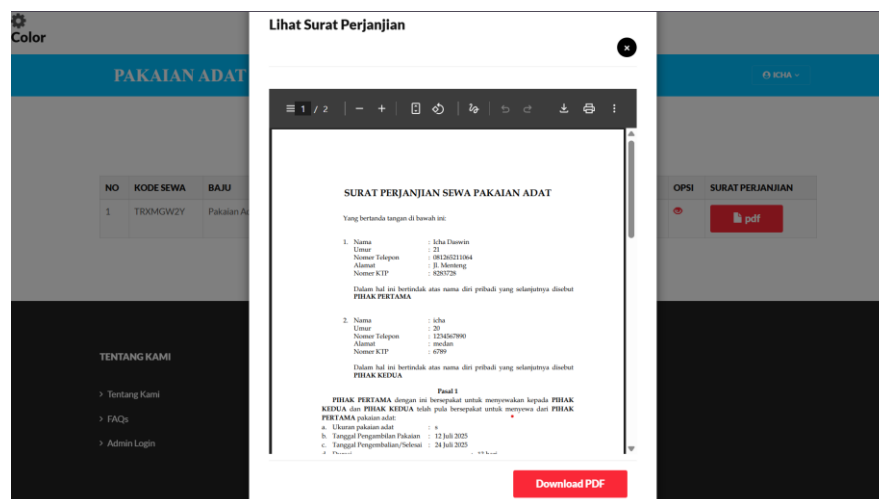


Figure 10. Display of Traditional Clothing Agreement Contract

The admin login page displays username and password fields. The design is simple for quick and secure access to the system.

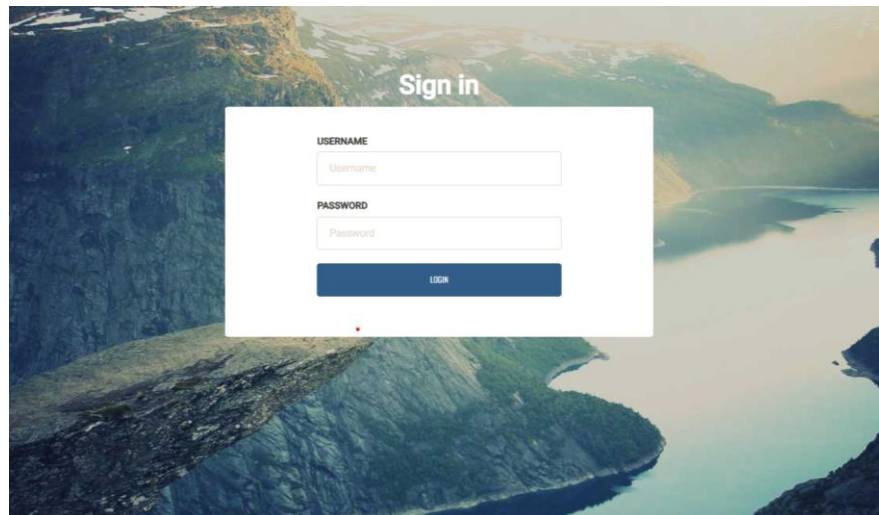


Figure 11. Admin Login Display

The dashboard displays a summary of data such as transactions, product quantities, rentals, and registered members. Its neat design makes it easy for administrators to monitor activities comprehensively.

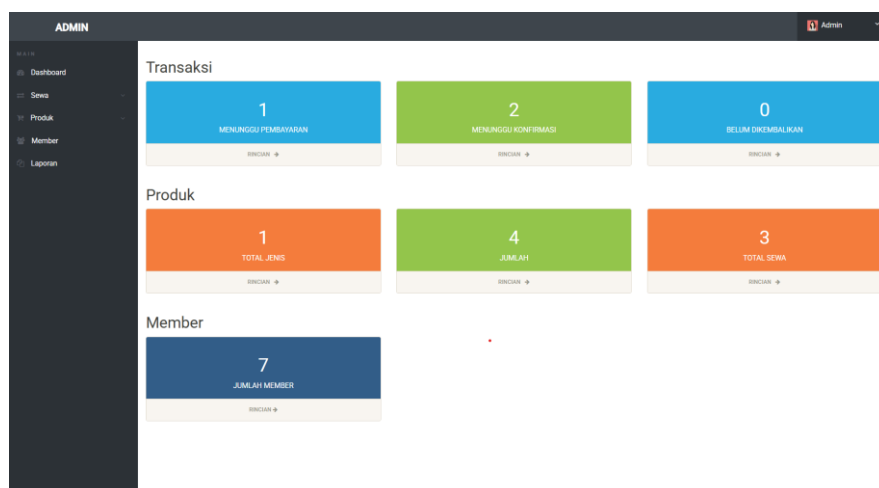


Figure 12. Dashboard Display/Main Admin Page

Test Results

After testing the system, the following conclusions can be drawn:

1. The system successfully provides an account registration feature, where users can create new accounts by entering valid data and are directed to the login page immediately after successful registration.
2. The login feature works well for both users and administrators, who can access the system according to their respective access rights.
3. Users can select traditional clothing, and the system displays detailed information about the clothing according to the selection clicked.

4. The rental form can be filled out and saved successfully by users, and rental data is stored in the database and displayed in the rental history.
5. The down payment or full payment feature works as expected, where users can upload proof of payment and the system displays the status "Pending Verification."
6. The system is capable of generating digital contracts with electronic signatures using JSignPdf, and the files are saved in PDF format.
7. Printing of agreement documents works well, with the PDF contract displayed or downloadable upon user request.
8. Admins can log in and access the dashboard, manage rental data, and validate payment proof uploaded by users.
9. The admin verification feature works as intended, with the rental status changing to "Paid" after payment proof is verified.
10. Users can view rental history, including rental status, clothing details, and access to the digital contract document.
11. Overall, all system features were tested and produced outputs consistent with expectations, with no significant bugs or errors identified during testing.
12. Therefore, the web-based traditional clothing rental system integrated with digital agreement contracts is deemed suitable for use and has met user needs in terms of functionality and operational efficiency.

4. Conclusion

The following are conclusions and recommendations based on the content of my thesis titled "Development of a Digital Contract Agreement: A Case Study of a Traditional Clothing Rental Information System": 1) The traditional clothing rental information system developed has been successfully implemented and aligns with its objectives. This system streamlines the process of renting traditional clothing in a digital and modern manner. 2). Key features such as account registration, login, selecting attire, filling out the rental form, uploading payment proof, approving the contract, digital signatures, and printing the agreement have been tested and the results meet expectations. 3). The use of digital signatures in contracts significantly helps clarify the responsibilities of both the renter and the clothing owner, thereby reducing the risk of disputes. 4). The system development process, which utilized the Agile methodology, proved effective as it was carried out in a phased and structured manner. Research suggestions is 1). It is recommended to add automatic notification features such as via email or WhatsApp so that users can know the status of orders or payment reminders. 2). The system should be tested on a larger scale, for example, used by more users or over a longer period of time to see its actual performance. 3). Finally, it would be better if there were short training sessions or user guides for administrators and business owners so that the system can be used to its full potential and is easy to maintain.

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