UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECP2613 SYSTEM ANALYSIS & DESIGN

SEMESTER II 2024 / 2025

Phase 2:

Information System Gathering and Requirement

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- Group 8 -

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1.0 Overview of the Project

Hasta Travel and Tours is ready to take a big step forward by creating a system that makes life easier for both their customers and staff. Right now, a lot of the work like booking vehicles, handling payments, and managing the fleet is done by hand or by messages .This can slow things down as well as lead to errors, which is bad for everyone.

By combining all of these processes into one, the new system would increase their speed, accuracy, and convenience. Customers will have a simple, clear booking process and they will be able to make safe online payments, reserve optional items like insurance, and check the available vehicles in real time. On the other hand, the employees will have access to a common dashboard providing real-time data regarding the fleet's status, rental history, as well as information about customers so that they can work more efficiently and respond quicker to any issues.

In addition to making operations more efficient, the system is made to improve the general customer experience by including communications and loyalty benefits. The company will be able to build greater relationships with clients and promote repeat business with these great features. The platform will also help partners by enabling improved coordination and introducing capabilities for their rental requests and car listings.

The business will be able to plan for long-term growth, optimize resources, and make well-informed decisions if it has a wealth of data on bookings, payments, car usage, and complaints. With features that can handle deposits, refunds, and blacklisting automatically, safety and risk are also given first priority, guaranteeing a reliable and safe service.

Lastly, this project represents a giant step forward for Hasta Travel and Tours, which will become a formidable player in the present digital economy. The system is also scalable and modular, meaning that it can grow with the business and tackle new challenges and opportunities as they emerge. With technology as its mandate, the company will not only increase its operation efficiency but also create a more satisfying and reliable experience for customers and partners.

2.0 Problem Statement

Hasta Travel's current car rental operations rely heavily on manual processes and disconnected systems, resulting in substantial operational inefficiencies and a poor customer experience. Core activities such as booking confirmations, vehicle status updates, and customer data management are conducted manually across different, disconnected tools. This fragmentation not only leads to frequent errors and data inconsistencies but also significantly increases administrative workloads, slowing down daily operations.

The existing booking system is isolated and lacks real-time synchronization with vehicle availability. Staff members must manually confirm each booking request, check vehicle availability, and handle payment processing. This process creates bottlenecks, leading to booking delays, potential double bookings, and scalability issues as demand grows. The absence of a centralized fleet tracking system also prevents accurate, real-time updates on vehicle status—whether they are available, rented, or under maintenance, complicating scheduling and increasing the risk of operational errors.

Post-rental processes, such as recording fuel levels and mileage, are similarly manual and error-prone. Inaccuracies in these logs can disrupt maintenance schedules and affect the overall performance of the vehicle fleet. Additionally, while Hasta Travel uses dynamic pricing based on factors like vehicle model, rental duration, and customer type, this pricing system is manually managed. As a result, it leads to inconsistent pricing and lacks transparency for customers.

Payment workflows further compound the problem. Payments are manually verified and recorded, lacking automated processes and transaction logs. This creates a high potential for errors, delays payment confirmations, and poses challenges in scaling payment operations as the business grows. This fragmented approach erodes operational efficiency, may result in revenue leakage, and diminishes customer trust.

Finally, there is no centralized database to manage blacklisted or loyal customers. Without such a system, customer information cannot be stored or pass data to relevant proses. This limit the ability of company to restrict problematic clients , reward loyal customer and build long term customer relationships essential for growth and retention

Collectively, these challenges undermine customer satisfaction, limit partner engagement, and place a heavy burden on administrative resources. These operational hurdles hinder Hasta Travel's ability to scale effectively, remain competitive in the market, and deliver a superior customer experience.

3.0 Proposed Solutions

The existing car rental process relies heavily on manual interactions and fragmented systems, leading to significant challenges for customers, partners, and administrators. These challenges not only affect operational efficiency but also negatively impact the overall user experience and business growth.

Web and Mobile-Based Booking Platform

An intuitive web and mobile interface will allow customers to:

- Search and filter available vehicles based on dates, location, price, and features.
- Pay online securely with online payment gateways such as credit/debit cards or e-wallets.
- Get immediate verification and e-receipts, lessening reliance on face-to-face or phone communications.

Digital Payment and Deposit Management

- Integrated payment system with digital wallet or payment gateway support for booking fees and security deposits.
- A trigger-based deposit refund system, using automation for deposit tracking, to immediately initiate deposit refunds once the return conditions for the car are met.
- Generating an audit trail and receipts for all finance-related transactions, making everything more transparent and convenient.

Automated Dynamic Pricing Engine

To address inconsistencies in manual pricing:

- An automated pricing engine will be implemented to apply predefined pricing rules based on:
    - Vehicle type
    - Rental duration
    - Customer tier or loyalty status
    - Seasonal demand

- The pricing logic will be fully transparent to customers during booking and easily adjustable by administrators.

This ensures consistent, fair pricing and reduces administrative effort.

Feedback and Loyalty Modules

- Establish a systematic feedback mechanism after each rental, with rating, comments, and tags.
- Make a reward and loyalty program to encourage repeat rentals (e.g., points system, tiered benefits).
- Provide partners and administrators with dashboard reports. These will summarize customer insights and present satisfaction metrics.
- Blacklisting of problematic clients with enforcement rules embedded in the booking engine.

Partner Portal with Real-Time Fleet Insights

- Provide a devoted cooperative framework for vehicle proprietors in which they can:
    - Observe the data that results from the bookings in real time.
    - Manage vehicle availability and pricing.
    - Monitor revenue and performance metrics.
- Strengthen trust and involvement by providing performance analytics, customer assessments, and financial overviews.

Admin Control Panel with Automation

- Create a centralized admin dashboard to effectively manage and control the following aspects of the system:
    - Vehicle inventory and partner management.
    - Customer bookings, communication logs, and issue tracking.
    - Financial records (payments, deposit refunds, partner payouts).
    - System-wide reports and analytics.
- Implement automation workflows for:
    - Booking confirmations.

    - Deposit refunds.
    - Alerting on overdue returns or pending feedback.

Centralized Monitoring Dashboard

Develop a centralized dashboard accessible to different user roles. Access to the dashboard will depend on specific permissions set for each user role.

- For clients: View booking history, status of rewards, and timeline for refunds. Also with digital logging of post-rental data such as fuel level, mileage, and damages using mobile devices.
- For partners: Monitor the use of the vehicle, income, and consumer feedback.
- For admins: A centralized view of system-wide activity, including inventory management, financial transactions, and user interactions.

4.0 Information Gathering Process

Information gathering is one of the most important processes in understanding the clients' needs. For this project, we retrieved questions and insights from recorded interview videos featuring the founder and co-founder of HastaTravel. These videos provided valuable information regarding the project and the system that is going to be developed.

The questions and details gathered are listed to be reviewed and sorted out with the team.

Question 1: Regarding E-invoice, what system will be used?

> **Answer**: Currently, the one that will be used is the one provided by LHDN, they also listed a few software that is going to be used for this e-invoicing generating purposes.

Question 2: Can you explain in detail about MYOB?

> **Answer**: MYOB is an accounting system that is used by most companies due to the system being most familiar and favoured by most accountants and audit firms in Malaysia, despite being quite outdated by current standard. The major problem is that there's no attachment feature where we can attach the proof of payment and it is only an excel based system.

Question 3: What is the most highly requested feature that is crucial in the new upcoming system?

> **Answer**: Most of the features are accounting and bank statement related features since it is currently the part that needed most updates and improvement, such as attachment features, bank statement records from previous months, linked with bank feature and last but not least a post feature.

Question 4: What can the user and the staff access?

Answer: For now, there's no separate id for when those two parties access the site, however it is crucial for staff with only accounting id to be able to access the company's banking and transaction details.

Question 5: Can the user book through the system?

Answer: We need two sides for the system, the customer or user side and also the staff or hasta officials sides. For the hasta sides, we need to be able to see reports, check the payment receipts, verify loyalty points and memberships feature. For the user side, they need to be able to see the car availability status, the payment gateway where they can upload the receipt just in case , the register page along with the login page, profile and bookings history.

Question 6: What are the documents that are required when renting a car?

Answer: You can refer to hastatravel.com, or in general, look out for the car rental booking form.
*An additional note for my team, we can refer to how other car rental services such as SoCar do their system as reference.

Question 7: What is the basic travel data that needs to be collected?

Answer: This usually includes college, faculty, email, phone number. Mostly this is important for adsense purposes.

Question 8: What is the current method of confirming customer order?

Answer: Through Whatsapps and email.

Question 9: Regarding safety measurement, there's a lot of data being circulated in the system and currently whatsapp, what's the safety approach to keep all this data safe and secured? Are there any backups?

Answer: Yes we do have backups for summons in the booking system but not the customer chats. We have experienced chat data lost before, and the only way to retrieve it is from the previous system database.

Question 10: Currently the only way to make payment is by the customer manually key in the value, do you need an automated system for that too?

Answer: Yes sure, the total payment should be automatically calculated based on the pickup and return date, and maybe some add ons such as phone holder and touch n' go card.

Question 11: What about the blacklisted list?

Answer: Yes we do have the blacklisted list, and we will check with the customer each time they return the car. But in some cases, the summons come in a bit late, thus the proper report and details must be kept for any process later on. This can take up to 10 days. We will keep the remark in the system and the blacklisted database.

Question 12: Does the system have any insurance coverage?

Answer: Yes, it is in the agreement, for UTM students and staff, they can opt for the installment payment options but for non-UTM customers, they will need to pay the full payment on the spot. The maximum charge is RM2000 and we will also claim the insurance from the registered company. The student should be able to monitor the payment or at least get notified via the UTMSmart app and there's also a debt-list for our reference.

Question 13: Does the customer need to declare their destination?

Answer: Yes they do but in general, if the destination is within Johor Bahru, the minimum rental period can be per hour rental rate. A minimum of 1 whole day for outside Johor Bahru and 2 days for outside the state of Johor. It's for the benefit of the user since we don't want them to be rushed when renting for a long trip, as it can increase the wear and tear of the car and putting their own safety at stake.

Question 14: Is there any GPS tracker in the car?

Answer: Yes, we can monitor the status and location of the car.

Question 15: Will the pricing be based on the type of terrain it will be used? For instance, maybe a trip to a farm or estate will cost more than usual?

Answer: For now, that's not in the system, but that's a great insight. Maybe we will update the terms and conditions for renting and this can cost the deposit or even get penalised.

Question 16: In the system, what if the student keyed in the fake matric number?

Answer: We need to verify the matric details with a picture of the matric cards, if it's tally then they can proceed. So, you need to figure out the way to efficiently detect the details in the card and make sure the records match.

Question 17: How long do you keep the user data?

Answer: According to LHDN, we need to keep the data for up to 3-6 years for audits and financial records purposes.

5.0 Requirement Analysis

5.1 Current Business Process

As Hasta Travel and Tours rely on manual processes and disconnected systems, they are faced with enormous operational challenges. At present, the reservation system requires staff to confirm the reservation manually by WhatsApp or email, which leads to delay and potential repeat reservation, because it is impossible to check the availability of vehicles in real time. Payment processing is also inefficient. Customers manually enter the payment amount, and staff handle transactions and refunds without automation, resulting in errors and slow processing times. Fleet management suffers from outdated tracking methods, as vehicle status updates and post-rental inspections for fuel levels, mileage, and damages are recorded manually, increasing the risk of disputes and maintenance inaccuracies.

These problems are further aggravated by the lack of customer and partner participation tools. There is no loyalty program to incentivize repeat customers, and partners have no real-time access to booking data or earnings reports. Blacklisted customers are tracked through spreadsheets, making enforcement inconsistent. Data security is another concern, with sensitive customer information shared via unsecured channels like WhatsApp and no centralized backup system for critical transaction logs. In addition, the manual application of dynamic pricing and leasing policies leads to inconsistency and confusion. Together, these restrictions reduce operational efficiency, hinder customer satisfaction, and create obstacles to scalability, highlighting the need for an integrated digital solution that automates processes and improves service delivery.

5.2 Logical DFD (AS-IS) System

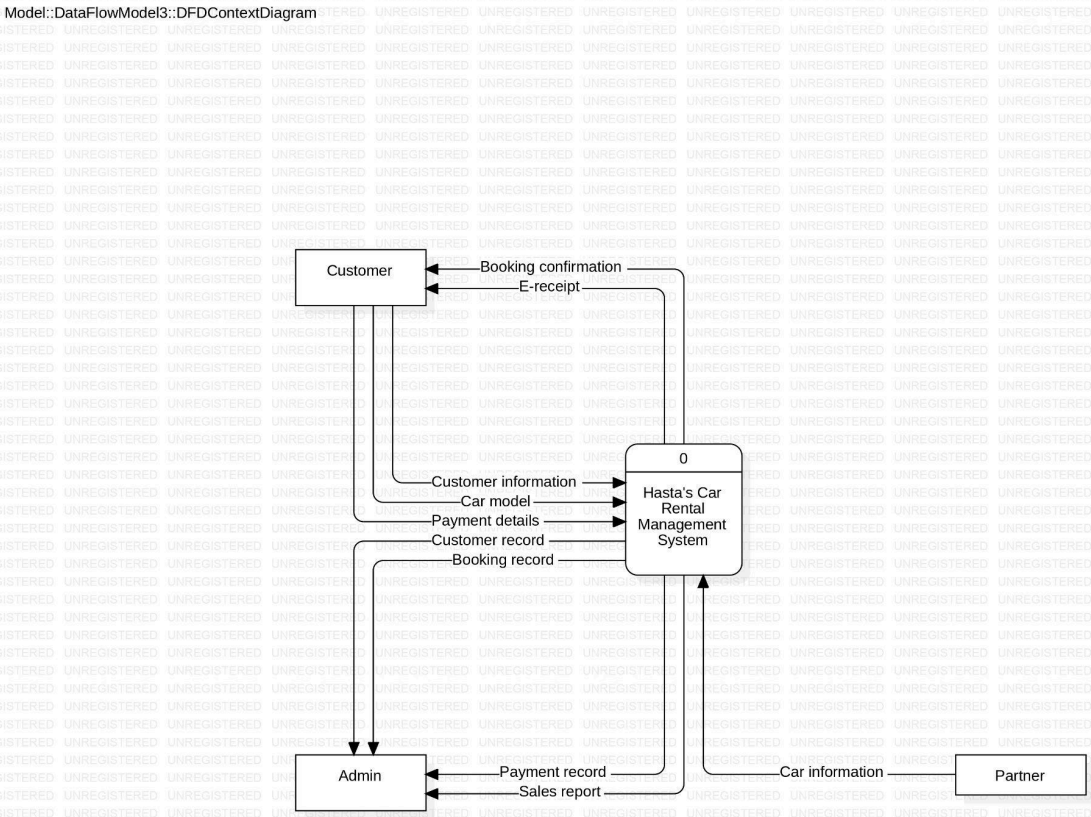

Figure 1: Context Diagram for the Existing Hasta's Car Rental Management System

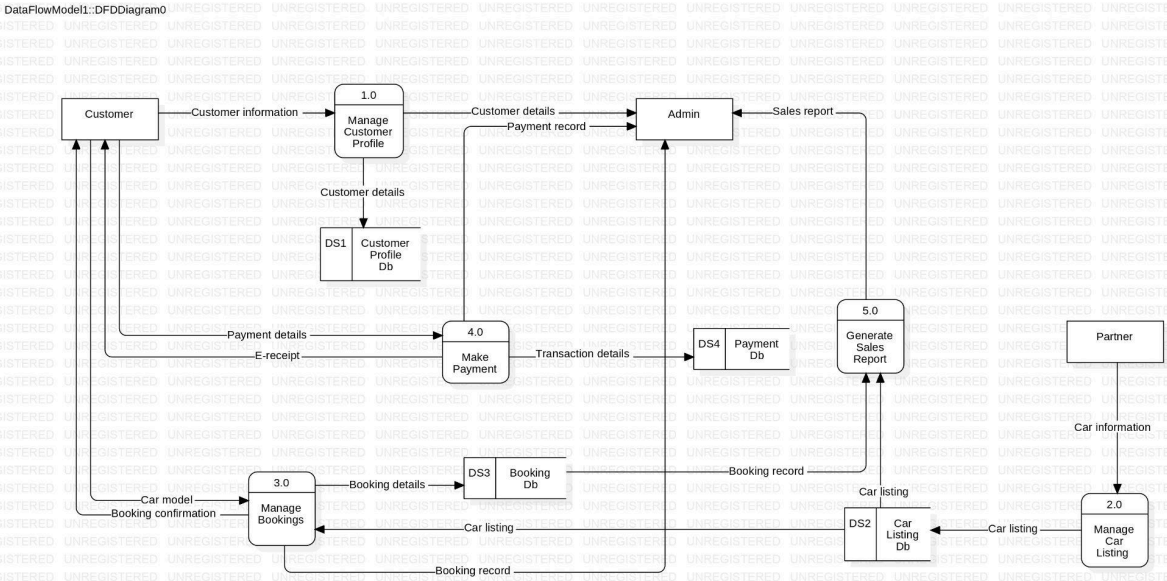

Figure 2: Diagram 0 for the Existing Hasta's Car Rental Management System

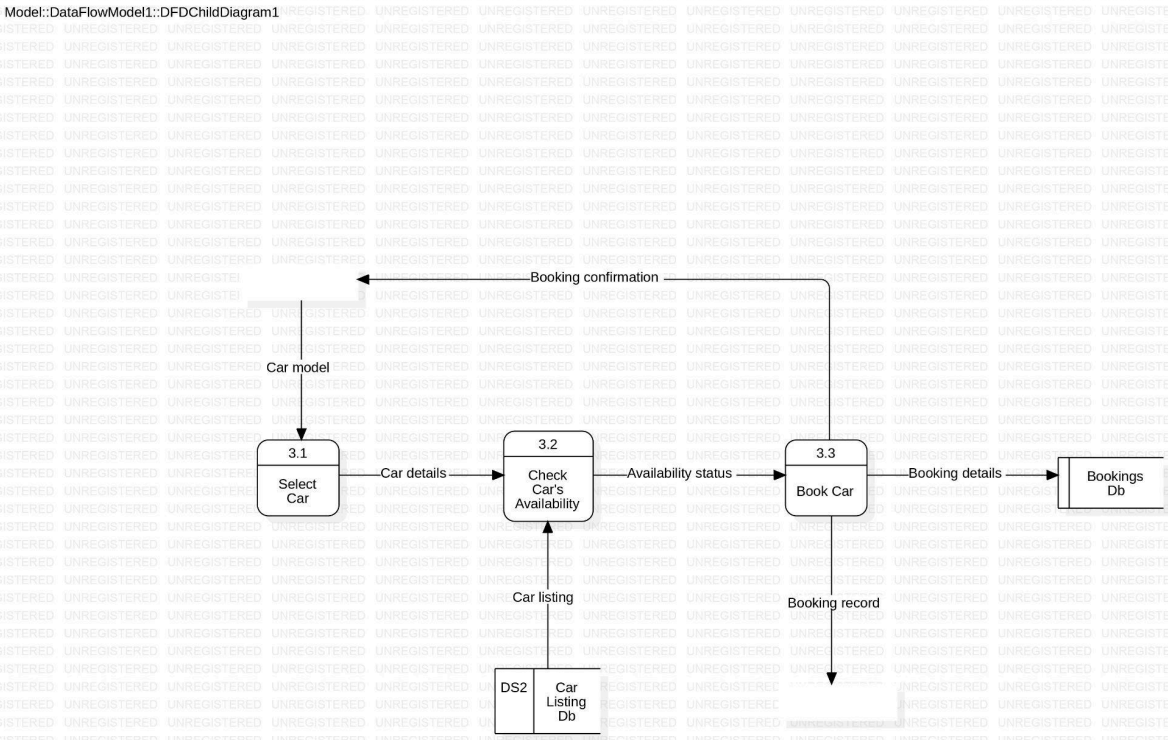

Figure 3: Child Diagram for the Manage Bookings Process

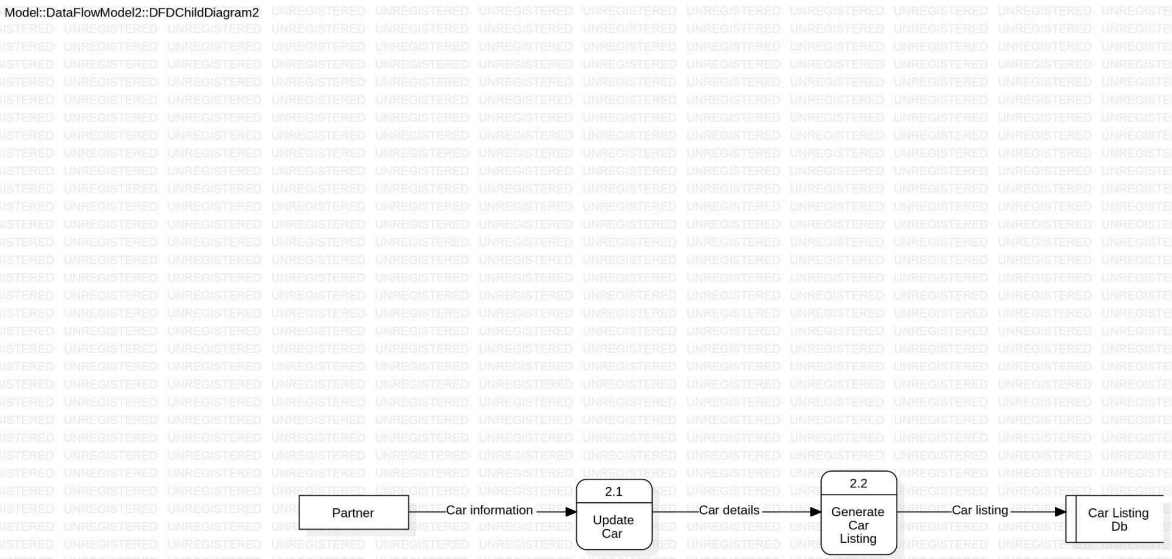

Figure 4: Child Diagram for the Manage Car Listing Process

5.3 Functional Requirement

- Manage Profile
  Customers can create or update their profiles with personal and license details, while admins can access, manage, and confirm profile records.

- Manage Car Rental
  Customers can search, book, and pay for available cars, while admins and partners can add, edit, and manage car listings and monitor bookings.

- Manage Insurance
  Customers can select insurance options during booking, and the system calculates fees and generates insurance documents, which admins can review.

- Manage Payment
  Customers can make payments using various methods, and the system processes them, generates receipts, and allows admins to manage refunds and transactions.

- Manage Feedback Form
  Customers can submit feedback after using the rental service, which is stored in the system, and admins can review and analyze customer feedback.

- Manage Report
  The system generates a report based on the customer's rental history and achievements, and admins can edit and approve the final version before download.

- Manage Reward
  The system tracks customer milestones and automatically assigns badges or rewards, with admins able to view and manage the reward system.

- Dashboard
  Customers, admins, and partners access a tailored dashboard view showing profile details, booking history, rewards, and system activity

5.4 Non-Functional Requirement

Performance

- System response time - Core functions like booking and payment should respond in under 2 seconds to ensure smooth user experience.
- High availability - The system must remain accessible 24/7, with downtime only during planned maintenance periods.
- Scalability - The platform should support at least 1000 users simultaneously without slowing down or crashing.
- Data backup - System must automatically back up data daily to prevent information loss.
- Mobile compatibility - The interface should be mobile-friendly with a responsive design that works on all device types.

Control

- Authentication - All users (admin, partner, customer) must securely log in with verified credentials.
- Authorization - Access should be controlled by user roles—admins can manage content, while users have limited access.
- Data integrity - Input validation must be enforced to ensure all data entered is complete and accurate.
- Data security - Sensitive data such as passwords and payment details must be encrypted during storage.
- Audit trail - The system must record logs of all key actions like bookings, refunds, and insurance transactions for traceability.

6.0 Summary of Requirement Analysis process

The requirement analysis process for Hasta Travel and Tours' new system involved the following steps:

1. Stakeholder interviews by conducting sessions with the company’s founders and key staff to identify pain points and expectations. Also, gathered insights on critical features, such as accounting integrations, automated payments, and real-time fleet tracking.
2. Document review. Hasta Travel and Tours should analyze existing workflows, including booking confirmations, payment processing, and vehicle management. Also, identified gaps in data security, system scalability, and user accessibility.
3. Competitor benchmarking by studying systems like SoCar to understand industry standards and best practices.
4. Outlined core modules such as profile management, car rental, insurance, payments) with input-process-output flows. With this, prioritized automation for bookings, dynamic pricing, and deposit refunds to reduce manual effort.
5. Focus on non-functional requirements specification performance benchmarks and emphasized security measures like role-based access, encryption, audit trails and scalability to support for 1000+ users.
6. Focused on users reviewing requirements with stakeholders to ensure alignment with business goals. Incorporated feedback on usability, such as mobile compatibility and dashboard customization for different user roles.

The analysis confirmed the need for a centralized, automated system to streamline operations, enhance customer experience, and support future growth. The next phase will focus on system design and prototyping based on these requirements.