

# **EcoXchange: Waste Collection & Recycling System Final Report**

**CSC264  
Introduction to Web and Mobile Application**

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## **1.0 Project Description and Purpose**

### **1.1 Project Description**

EcoXchange is an innovative website that aims to make recycling more convenient for customers. Rather than requiring people to sort and transport their recyclables to a facility, which can be time-consuming and inconvenient, EcoXchange offers a pickup service. Runner will come directly to the customer's doorstep to collect the recyclable materials, saving them the requirement of transportation.

EcoXchange does not just provide a convenient service, but they also promote recycling by rewarding customers for the materials they provide. The website has a fair system that allows customers to calculate each recyclable item based on its environmental impact and recyclability.

The approach of combining convenience and rewards has proven to be an effective way of increasing participation in the recycling process. EcoXchange believes that by making recycling easier and more rewarding, they can promote and increase the sense of responsibility taking care of the environment among customers.

Additionally, EcoXchange has developed a comprehensive waste tracking system that monitors recyclable materials from collection to final processing. Each item is assigned a unique identifier, allowing the company to accurately record and trace the movement of recyclables through the various stages of the recycling chain. This real-time monitoring ensures that no materials are lost or misplaced during the process.

Looking to the future, EcoXchange is committed to continually improving and expanding its recycling services to achieve higher levels of impact and sustainability. The company firmly believes that with the cooperation and support of the community, they can create a society that minimizes waste and preserves valuable resources.

## **1.2 Project Purpose**

Our project purpose is to develop a system that will increase the efficiency of EcoXchange waste management. We make sure the system consists of user-friendly design and adaptability to use on different devices. EcoXchange system also optimizes the processing of recyclable materials by implementing advanced features such as calculators. By that, customers can calculate their own reward and accept fair rewards for recycling.

Secondly, EcoXchange system provides precise tracking of waste collection by catching up on the latest information about recycling operations. For example, customers can view the booking status, whether pending or successful, and view their rewards' status after the waste is picked up. From admin's function, admin can update customer's booking and their reward status.

Thirdly, EcoXchange system enables customers to recycle waste without moving from their location. This system expand the convenient pickup service to make recycling more accessible for customers. For example, EcoXchange provides 3 vehicle types, such as motorcycle, car and lorry. By implementing this additional service, customers do not have to go out of their way to recycle and more recycled items can be collected.

## 2.0 Updated Analysis and Design

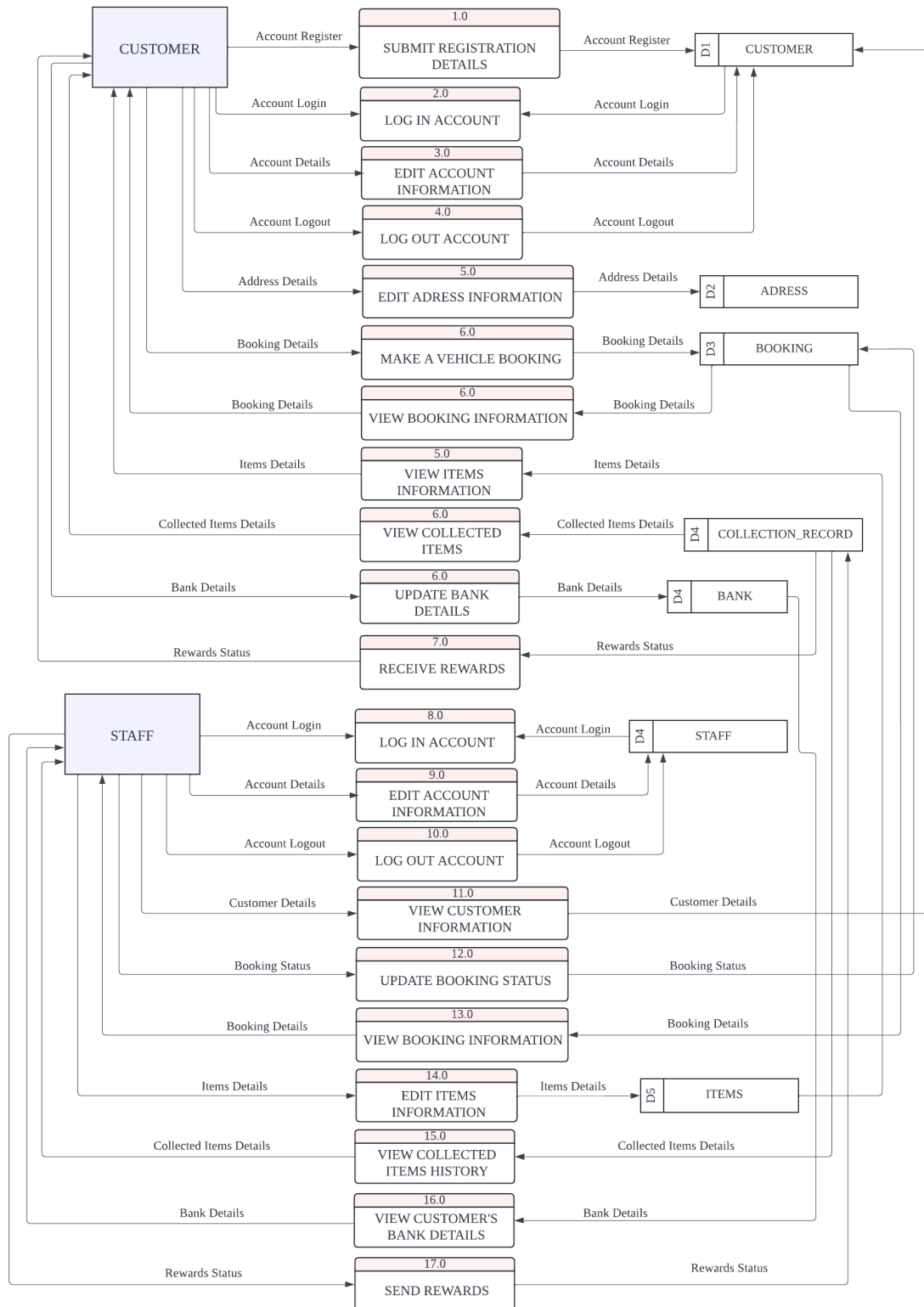


Figure 2: Data Flow Diagram (DFD)

### 3.0 Updated Analysis and Design

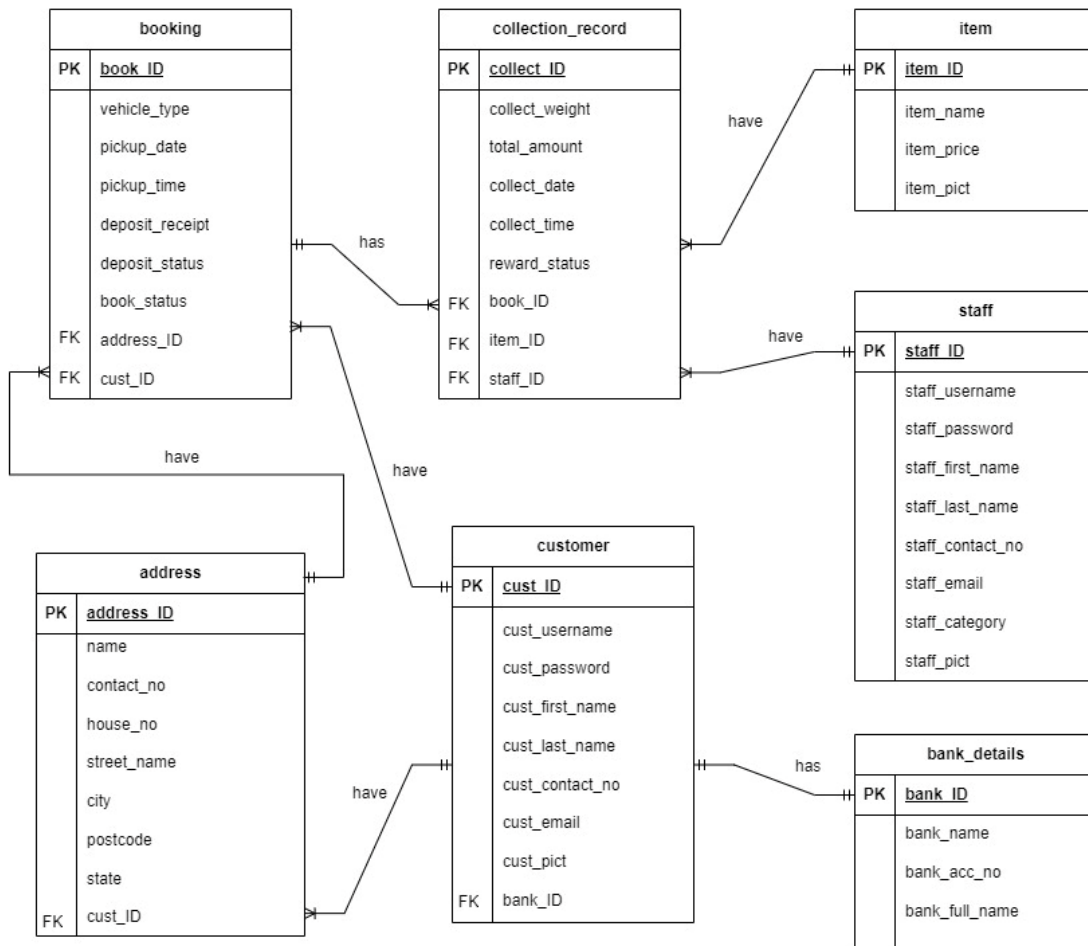


Figure 2: Entity Relationship Diagram (ERD)

## 4.0 Sample Interface and Output

### 4.1 Main Page

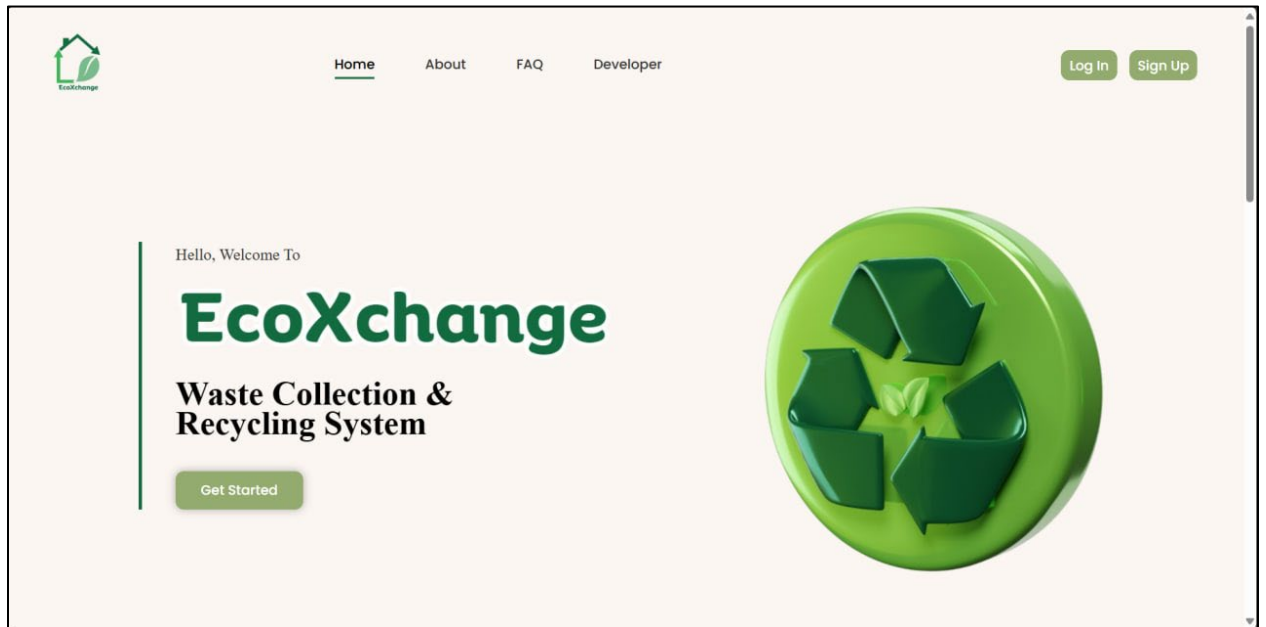


Figure 4.1.1: Home Page

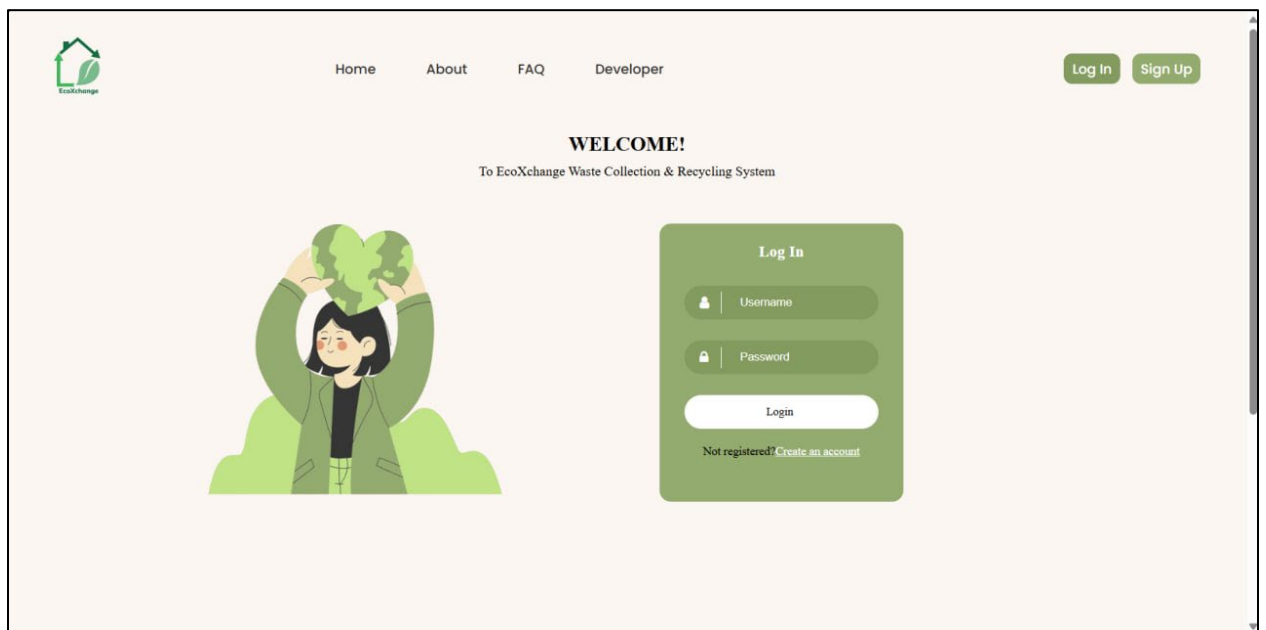
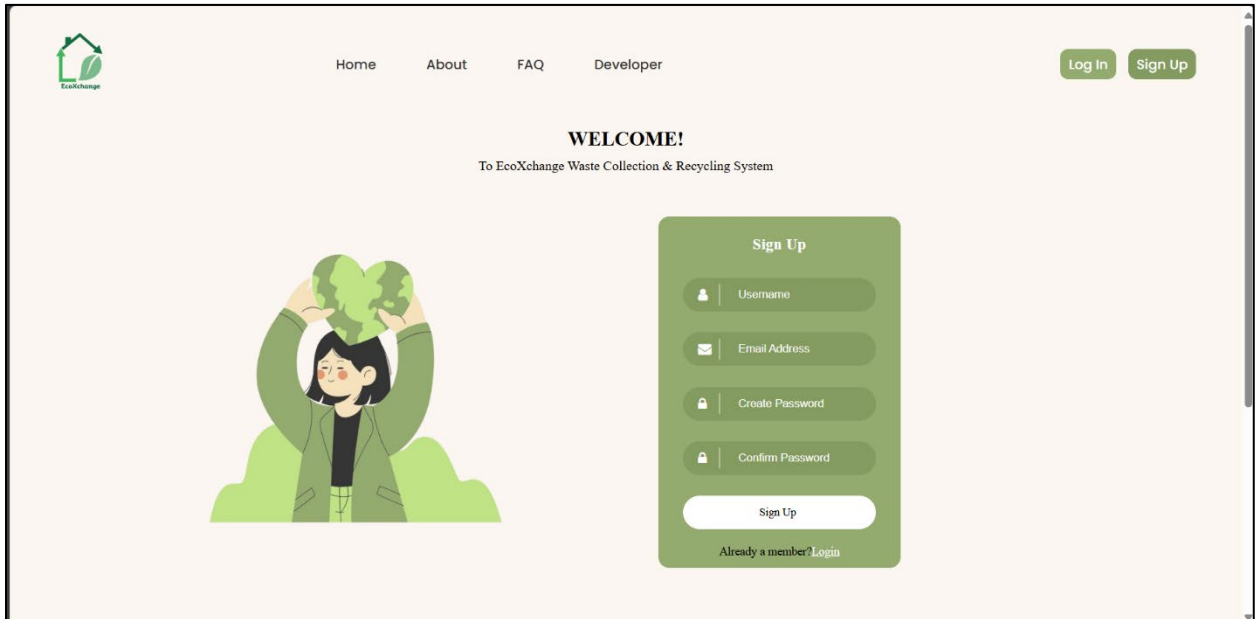


Figure 4.1.2: Login Page

## 4.2 Customer



The registration page features a light beige background. At the top left is the EcoXchange logo. Navigation links for Home, About, FAQ, and Developer are centered at the top. On the right are Log In and Sign Up buttons. The main content area includes a 'WELCOME!' message and a subtitle 'To EcoXchange Waste Collection & Recycling System'. On the left is an illustration of a person holding a green heart. On the right is a green 'Sign Up' form with fields for Username, Email Address, Create Password, and Confirm Password, followed by a Sign Up button and a link for 'Already a member? Login'.

EcoXchange

Home About FAQ Developer

Log In Sign Up

**WELCOME!**  
To EcoXchange Waste Collection & Recycling System

Sign Up

Username

Email Address

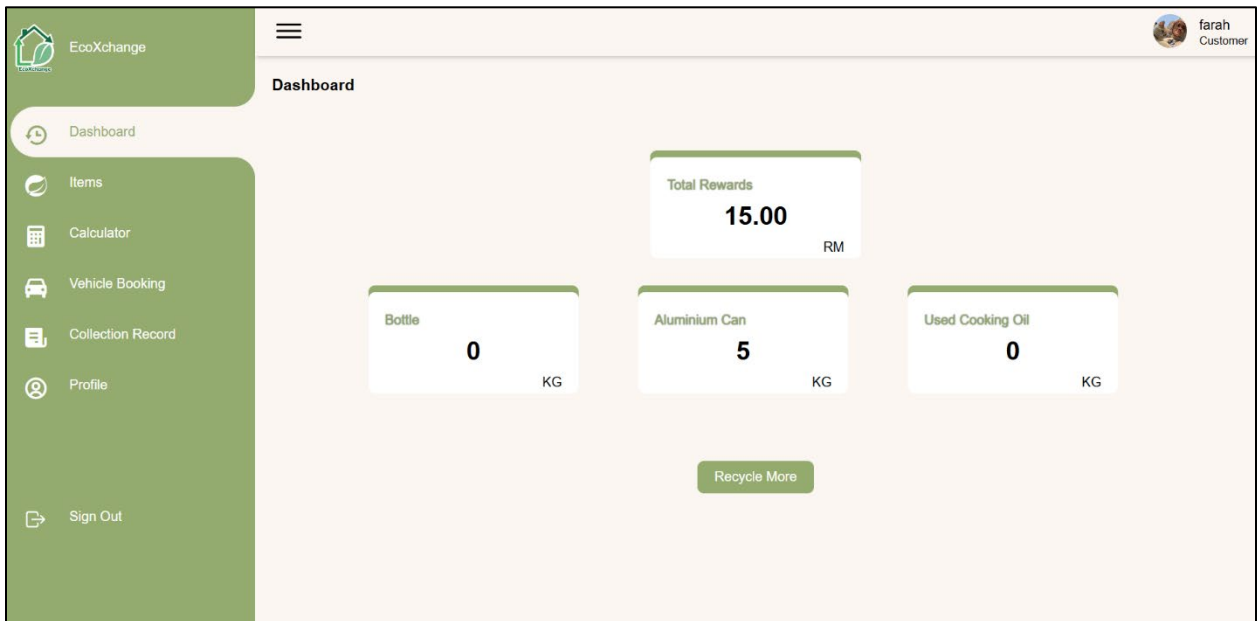
Create Password

Confirm Password

Sign Up

Already a member? [Login](#)

Figure 4.2.1: Registration Page



The dashboard has a green sidebar with the EcoXchange logo and navigation links: Dashboard, Items, Calculator, Vehicle Booking, Collection Record, Profile, and Sign Out. The main area is titled 'Dashboard' and shows a 'Total Rewards' of 15.00 RM. Below this are three boxes for 'Bottle' (0 KG), 'Aluminium Can' (5 KG), and 'Used Cooking Oil' (0 KG). A 'Recycle More' button is at the bottom.

EcoXchange

Dashboard

Dashboard

Items

Calculator

Vehicle Booking

Collection Record

Profile

Sign Out

Total Rewards  
**15.00**  
RM

Bottle  
**0**  
KG

Aluminium Can  
**5**  
KG

Used Cooking Oil  
**0**  
KG

Recycle More

Figure 4.2.2: Dashboard



- Dashboard
- Items
- Calculator**
- Vehicle Booking
- Collection Record
- Profile
- Sign Out

Calculator

Cardboard

Enter the weight:

Subtotal: RM 0.00

Old News Paper

Enter the weight:

Subtotal: RM 0.00

Total: RM 0.00

farah Customer

Item's name

Figure 4.2.3: Calculator Page

- Dashboard
- Items
- Calculator
- Vehicle Booking
- Collection Record
- Profile**
- Sign Out

Profile

Bank Details

Bank Name: Maybank

Account No: 7063486780

Full Name: Farah Adibah Binti Abdul Malek

User Details

Username: farah

First Name: Farah

Last Name: Adibahh

Phone: 0192367890

Email: farah@gmail.com

My Address

Rohaidah Has | 01266082982

Jalan Semarak kubang ulu, Bukit Mertajam, Pulau Pinang 14000

Add New Address

Update

Figure 4.2.4: Profile Page

Edit Address Detail

Person In Charge

Enter Name

Contact

Enter Contact Number

House No

Enter House Number

Street Name

Enter Street Name

City

Enter City

State

Enter State

PostCode

Enter Postcode

Country

Malaysia

Add Address

Figure 4.2.5: Edit Address Detail Page

EcoXchange

Dashboard

Items

Calculator

Vehicle Booking

Collection Record

Profile

Sign Out

Vehicle Booking

Search here

| Booking ID | Vehicle Type | Booking Date | Pickup Time          | Deposit Receipt | Deposit Status | Book Status | Address | Action         |
|------------|--------------|--------------|----------------------|-----------------|----------------|-------------|---------|----------------|
| B003       | motorcycle   | 2024-07-15   | Pickup in 30 minutes | View PDF        | Approved       | In Progress | Show    | Cancel Booking |

Figure 4.2.6: Vehicle Booking Information Page

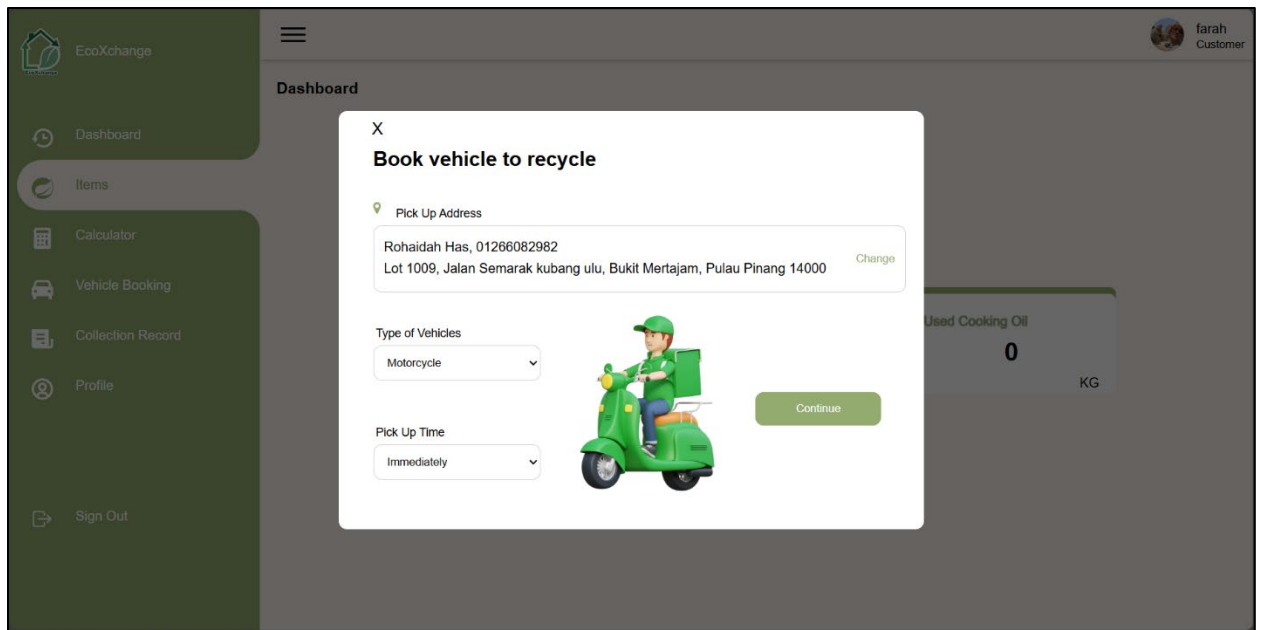


Figure 4.2.7: Vehicle Booking Page

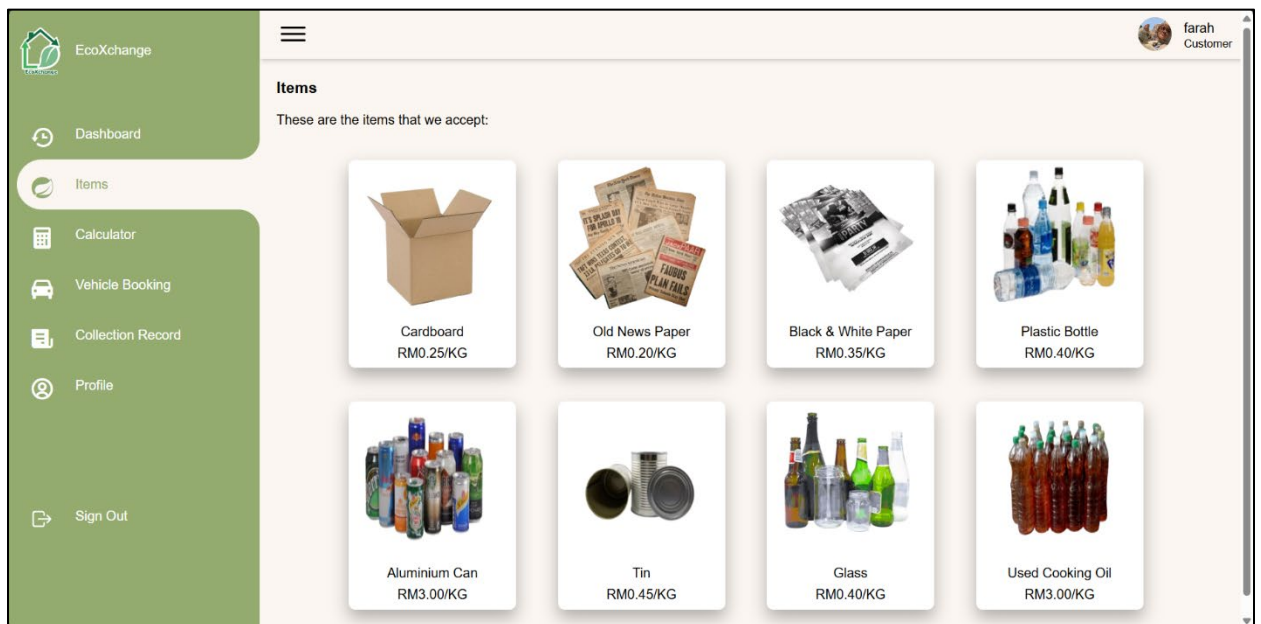


Figure 4.2.8: Item Detail Page

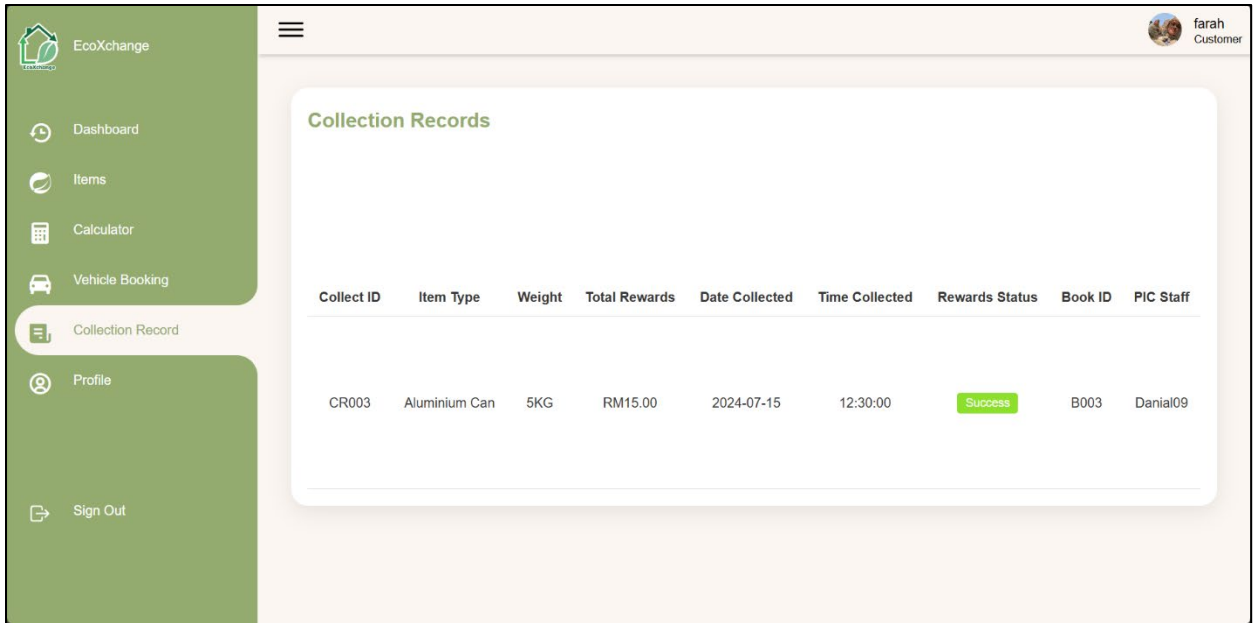


Figure 4.2.9: Collected Item Page

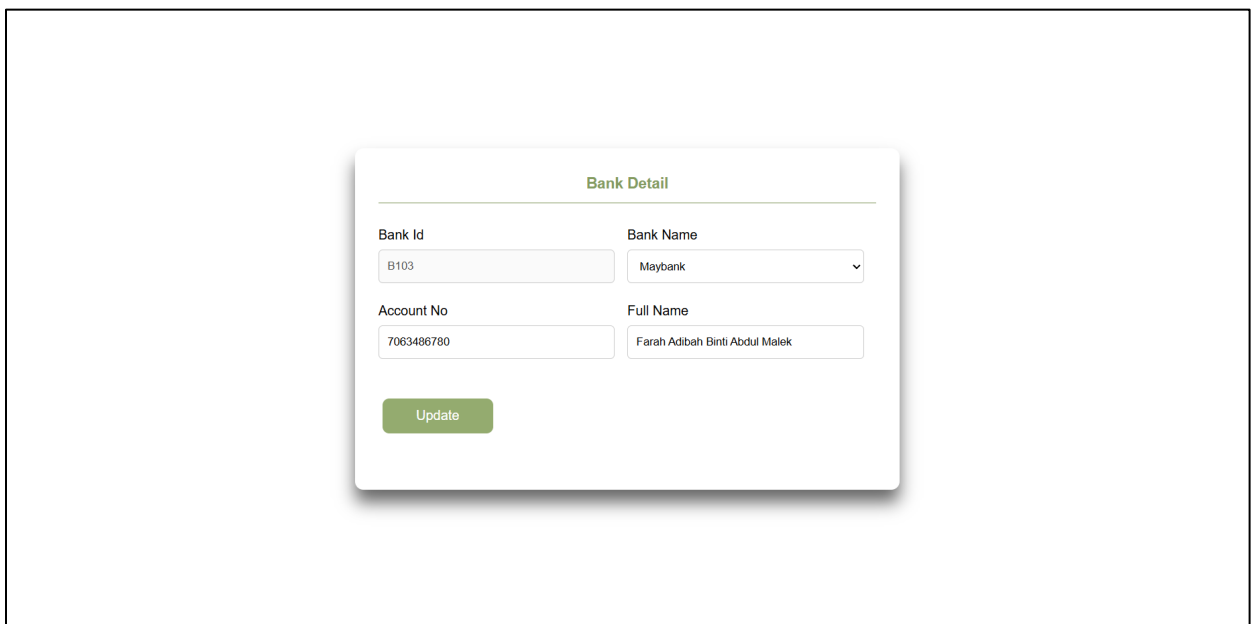


Figure 4.2.10: Bank Details Page

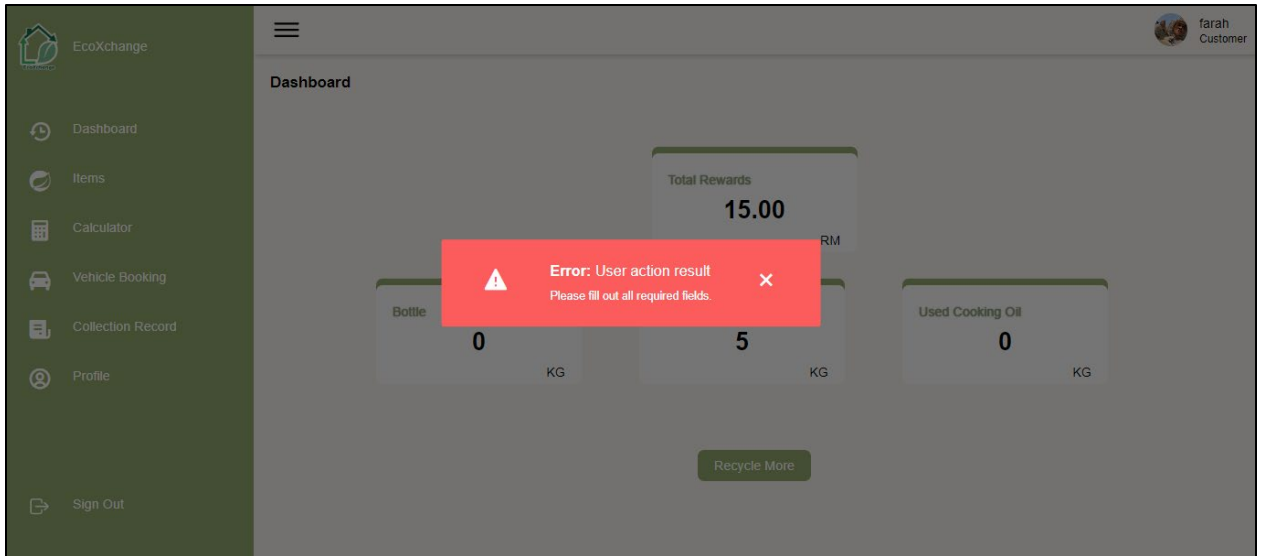


Figure 4.2.11: Pop up error message

## 4.3 Staff

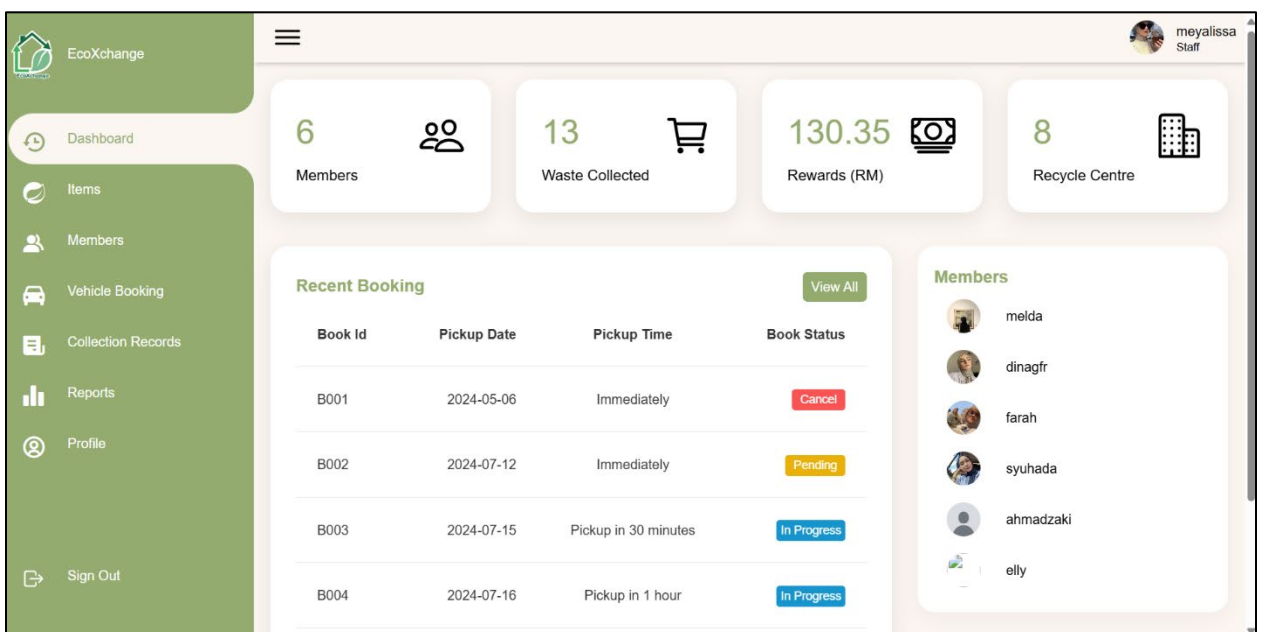
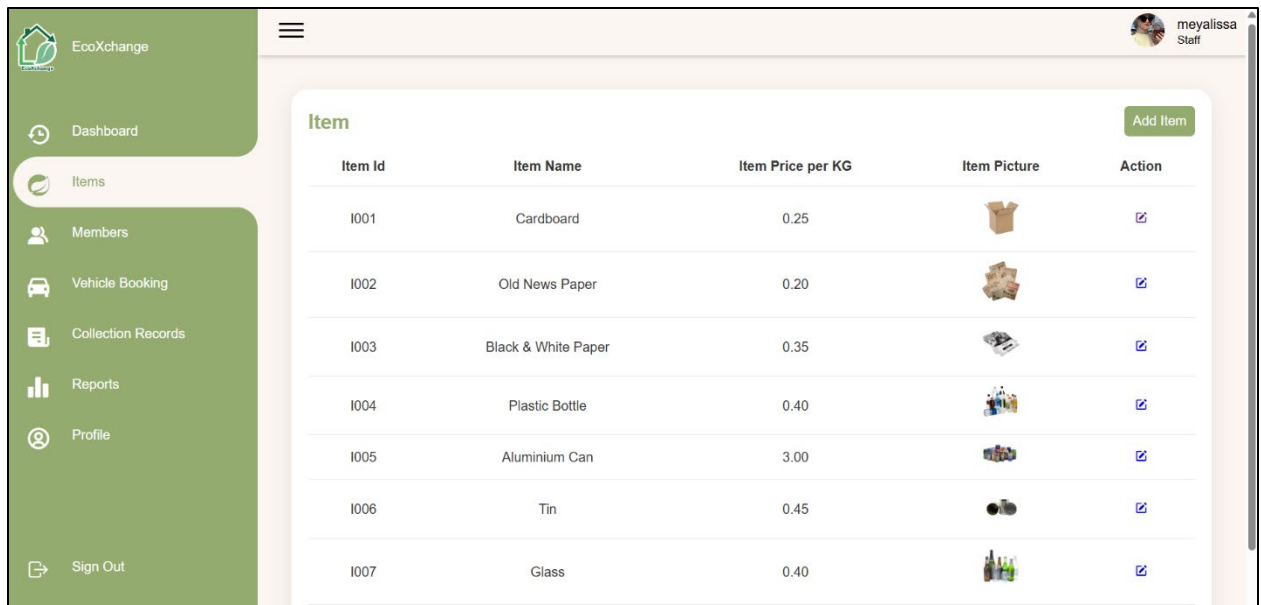


Figure 4.3.1: Dashboard

















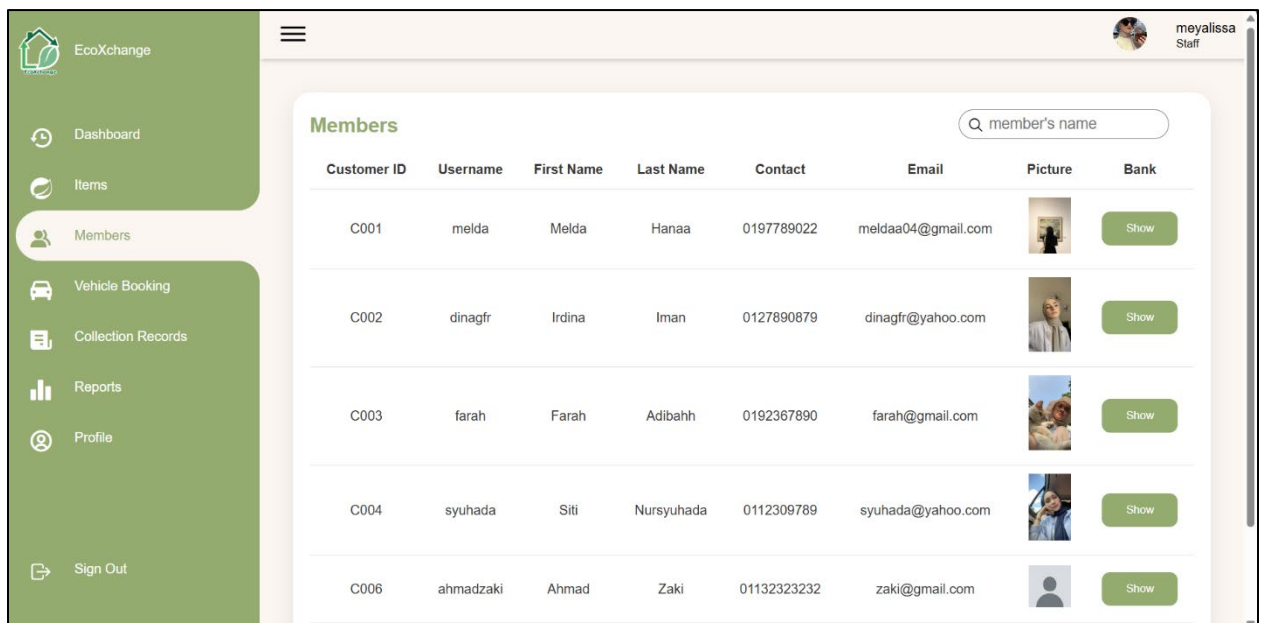
| Item Id | Item Name           | Item Price per KG | Item Picture  | Action  |
|---------|---------------------|-------------------|---|---|
| I001    | Cardboard           | 0.25              |  |  |
| I002    | Old News Paper      | 0.20              |  |  |
| I003    | Black & White Paper | 0.35              |  |  |
| I004    | Plastic Bottle      | 0.40              |  |  |
| I005    | Aluminium Can       | 3.00              |  |  |
| I006    | Tin                 | 0.45              |  |  |
| I007    | Glass               | 0.40              |  |  |

Figure 4.3.2: Items page








| Customer ID | Username  | First Name | Last Name  | Contact     | Email              | Picture   | Bank |
|-------------|-----------|------------|------------|-------------|--------------------|---|------|
| C001        | melda     | Melda      | Hanaa      | 0197789022  | meldaa04@gmail.com |  | Show |
| C002        | dinagfr   | Irdina     | Iman       | 0127890879  | dinagfr@yahoo.com  |  | Show |
| C003        | farah     | Farah      | Adibahh    | 0192367890  | farah@gmail.com    |  | Show |
| C004        | syuhada   | Siti       | Nursyuhada | 0112309789  | syuhada@yahoo.com  |  | Show |
| C006        | ahmadzaki | Ahmad      | Zaki       | 01132323232 | zaki@gmail.com     |  | Show |

Figure 4.3.3: Members

| Booking ID | Vehicle Type | Booking Date | Pickup Time          | Deposit Receipt | Deposit Status | Book Status | Address | Username |
|------------|--------------|--------------|----------------------|-----------------|----------------|-------------|---------|----------|
| B001       | lorry        | 2024-05-06   | Immediately          | View PDF        | Pending        | Cancel      | Show    | melda    |
| B002       | lorry        | 2024-07-12   | Immediately          | View PDF        | Approved       | Pending     | Show    | dinagfr  |
| B003       | motorcycle   | 2024-07-15   | Pickup in 30 minutes | View PDF        | Approved       | In Progress | Show    | farah    |
| B004       | car          | 2024-07-16   | Pickup in 1 hour     | View PDF        | Approved       | In Progress | Show    | syuhada  |
| B005       | motorcycle   | 2024-07-22   | Immediately          | View PDF        | Approved       | Success     | Show    | dinagfr  |
| B006       | car          | 2024-07-23   | Pickup in 30 minutes | View PDF        | Approved       | Success     | Show    | melda    |

Figure 4.3.4: Vehicle Booking

| Collect ID | Item Type        | Weight | Total Rewards | Date Collected | Time Collected | Rewards Status | Book ID | PIC Staff | Action |
|------------|------------------|--------|---------------|----------------|----------------|----------------|---------|-----------|--------|
| CR013      | Plastic Bottle   | 5KG    | RM2.00        | 2024-05-30     | 20:53:49       | Pending        | B002    | meyalisa  |        |
| CR001      | Cardboard        | 1KG    | RM0.25        | 2024-05-06     | 14:23:00       | Pending        | B001    | fadlan    |        |
| CR002      | Plastic Bottle   | 3KG    | RM2.00        | 2024-07-12     | 12:00:11       | Pending        | B002    | fadlan    |        |
| CR006      | Plastic Bottle   | 0.5KG  | RM2.00        | 2024-07-22     | 16:30:14       | Success        | B005    | fadlan    |        |
| CR012      | Glass            | 10KG   | RM4.00        | 2024-07-23     | 10:51:38       | Success        | B006    | fadlan    |        |
| CR003      | Aluminium Can    | 5KG    | RM15.00       | 2024-07-15     | 12:30:00       | Success        | B003    | Danial09  |        |
| CR004      | Glass            | 0.5KG  | RM0.20        | 2024-07-16     | 09:00:00       | Success        | B004    | Danial09  |        |
| CR005      | Glass            | 3KG    | RM1.40        | 2024-07-17     | 15:22:36       | Success        | B004    | Danial09  |        |
| CR011      | Used Cooking Oil | 20KG   | RM60.00       | 2024-07-23     | 13:50:05       | Success        | B006    | Danial09  |        |

Figure 4.3.5: Collection Records

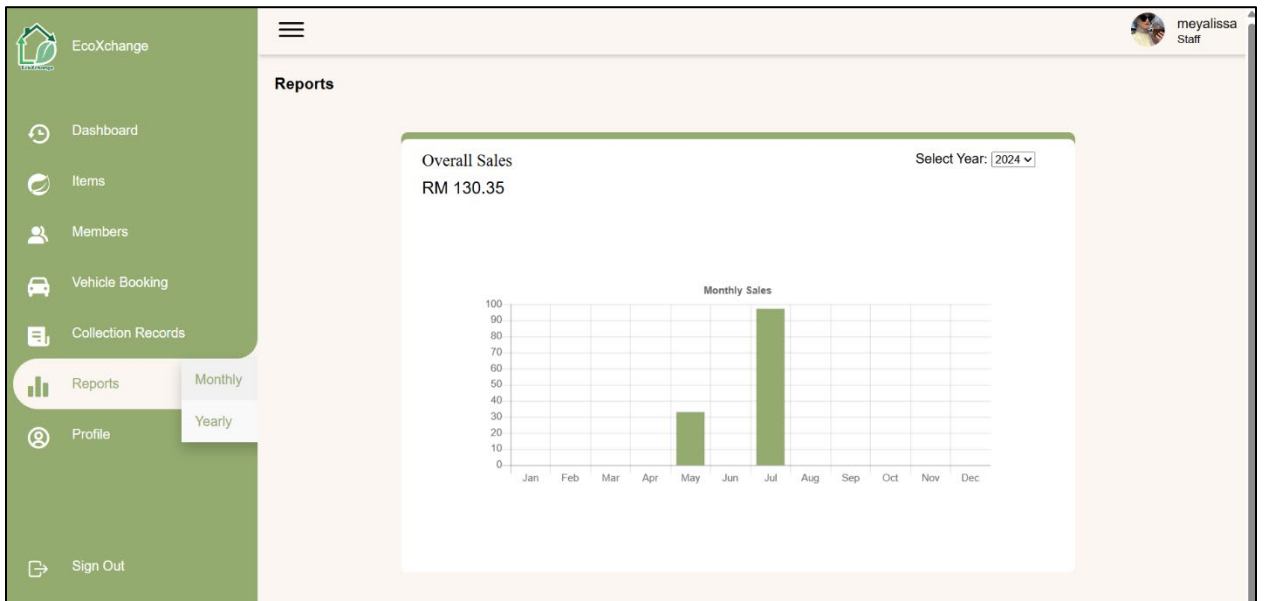


Figure 4.3.6: Reports

The screenshot displays the 'Profile' section of the EcoXchange application. The left sidebar is identical to the Reports page, with 'Profile' selected. The main content area is titled 'Profile' and shows a circular profile picture of a woman. To the right of the picture are 'User Details' form fields: Username (moyalissa), First Name (Melissa), Last Name (Sofia), Phone (0136653982), and Email (melissa.sofia0204@gmail.com). An 'Update' button is located at the bottom right of the form.

| Field      | Value                       |
|------------|-----------------------------|
| Username   | moyalissa                   |
| First Name | Melissa                     |
| Last Name  | Sofia                       |
| Phone      | 0136653982                  |
| Email      | melissa.sofia0204@gmail.com |

Figure 4.3.7: Profile




### Item Detail

---

**Item Id**


**Item Name**

**Item Price**

**Current Item Picture**  







**New Item Picture**  
 No file chosen

Figure 4.3.8: Edit items page

 EcoXchange

- [Dashboard](#)
- [Items](#)
- [Members](#)
- [Vehicle Booking](#)
- [Collection Records](#)
- [Reports](#)
- [Profile](#)
- [Sign Out](#)

### Members

| Customer ID | Username  | First Name | Last Name  | Contact     | Email              | Picture   | Bank                                |
|-------------|-----------|------------|------------|-------------|--------------------|---|-------------------------------------|
| C001        | melda     | Melda      | Hanaa      | 0197789022  | meldaa04@gmail.com |  | <input type="button" value="Show"/> |
| C002        |           |            |            |             | dinagfr@yahoo.com  |  | <input type="button" value="Show"/> |
| C003        | farah     | Farah      | Adibahh    | 0192367890  | farah@gmail.com    |  | <input type="button" value="Show"/> |
| C004        | syuhada   | Siti       | Nursyuhada | 0112309789  | syuhada@yahoo.com  |  | <input type="button" value="Show"/> |
| C006        | ahmadzaki | Ahmad      | Zaki       | 01132323232 | zaki@gmail.com     |  | <input type="button" value="Show"/> |

**Bank Details** X

Bank Name: Hong Leong Bank

Account No: 162309809611

Full Name: Nur Melda Hana Binti Ahmad

Figure 4.3.9: Customer Banks Details

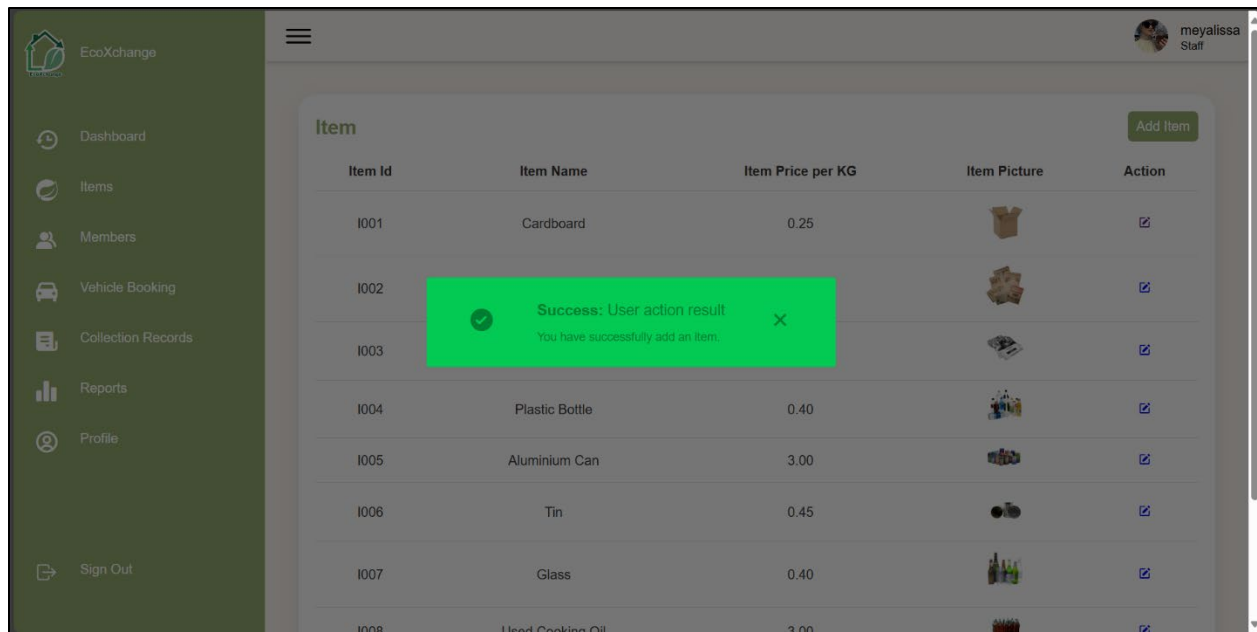


Figure 4.3.10: Add new item

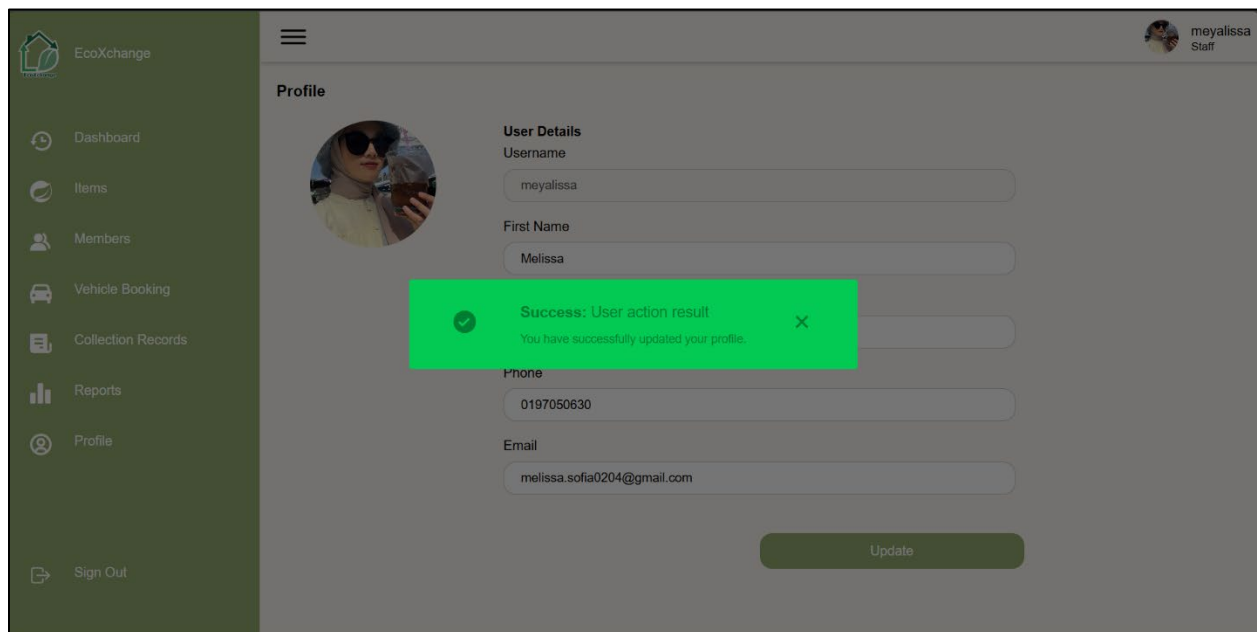


Figure 4.3.11: Update profile

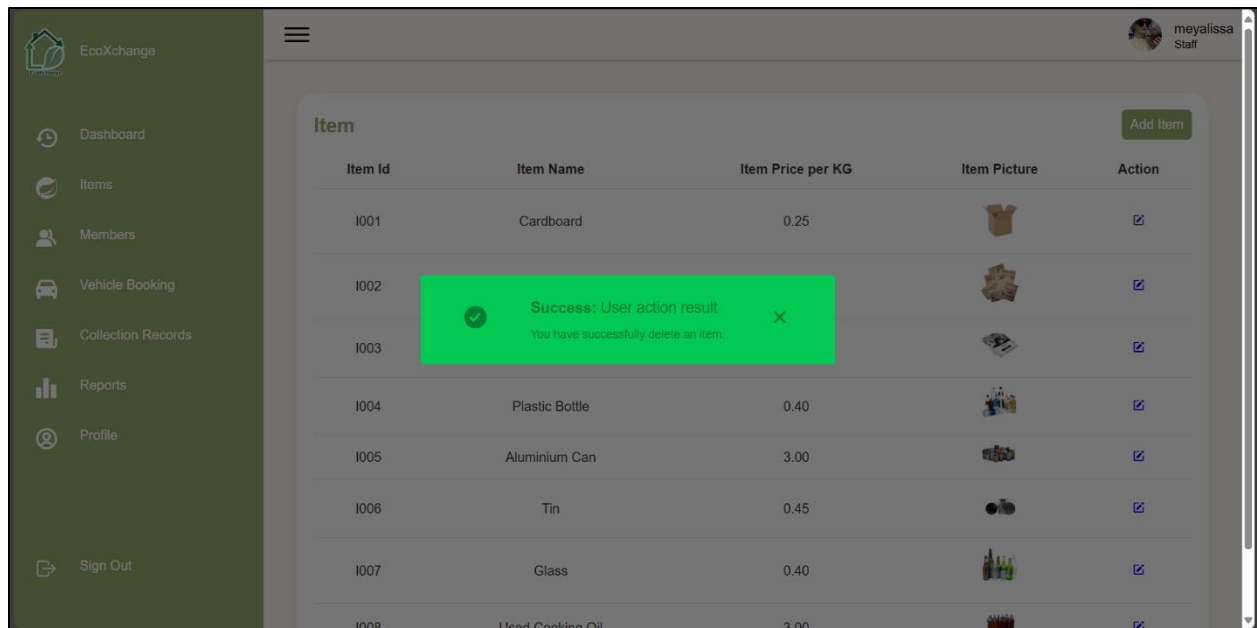


Figure 4.3.12: Delete item

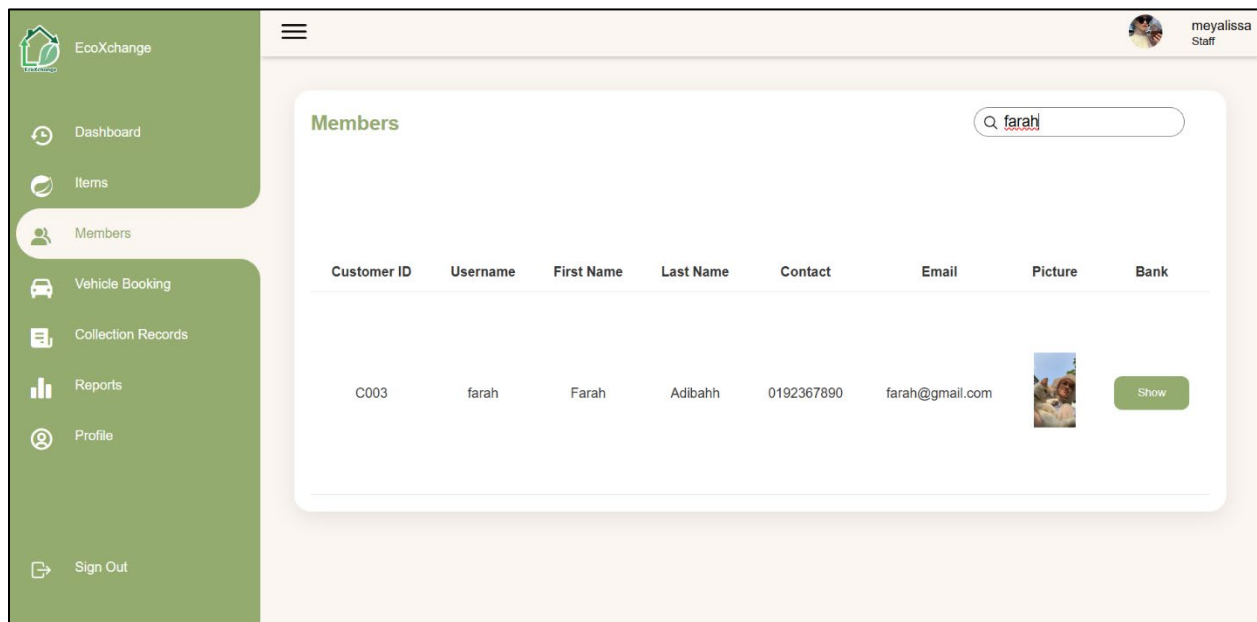


Figure 4.3.13: Display record accurately

## 5.0 Conclusion

The EcoXchange web development project is a big step forward in our mission to build a sustainable future and an eco-friendly environment. Throughout this project, we successfully met all our objectives, which are critical to the EcoXchange platform's effectiveness. We created a reliable system that strongly enhances the efficiency of EcoXchange's waste management operations. Customers can now systematically recycle their waste, contributing to a greener environment and a sustainable future. EcoXchange provides accurate tracking of waste collection by offering up-to-date information on recycling operations and allowing users to monitor their recyclable products and processes without relying on manual tracking, ensuring in a smoother experience.

Moreover, EcoXchange also enables customers to recycle their waste without having to leave their home. Our dedicated runners are assigned to collect waste directly from customers' homes, resolving transportation issues and promoting greater recycling rates. Furthermore, this platform helps customers determine the rewards they will earn for their recyclable materials, providing a reliable system for tracking and managing waste.

The EcoXchange platform has greatly improved our capacity to engage with eco-conscious users and simplify waste management operations. By providing a user-friendly and efficient system, we have made it easier for individuals to participate in recycling initiatives, thus boosting the impact on environmental sustainability.

In conclusion, the EcoXchange web development project has created a foundation for a more sustainable and eco-friendly future. By constantly developing and improving, we aim to make EcoXchange the top platform for efficient and rewarding waste management, empowering people to recycle and contribute to a sustainable future.

## 6.0 References

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<https://www.youtube.com/watch?v=hBbrGFCszU4>