

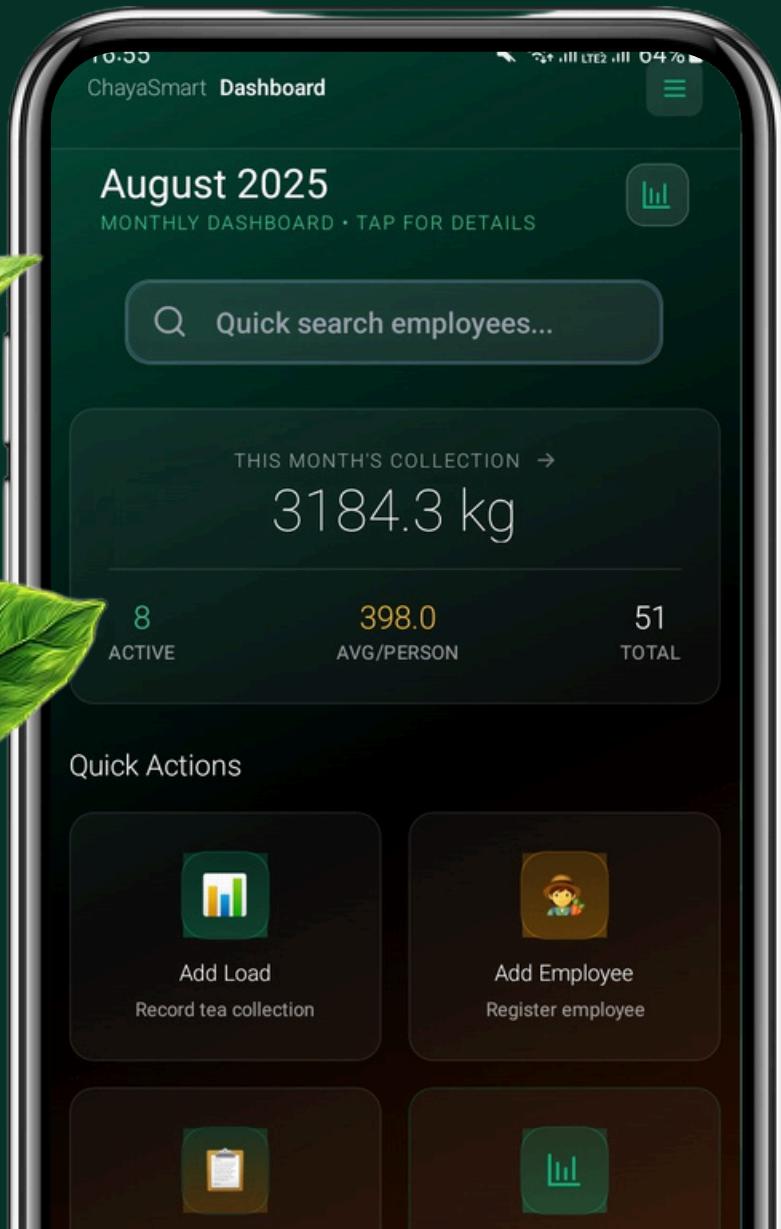


**CHAYA SMART
PLUS +**

PROJECT REPORT

Presented by
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2025





INTRODUCTION



Chaya Smart Plus: A Mobile-Based Smart Administration System for Tea Collection Centers



ChayaSmartPlus is a mobile-based administration system designed to streamline tea collection center operations. Built with React Native, Supabase, and Firebase, the app enables real-time tea load entry, employee management, and performance tracking through a user-friendly interface. It replaces manual processes with a smart, efficient, and data-driven solution.



OUR MISSION

From Field to Record – Instantly and Accurately.

To revolutionize tea collection center operations by delivering a smart, mobile-first platform that ensures accuracy, efficiency, and transparency in tea load and employee management, empowering stakeholders with real-time data and insights.



Problem

The tea industry in Sri Lanka still relies heavily on manual or semi-digital systems for managing and tracking daily tea leaf loads delivered by estate workers. These systems often involve handwritten records, spreadsheets, or outdated desktop applications, which result in several key issues:

- Inefficiency: Manual recording slows down the process and increases administrative workload.
- Data Loss Risks: Paper-based or offline data entry methods are prone to damage, misplacement, or accidental deletion.
- Lack of Real-Time Access: Stakeholders and supervisors cannot view up-to-date tea delivery data unless they are physically present.
- Difficulty in Monitoring Performance: There's no easy way to view which workers contributed most or least during a specific period.
- No Integrated Reporting: Exporting summaries or charts for monthly tea loads is time-consuming and requires manual compilation.





SOLUTION

A one-liner that makes your solution shine.



✓ Solution 1: Digital Employee & Load Management

- A user-friendly interface allows admins to add employees with personal details such as name, NIC, address, and contact number.
- Tea load entries can be added with automated timestamps and are linked to the relevant employee's NIC.

✓ Solution 2: Centralized Cloud Database

- Uses Supabase as a backend to store all employee and tea load records securely.
- Real-time synchronization ensures that all data is immediately available from any device.

✓ Solution 3: Authentication and Access Control

- Firebase Authentication is used to ensure only verified users (admins) can log in.
- Login methods include Email/Password with optional support for Google or phone authentication.

✓ Solution 4: Real-Time Dashboard and Analytics

- Displays charts (bar, pie, area, line) to visualize monthly tea leaf collections.
- Provides admin-level insight such as:
 - Top contributor
 - Total kilograms collected this month

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✓ Solution 5: Profile View and History

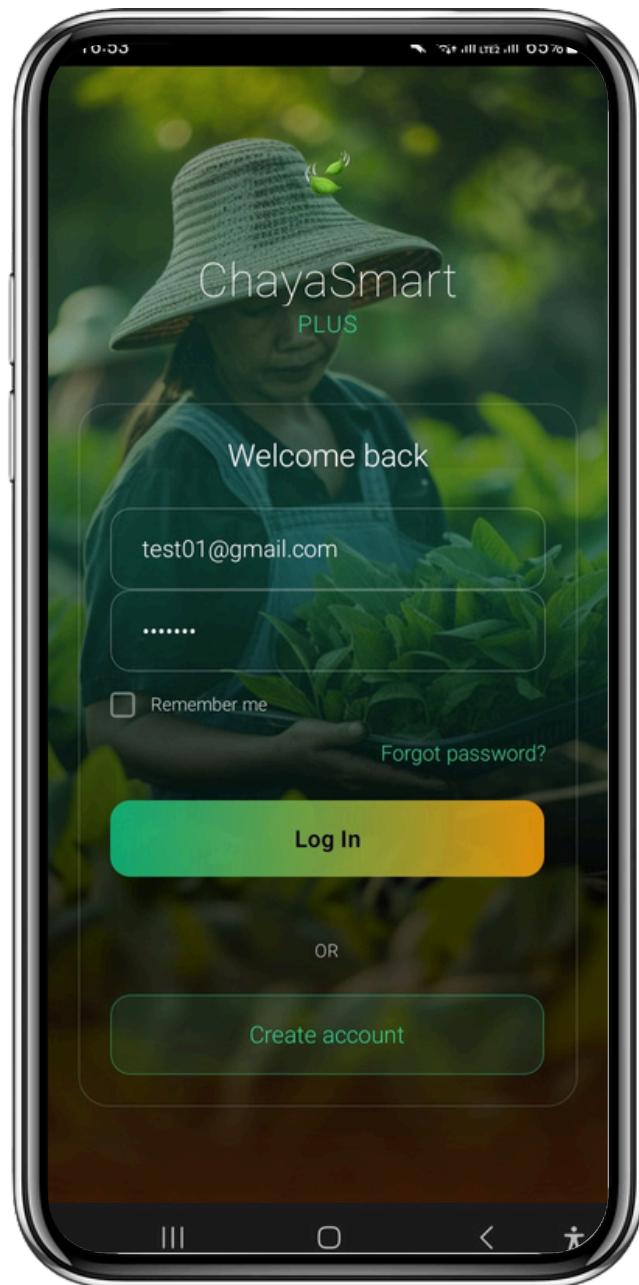
- Each employee has a profile screen showing:
 - Personal details
 - Total supply weight
 - Complete history of their daily tea deliveries

✓ Solution 6: Password Reset and Secure Login

- Includes password reset functionality through Firebase Auth.
- Ensures users can recover their accounts securely.

✓ Solution 7: Portable APK for Android Use

- Built with Expo and exported to an APK for use in the field on Android devices.
- Enables estate managers to use the system even in rural locations with limited infrastructure.



SOLUTION

Goals

The primary goal of ChayaSmartPlus is to modernize and simplify the process of managing tea leaf deliveries and employee records by creating a mobile-friendly, cloud-based admin system. This system should provide real-time visibility, accurate tracking, and analytical insights for tea estate administrators.



SOLUTION

Objectives

To achieve the main goal, the following specific objectives were defined:

1. Develop an Android-based admin application
2. Build a responsive and user-friendly mobile app using React Native with Expo to manage tea leaf collection data.
3. Implement secure authentication
4. Use Firebase Authentication to allow only authorized users (admins) to access the system and perform operations.
5. Enable employee data management
6. Create features to add, view, and update employee records with fields such as full name, NIC, address, and mobile number.
7. Track daily tea load entries
8. Allow admins to log tea leaf weights for each employee daily, linked via NIC with auto-generated dates.
9. Use Supabase for cloud data storage
10. Integrate Supabase to store and fetch data in real-time for both employee and tea load records.
11. Display monthly performance summaries
12. Show analytical dashboards with charts to highlight total collection, top contributors, and monthly trends.
13. Create profile views with supply history
14. Allow admins to view detailed history and total supplied weight per employee from their profile screen.
15. Ensure password reset and error handling
16. Include email-based password reset support and user-friendly error messages to improve usability.
17. Package the app as an APK
18. Provide a production-ready APK version that can be installed on any Android device, especially in rural tea estate environments.

SOLUTION

System Architecture

The ChayaSmartPlus system follows a client-server architecture that connects an Android-based mobile admin app with cloud-based backend services. It integrates Firebase for authentication and Supabase for real-time database operations.

Frontend (Mobile App)

- Built with React Native and Expo for Android devices.
- Offers a user-friendly interface to:
- Add/view employees
- Log tea load weights
- View statistics and charts
- Manage profiles and perform secure login

Authentication Service (Firebase Auth)

Handles:

- User registration and login via email/password
- Password reset via email
- Session management

Ensures only authorized admins access sensitive operations.

Backend Database (Supabase)

- Provides cloud-hosted PostgreSQL database with REST APIs.

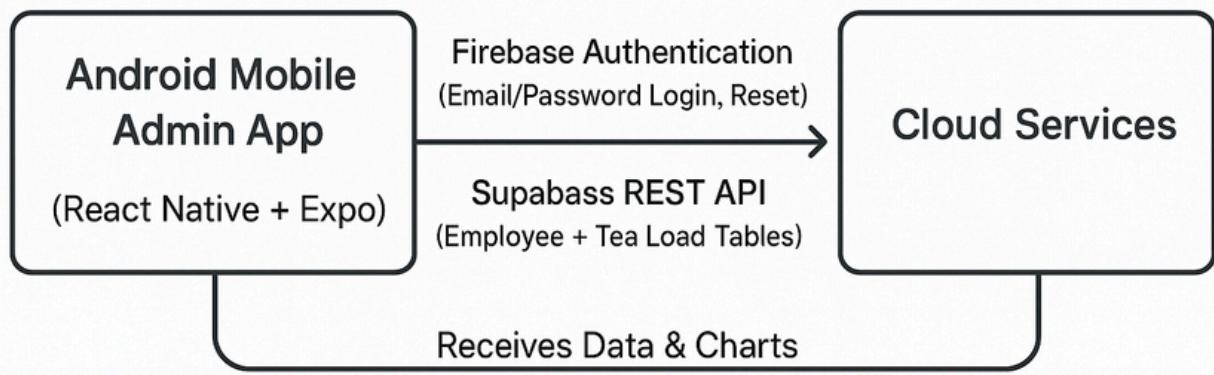
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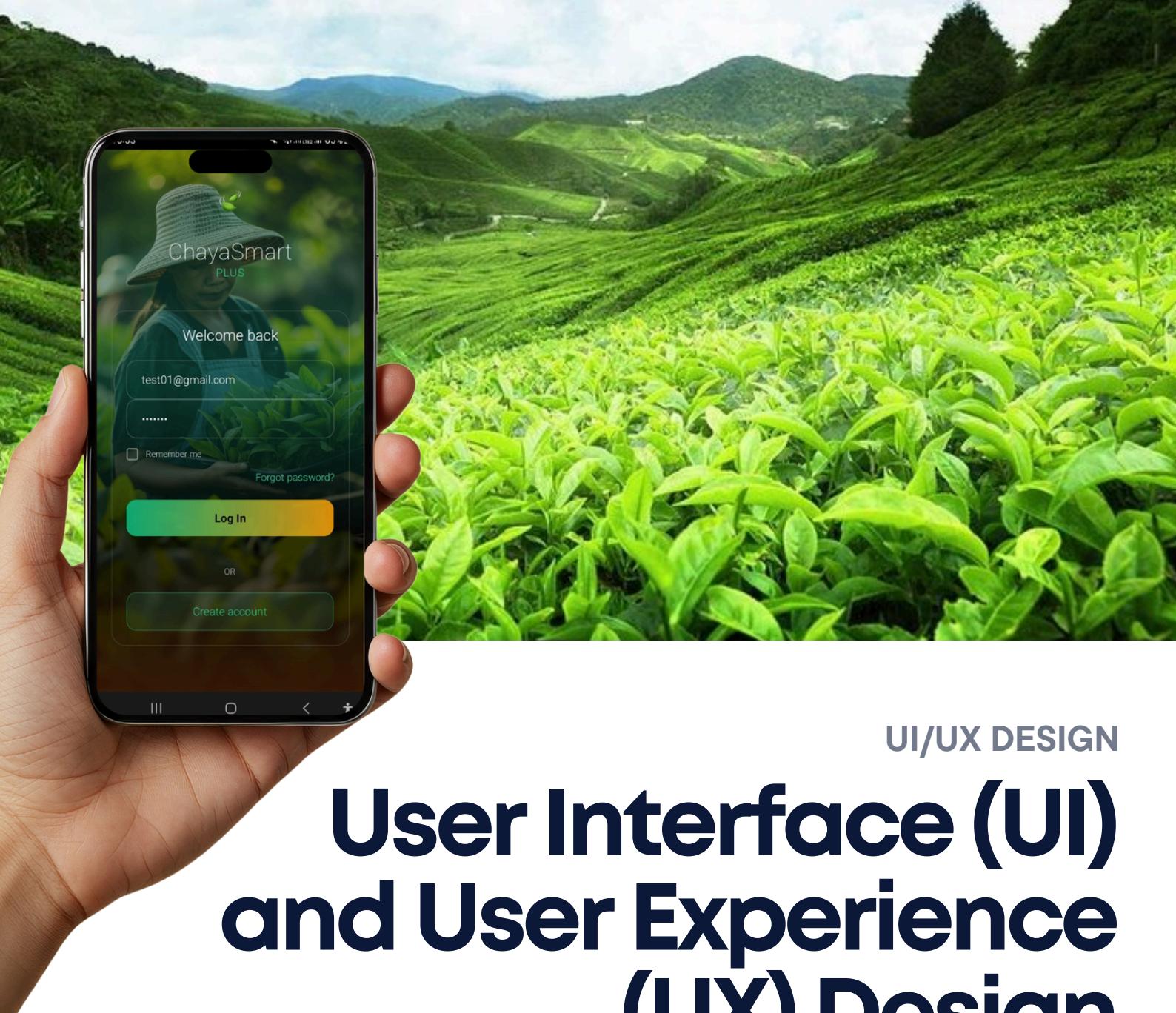
- employees table (name, NIC, address, mobile)
- tea_loads table (NIC, weight, date)
- Enables real-time updates and filtering for reports.

Data Flow

- Admin logs in → Firebase verifies user → App fetches employee and tea load data via Supabase.
- All updates (add/edit/load) are pushed to Supabase and immediately reflected in the UI.
- Dashboard analytics are calculated client-side based on data from Supabase.

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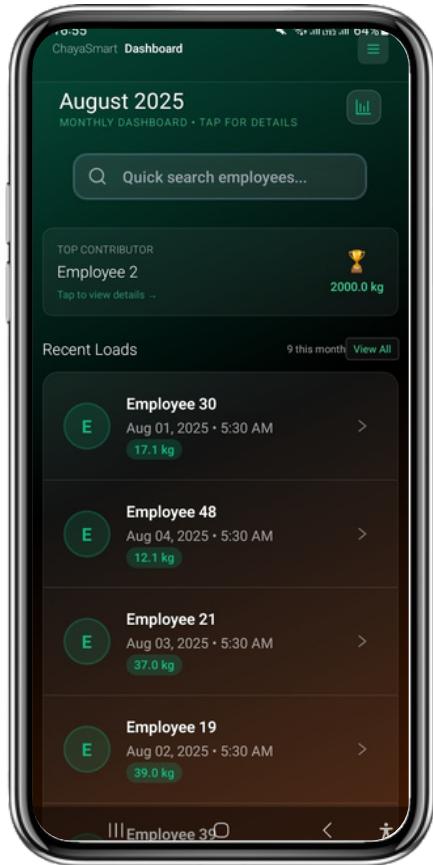
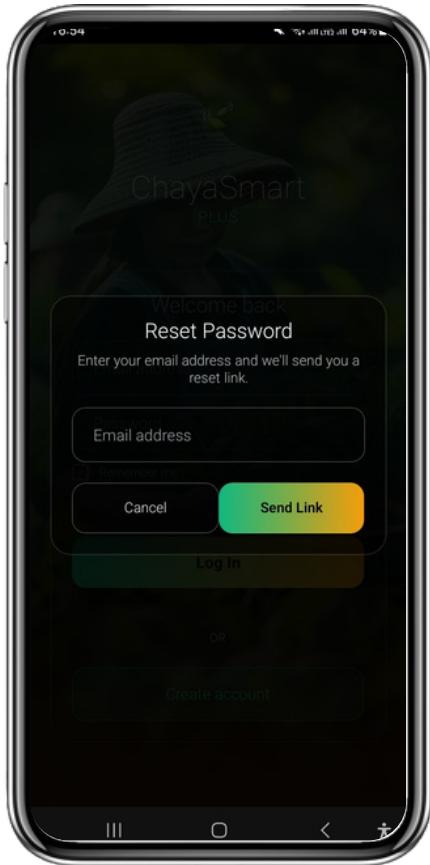
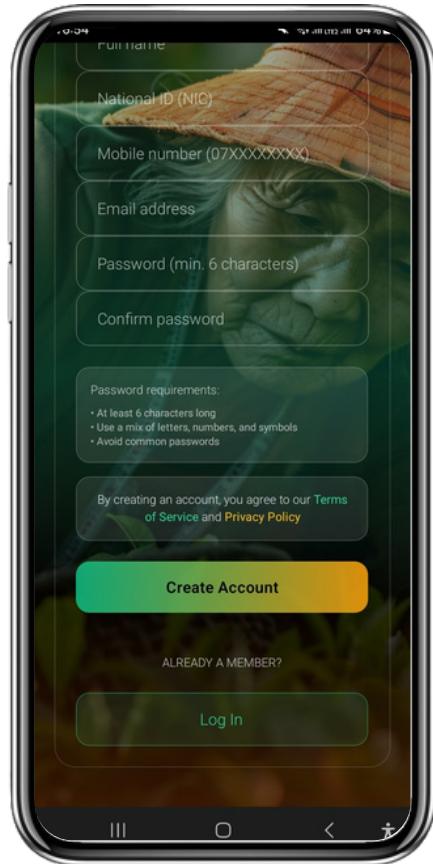
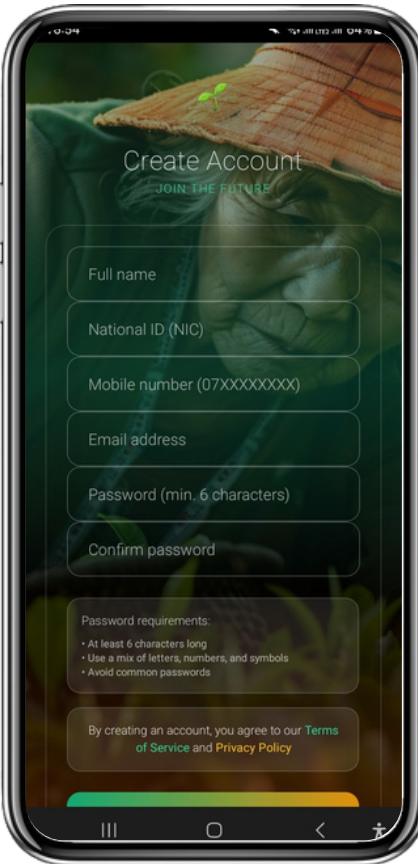
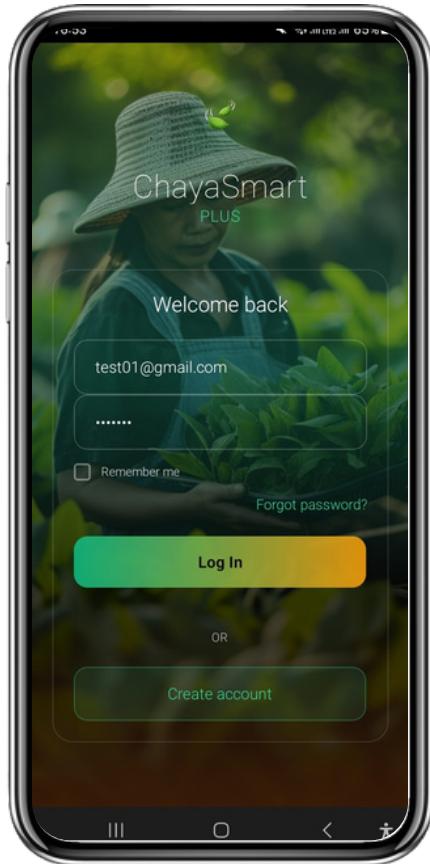


UI/UX DESIGN

User Interface (UI) and User Experience (UX) Design

The UI/UX design of the ChayaSmartPlus application was crafted with the goal of providing an intuitive, visually appealing, and seamless experience for tea factory administrators. The design reflects both functional clarity and aesthetic simplicity, ensuring the app is efficient, modern, and accessible for all users.

CHAYA SMART PLUS+



CHAYA SMART PLUS+

The image displays six screenshots of the ChayaSmart Plus+ mobile application, arranged in a 2x3 grid. The app has a dark-themed interface with green and white text.

- Screenshot 1: Dashboard (Top Left)**

Shows the monthly dashboard for August 2025. It includes a search bar for employees, a summary of 7.9 kg, and a button to "View all 9 loads". The ChayaSmartPlus logo and developer information (React Native, Firebase, Supabase) are visible at the bottom.
- Screenshot 2: Search Results (Top Middle)**

A search results screen for employees, showing three entries:

Employee	NIC	Weight (kg)	Status
Employee 1	NIC000001	1023.0	this month
Employee 2	NIC000002	2000.0	this month
Employee 3	NIC000003	0.0	this month
- Screenshot 3: Add Tea Load (Top Right)**

A screen for adding tea load data. It shows today's total (247 kg) and number of entries (12). Fields for employee NIC and weight (kg) are present, along with a "Record Tea Load" button and a "Quick Entry" note.
- Screenshot 4: Add Employee (Bottom Left)**

A screen for adding a new team member. It requires input for Full Name, Address, National ID, and Mobile Number, followed by a "Add Employee" button.
- Screenshot 5: Team Profiles (Bottom Middle)**

A dashboard for managing employee profiles. It shows this month's collection total (3184.3 kg), employee ranking (51 employees), top performer (Employee 2, 2000.0 kg), and average (62.4 kg). A search bar and a list of employees with their names, IDs, and weights are displayed.
- Screenshot 6: Edit Employee (Bottom Right)**

A screen for editing an employee profile. It shows fields for NIC (fixed to NIC000002), Full Name (Employee 2), Mobile (0770251820), and Address (81 Main Street, Town 2). Buttons for "Cancel" and "Update" are at the bottom.

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The Chaya Smart Plus+ app is a茶 Estate Management System designed for tracking tea load data. It features a clean, modern design with a dark mode option.

Employee Profiles (Employee Management): Shows a search result for "Ishan". Two employees were found: "Employee 47" (Ishan) and "Ishan Nilaksha".

Employee Details (Employee 1): Displays detailed information for Employee 1 (NIC: NIC000001). The address is 54 Main Street, Town 1. The mobile number is 0726380450. The performance trend chart shows monthly tea loads from Aug 2025 to Jul 2025, with a peak of 1023.0 kg in August and a low of 0.0 kg in July.

Monthly Tea Loads (kg): A summary screen showing the best month was Aug 2025 at 1023.0 kg, with an average of 522.1 kg per load. It also displays茶 Load History for Aug 2025, showing two loads: one on Aug 7 (1000.0 kg) and one on Aug 4 (23.0 kg).

Employee Details (Employee 000001): Shows the details for Employee 000001 (Mobile: 0726380450, Address: 54 Main Street, Town 1). The filter is set to Aug 2025. A message indicates a PDF statement was generated successfully for Aug 2025.

Employee Details (Employee 000001): Shows the details for Employee 000001 (Mobile: 0726380450, Address: 54 Main Street, Town 1). The filter is set to Aug 2025. It includes an "Export PDF Statement" button and a summary box stating "Aug 2025 Summary" with a total of 1023.0 kg for 2 loads.

Save as PDF: A modal window for generating a PDF. It shows the following details:

Tea Estate Management System		Monthly Tea Load Statement	
Employee Name: Employee 1		Mobile Number: 0726380450	
NIC Number: NIC000001		Address: 54 Main Street, Town 1	
1023.0	Total weight (kg)	2	Total loads
511.5	Average per Load (kg)		
Daily Tea Load Details			
S.No	Date	Weight (kg)	
1	Aug 4, 2025	23.0 kg	
2	Aug 7, 2025	1000.0 kg	

The PDF is generated on 8/8/2025, and it is a computer-generated document.

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The Chaya Smart Plus+ mobile application provides a comprehensive overview of tea collection performance across different dimensions. The interface is designed with a dark theme and includes various charts, graphs, and summary statistics.

Overview Dashboard: Shows a total collection of 3184 kg for the month. Key metrics include 8 active employees, 9 total loads, an average of 398.0 kg per employee, and 353.8 kg per load. Employee 2 is identified as the top performer.

Analytics Overview: Displays a pie chart of top contributors (Employee 2, Employee 1, Employee 9) and a bar chart of monthly performance. Detailed breakdowns show contributions from individual employees.

Analytics (Line Chart): A line chart tracks top collection days, showing a significant peak on August 7th at 3000.0 kg.

Analytics (Employee 2): Focuses on Employee 2, showing their performance distribution across 8 contributors. They are identified as high performers.

Navigation Drawer: Provides quick access to Home, Overview, Add Load, Add User, Profiles, Sign Out, and茶 Collection Management.

FEATURES

Key Features of ChayaSmartPlus

The ChayaSmartPlus application includes a range of powerful features designed to streamline tea factory administration and improve efficiency in employee and tea load management.

Authentication & Security

Email and Password Login

Secure login system using Firebase Authentication to protect sensitive employee data.

Password Reset

Users can easily reset forgotten passwords via email using Firebase's built-in functionality.

Dashboard & Statistics

Monthly Overview Charts

Visual charts (Pie, Line, Area, Donut) showing monthly tea load trends, top contributors, and totals.

Real-time Refresh

One-tap refresh button to sync and update data instantly from Supabase.

Employee Management

Add New Employees

Admins can add full employee details (Name, NIC, Address, Mobile) to the system.

View All Profiles

A table view of all employees with monthly tea contribution summary.

Detailed Employee View

Full profile with tea load history, personal info, and cumulative weight records.

Tea Load Management

Add Daily Tea Load

Enter weight and NIC. The app auto-fetches employee details to reduce redundancy.

Monthly Tracking

Tea loads are filtered by date to show current month contributions only.

FEATURES

Key Features of ChayaSmartPlus

Search & Filter

Search Bar Integration

Easily search employees by NIC or name for quick access.

Filter by Date Range (Future Scope)

(Planned) Feature to filter tea load history across custom date ranges.

Responsive & Modern UI

Dark Mode with Branding Colors

Smooth dark theme with green and yellow highlights enhances readability and battery efficiency.

Glassmorphism & Gradient Effects

Eye-catching modern design with soft shadows, blur effects, and consistent typography.

Platform & Performance

Built with React Native + Expo

Fast, cross-platform mobile app optimized for Android.

Firebase + Supabase Integration

Firebase handles authentication.

Supabase stores and queries employee and tea load data.

Smooth Navigation

Seamless screen transitions powered by Expo Router.

Database Schema

The ChayaSmartPlus application utilizes Supabase as its primary backend database to efficiently manage and store both employee and tea load data. Supabase provides a scalable, secure, and PostgreSQL-powered platform that integrates seamlessly with modern React Native apps, making it ideal for this system.

The database consists of two primary tables: employees and tea_loads. Each table is designed to serve a specific role in managing the day-to-day operations of the tea factory.

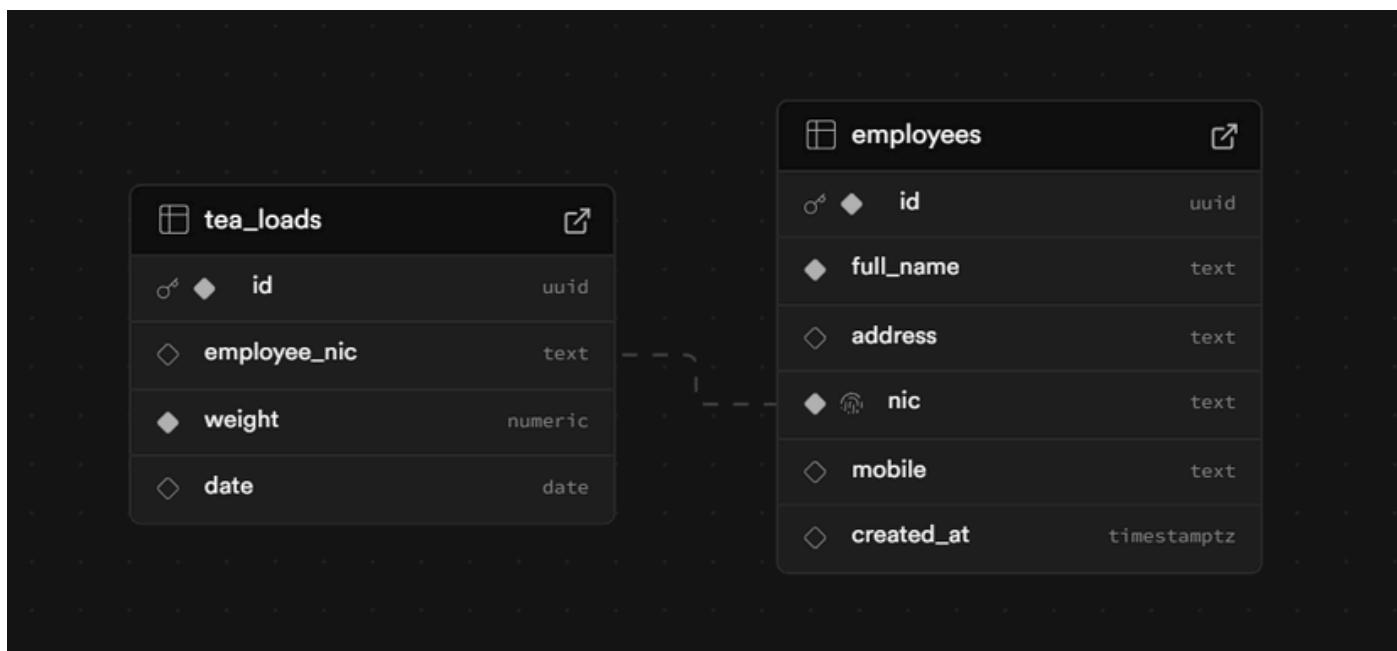
Employee Table

The employees table holds detailed information about each registered worker in the factory. Each row represents a unique employee identified by their NIC (National Identity Card) number, which serves as the primary key. In addition to the NIC, the table stores the employee's full name, address, and mobile number. This data is crucial for associating tea deliveries with the correct individual and enables quick look-up and management of employee records within the application.

Tea Load Table

The tea_loads table records daily tea leaves delivered by each employee. This table includes fields such as the weight (in kilograms), the NIC of the employee who delivered the load, and the timestamp when the load was added. Each entry in this table is linked to an employee through their NIC, forming a relational connection between the two tables. This design allows for efficient aggregation of tea contributions for any given employee over a month or a specific date range.

By structuring the database this way, the application can easily calculate totals, display trends, and fetch individual histories. The design also supports scalability, ensuring that the system can handle hundreds or thousands of entries without performance degradation.



Database Schema

```
create table public.tea_loads (
    id uuid not null default extensions.uuid_generate_v4 (),
    employee_nic text null,
    weight numeric not null,
    date date null default CURRENT_DATE,
    constraint tea_loads_pkey primary key (id),
    constraint tea_loads_employee_nic_fkey foreign KEY (employee_nic)
    references employees (nic) on delete CASCADE
) TABLESPACE pg_default;
```

```
create table public.employees (
    id uuid not null default extensions.uuid_generate_v4 (),
    full_name text not null,
    address text null,
    nic text not null,
    mobile text null,
    created_at timestamp with time zone null default timezone ('utc'::text, now()),
    constraint employees_pkey primary key (id),
    constraint employees_nic_key unique (nic)
) TABLESPACE pg_default;
```

A wide-angle photograph of a large, light-colored industrial building complex, likely a tea factory, situated in a lush, green, hilly area. The building has multiple wings and sections, with many windows and a corrugated metal roof. In the foreground, there are several smaller buildings with green roofs and some trees. The background shows dense forested hills under a clear sky.

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Implementation

The ChayaSmartPlus system was implemented using modern, scalable, and cross-platform technologies that allowed for efficient development, intuitive user interfaces, and seamless data management. The implementation process involved both the frontend and backend development, integrated through Firebase Authentication and Supabase database services.

PROJECT FUTURE

Future Developments

The current version of ChayaSmartPlus provides a solid foundation for managing tea leaves collection data efficiently. However, there are several opportunities for future enhancement and expansion:

1. Employee Attendance Tracking
2. Integrate daily attendance features using QR codes or GPS-based check-ins, providing more insights into worker performance and consistency.
3. SMS Notifications
4. Implement automatic SMS alerts to notify employees about their monthly tea delivery summaries or important announcements.
5. Role-Based Admin Panel
6. Introduce different user roles such as Manager, Supervisor, and Admin with restricted privileges to enhance security and responsibility distribution.
7. Data Analytics Dashboard
8. Add more advanced visualizations and analytics including predictive graphs, seasonal trends, and KPI dashboards to aid in decision-making.
9. Multilingual Support
10. Introduce Sinhala and Tamil language support to increase accessibility among local tea estate workers.
11. Offline Mode with Syncing
12. Enable offline data entry and automatic syncing when an internet connection is available, useful in rural or low-signal areas.
13. Web Admin Panel
14. Develop a web version of the admin dashboard for better access and control from desktop browsers.

References

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THANKS

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