
Development Of an Android Mobile App for Budget and Expense Tracking

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ABSTRACT

Effective personal financial management is crucial in the digital age, yet many salary earners struggle with tracking expenses, curbing impulsive spending, and adhering to budgets. While digital solutions exist, a gap remains for applications specifically tailored to the fixed-income cycle of salary earners, featuring automated tracking, salary-linked budgeting, and personalized insights. This study aimed to develop an Android mobile application to address these challenges. The application, named "eXpo Tracker," was built to provide users with an intuitive platform for recording daily expenses, setting spending limits, and automatically categorizing expenditures. The project adopted the Structured Systems Analysis and Design Methodology (SSADM) and the Waterfall model for its systematic approach. The application was developed using Kotlin in Android Studio, with Firebase Firestore serving as the backend for authentication and cloud data synchronization. Key features of the implemented system include secure user registration and login (with an optional 4-digit PIN for quick access), a comprehensive dashboard for financial overview, manual expense entry, budget creation and monitoring, and automated expense categorization. Rigorous testing confirmed that the application is functional, stable, and responsive, performing efficiently on Android devices. The study concludes by recommending future enhancements, including multi-platform support (iOS/Web), biometric authentication, advanced predictive analytics, and features for collaborative budgeting.

Keywords: Budgeting, Expense Tracking, Mobile Application, Android, Kotlin, Financial Management, Firebase, Financial Review, Testing, iOS/Web, Predictive Analytics, Biometrics, Security

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1. INTRODUCTION

Managing personal finances effectively has become a critical aspect of modern-day living, particularly in an era where digital transactions are predominant. Individuals often struggle to track their expenses, categorize their spending, and adhere to budgetary constraints, leading to financial instability. Mobile applications designed for financial management have gained prominence as they provide a convenient and efficient means of tracking expenditures and ensuring financial discipline (Garcia & Claour, 2021).

Expense tracking applications offer users the ability to record their daily spending, categorize their expenditures, and analyze financial habits. These features empower individuals to make informed financial decisions and optimize their financial planning. By utilizing automated tracking and categorization, these applications reduce the manual effort required to monitor spending patterns, thus fostering financial literacy and control (Singh, Gupta, & Balamurugan, 2021). A significant challenge in financial management is impulsive and untracked spending, which often results in overspending beyond one's financial capacity. Many individuals lack the discipline to record every transaction, leading to an incomplete financial picture. Mobile applications designed for tracking expenses address this issue by providing a digital solution that simplifies record-keeping and budgeting processes (Saraboji & Lakshmi, 2024).

Categorizing spending is another essential aspect of financial management. Without proper classification, individuals may struggle to identify non-essential expenditures and prioritize savings. Expense tracking applications employ artificial intelligence and machine learning algorithms to automatically categorize transactions, providing users with insights into their spending behaviors and helping them develop better financial habits (Singla et al., 2024). Budgeting plays a crucial role in ensuring financial stability by setting spending limits based on income and financial goals. Traditional budgeting methods, such as spreadsheets or manual logs, can be cumbersome and error-prone. Mobile applications offer automated budget-setting features that provide real-time notifications and alerts when spending exceeds predefined limits, thereby promoting disciplined financial behavior (Garcia & Claour, 2021).

Salary earners often struggle to manage their finances effectively due to poor expense tracking, impulsive spending, and weak budgeting habits. Many still depend on manual methods such as handwritten logs or spreadsheets, which are time-consuming, error-prone, and lack real-time updates (Singh, Gupta, & Balamurugan, 2021). This inefficiency often leads to overspending, poor savings discipline, and difficulty achieving long-term financial goals. Although digital financial tools exist, most are not designed specifically for salary earners. Many lack features that align with fixed income cycles, such as salary-based budget planning, expense categorization, and predictive reminders. Existing systems, like that of Singh et al. (2021), focus on general users without addressing the periodic nature of salaried income. As a result, there is a gap in developing an integrated financial management system that automates expense tracking, supports salary-linked budgeting, and provides personalized insights tailored to the financial behaviour of salary earners.

This Research work, therefore, was conceived to bridge this gap. The central aim of this study is to design and implement a mobile application that enables users to track their expenses, categorize spending, and set budgets effectively. To realize this vision, the following specific, measurable objectives were established:

- i. To integrate a budgeting feature that enables users to set spending limits and receive notifications when limits are exceeded.
- ii. To implement an expense categorization feature that classifies expenditures based on predefined categories.
- iii. To develop a user-friendly android mobile application that integrates objective (i) and (ii) and allows users to record and track their daily expenses and
- iv. To carry out an evaluation on the efficiency of the app.

2. LITERATURE REVIEW

A mobile application, commonly referred to as a mobile app, is a software program specifically designed to run on mobile devices such as smartphones and tablets. These applications enhance user experience by providing various functionalities, ranging from social networking to financial management (Sabab, Islam, Rana, & Hossain, 2018). Unlike traditional desktop software, mobile applications are optimized for smaller screens and touch-based navigation, allowing users to access services conveniently on the go (Garcia & Claour, 2021). The rapid advancement of mobile technology has led to the proliferation of mobile applications across different industries, including healthcare, education, banking, and entertainment (Saraboji & Lakshmi, 2024).

Mobile applications are often developed using programming languages such as Java, Swift, Kotlin, and React Native, depending on the platform for which they are intended (Singh, Gupta, & Balamurugan, 2021). The global adoption of mobile applications has been driven by increasing smartphone penetration, internet accessibility, and advancements in cloud computing (Singla, Kaur, Soni, Dhaiya, & Kaur, 2024). As a result, mobile applications have become an essential tool for modern-day consumers, allowing them to perform various tasks efficiently (Chandini et al., 2019). Mobile applications are designed with various features to enhance user engagement and usability (Yurochkin et al., 2021). One of the key features of mobile apps is their intuitive user interface (UI), which ensures seamless navigation (Sabab et al., 2018). Personalization options, such as customizable themes and notification settings, further enhance the user experience (Garcia & Claour, 2021).

Mobile application development refers to the process of designing, creating, testing, and deploying software applications for mobile devices such as smartphones and tablets (Kumar & Singh, 2024). The development process involves multiple stages, including requirement gathering, interface design, coding, testing, and maintenance. The demand for mobile applications has significantly increased due to the widespread use of smartphones and internet services (Raj et al., 2021). Organizations across different sectors are investing in mobile applications to enhance user experience, streamline business operations, and improve customer engagement (Chandini et al., 2019).

Developing a mobile application requires knowledge of programming languages, frameworks, and tools tailored to specific operating systems (Garcia et al., 2021). Android applications, for instance, are primarily developed using Java or Kotlin, while iOS applications are built with Swift or Objective-C (Raj et al., 2021). Additionally, developers use integrated development environments (IDEs) such as Android Studio and Xcode to create, debug, and optimize mobile applications (Garcia et al., 2021). The choice of development platform and technology stack depends on the application's target audience, functionality, and budget (Raj et al., 2021).

A budget and expense tracking system is a financial management tool designed to help individuals, businesses, and organizations monitor their income, expenses, and financial goals (Singh et al., 2021). Effective budget management is essential for financial stability, as it enables users to allocate resources wisely, reduce unnecessary expenditures, and maintain financial discipline (Chandini et al., 2019). Expense tracking systems allow users to categorize spending, identify trends, and make data-driven decisions to optimize their financial plans (Saraboji et al., 2024).

With the increasing reliance on digital technology, automated budgeting systems have replaced traditional manual tracking methods, offering real-time insights and analytics (Capucão et al., 2020). These systems can be implemented as standalone software, mobile applications, or integrated financial platforms with advanced functionalities (Sabab et al., 2018). Features such as automated expense categorization, predictive analytics, and cloud synchronization enhance efficiency and accessibility (Johri et al., 2023).

Organizations utilize budget and expense tracking systems to streamline financial reporting, ensure compliance with financial policies, and improve overall financial management (Bhatele et al., 2023). Small businesses and startups, in particular, benefit from these tools as they provide cost-effective solutions to manage cash flow and financial forecasting (Singla et al., 2024). As financial management evolves, modern expense tracking systems incorporate artificial intelligence (AI) and machine learning (ML) to offer personalized recommendations and fraud detection (Sonone, 2025).

2.1 Review of Related Works

Sabab et al. (2018) conducted a study on the eExpense application, which employs a smart approach to track everyday expenses. The authors focused on developing a system that integrates real-time tracking with automated categorization, providing users with insights into their financial habits. Through a prototype evaluation, they found that the application successfully enabled users to visualize their expenditures and adhere to set budgets. The study concluded that the system's simplicity and efficiency made it a valuable tool for financial planning, particularly for individuals seeking to reduce unnecessary spending. This empirical study highlights the importance of real-time tracking and categorization in promoting financial discipline.

Garcia and Claour (2021) explored the Mobile Bookkeeper application, which incorporates a receipt scanner utilizing optical character recognition (OCR) for automated expense entry. This study, which involved a sample of 150 users, showed that OCR significantly reduced the time and effort required for manual data entry. Moreover, users were able to categorize expenses more accurately, leading to improved budgeting outcomes. The study suggests that the integration of OCR technology in budgeting apps can streamline expense tracking, making financial management more accessible and less time-consuming for users.

Saraboji and Lakshmi (2024) examined an Expense Tracker application, focusing on its ability to categorize and track daily expenses. The study utilized a survey method to assess user satisfaction and engagement with the app. Results indicated that 85% of users found the categorization feature highly useful in managing their daily expenses. The study concluded that categorizing expenses into predefined groups helped users identify trends in their spending behavior, thus allowing them to make more informed financial decisions. The app's simplicity and ease of use were also highlighted as key factors contributing to its success.

Singh, Gupta, and Balamurugan (2021) developed a Spending Tracker that offers users a smart approach to managing their daily expenses. The app uses machine learning algorithms to analyze spending habits and provide personalized recommendations. Through a sample size of 200 participants, the study found that users who received these personalized suggestions were 40% more likely to stick to their budgets. The study emphasized the role of machine learning in improving the accuracy of expense tracking and tailoring financial advice to individual users.

Singla et al. (2024) investigated the Daily Expense Tracker System, which aims to provide users with financial insights by tracking their spending patterns. The study found that the app's visualization features, which include pie charts and spending reports, were particularly effective in helping users understand their financial habits. 70% of participants reported feeling more in control of their finances after using the system for two months. The research suggests that the integration of data visualization tools enhances user engagement and makes financial tracking more interactive and informative.

Chandini et al. (2019) developed an Online Income and Expense Tracker, focusing on a cloud-based system for tracking personal finances. The study involved 100 users who tested the app over a three-month period. The findings indicated that users preferred the online nature of the application as it provided them with real-time access to their financial data, regardless of location. Furthermore, users found the application's ability to integrate both income and expenses particularly helpful for maintaining a balanced financial overview. The study highlighted the potential of cloud-based systems in ensuring consistent access and convenience in expense tracking.

Johri et al. (2023) developed an Expense Management System that offers an integrated solution for tracking expenses, creating budgets, and setting spending limits. The empirical evaluation of the system involved 250 users and focused on user satisfaction and the system's impact on financial discipline. The study showed that 80% of users felt more confident in managing their finances after using the system, with many users reporting a decrease in monthly overspending. The research concluded that systems combining multiple financial tools, including budgeting and expense tracking, can significantly improve financial management.

Raj et al. (2021) proposed a Digital Billing and AI-Based Expense Tracking System designed to automate expense categorization and generate financial reports. The study, conducted with a sample of 500 users, demonstrated that the AI-powered system improved budgeting accuracy and reduced manual errors. The system's ability to predict future spending based on historical data was particularly valued by users, as it enabled them to plan better for upcoming expenses. The authors concluded that AI has great potential in the financial technology sector, especially in providing users with personalized and predictive budgeting solutions.

3. MATERIALS AND METHOD

The methodology adopted for this study was the Structured Systems Analysis and Design (SSAD) and the model that will be used in the software design will be the Waterfall Model. The design phase, Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS) will be employed to structure and design the interface, ensuring visual appeal and ease of navigation. The development phase will utilize the PHP programming language for backend operations, facilitating seamless integration with the MySQL database for robust data management. Through a modular implementation approach, each system component will be systematically developed and integrated to ensure functionality and interoperability. Rigorous testing procedures, encompassing unit, integration, and user acceptance testing, will then be undertaken to ensure system reliability and security.

System Architecture

The system is designed using a three-tier architecture, which ensures modularity, scalability, and easy maintenance as presented in figure 1. These three tiers include:

- **Presentation Layer (Mobile Frontend):** This layer serves as the user interface and runs on Android or iOS devices. It allows users to input transactions, view financial summaries, set budgets, and receive alerts. The frontend is developed using a mobile framework such as Flutter or React Native for cross-platform compatibility.
- **Application Logic Layer (Backend Services):** The middle layer contains the core business logic, handling data processing, budget calculations, alert scheduling, and transaction categorization. It mediates communication between the frontend and the database or cloud storage, ensuring data integrity and rule enforcement.
- **Data Layer (Storage):** This includes both local (SQLite) and cloud storage options (Firebase) for storing financial data securely. Local databases enable offline functionality, while cloud integration ensures backup, synchronization, and access across multiple devices. Data in the cloud is encrypted and accessible only through authenticated sessions. Security measures such as user authentication, data encryption, and access control are implemented at each tier to protect user information. The system also supports offline-first architecture, syncing data once the device reconnects to the internet.

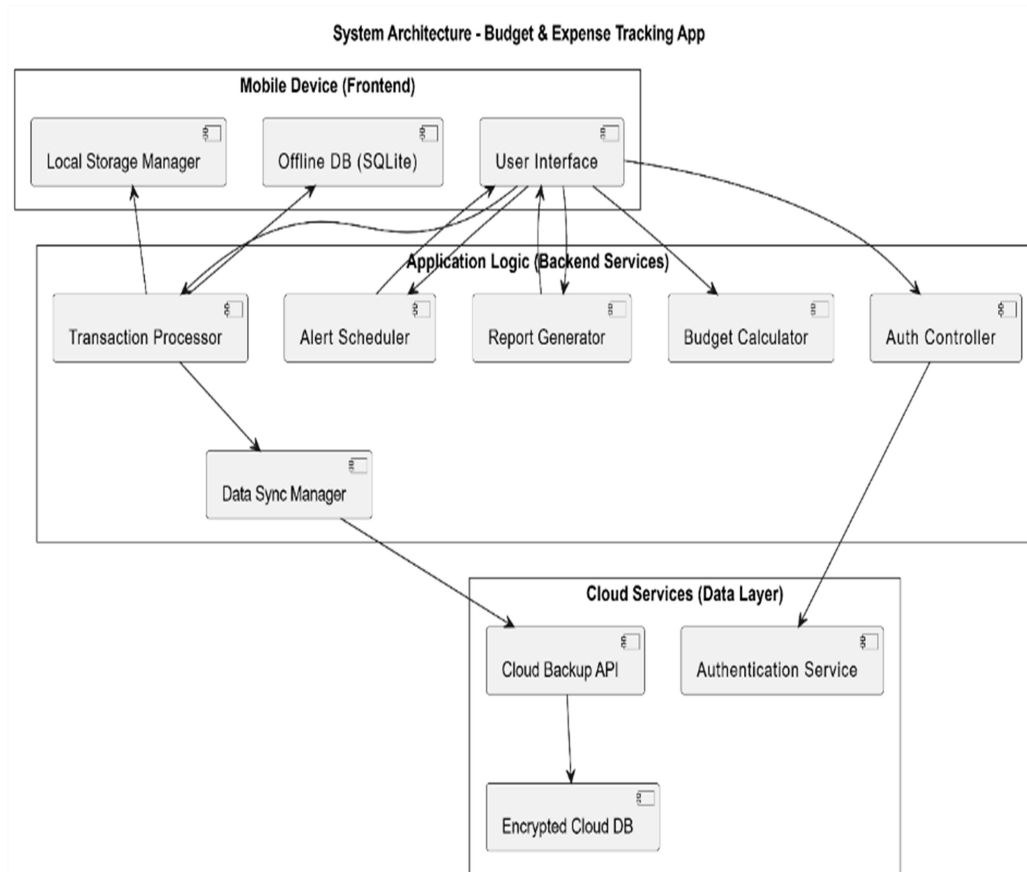


Figure 1: System Architecture

Table 1: Input Specification

Input	Description	Format	Source
User Login Credentials	Email/username and password for secure access	Text (String)	User
Income Details	Amount, source, and date of income entry	Float, Text, Date	User
Expense Details	Amount, category, description, and date of expense	Float, Text, Date	User
Budget Limit	Monthly/weekly budget for specific categories or general spending	Float, Category (Text)	User
Currency Selection	Preferred currency symbol/code (₺)	String	User
Reminder Settings	Notification time, frequency, and type (budget limit, payment, etc.)	Time, Boolean, Text	User
Sync Option	Enable/disable cloud synchronization	Boolean	User
Theme/Preferences	Light/dark mode, language, number format	String	User

The mobile application begins with the collection of user login credentials, which include a username or email and a password as shown in table 1. This ensures that only authorized users can access their financial records, providing a secure environment for sensitive data. Once authenticated, users can input income details such as the amount received, its source (e.g., salary, freelance job, gift), and the date of the transaction. This input helps the system accurately calculate total earnings over time. Similarly, users enter expense details, specifying the amount spent, a descriptive category (such as food, transport, or utilities), an optional description, and the date. These details are essential for organizing and analyzing expenditures.

Table 2: Output Specifications

Output	Description	Format	Destination
Login Status	Success or failure message	Text (Success/Error)	Mobile App Interface
Dashboard Summary	Overview of total income, expenses, and balance	Visual (Graph/Text)	User Interface
Budget Utilization Report	Bar or pie chart showing budget usage across categories	Chart/Graph	User Interface
Notifications/Reminders	Alerts for overspending, due dates, or goal tracking	Push Notification	Mobile Notification
Transaction History	List of recorded transactions with filters	Table/List View	Mobile App Interface
Expense Trends	Line graph of spending behavior over time	Graph	User Interface
Backup Confirmation	Success/failure message after sync to cloud	Text (Success/Error)	App Notification Area
User Profile Settings	Display of selected preferences and option to update	Form/View	Settings Page

After processing the inputs, the system delivers several key outputs as shown in table 2, starting with the login status, which notifies users whether access was granted or denied based on the provided credentials.

Once logged in, users are presented with a dashboard summary, which displays a real-time overview of total income, total expenses, and the current financial balance, offering a quick snapshot of their financial health. The system also generates a budget utilization report, usually in the form of charts or progress bars, that shows how much of the set budget has been used within each category, helping users identify areas of overspending or savings. In addition to visual reports, the app sends notifications and reminders as scheduled by the user, such as alerts for reaching budget limits or reminders for upcoming payments.

These notifications are delivered through the mobile system's push service. Users can also view their complete transaction history, where all income and expense records are listed with filters for date, category, or amount. This helps users analyze past financial behaviour in detail. The app also provides expense trends, presented in the form of graphs that track spending over time, which aids in understanding financial patterns and making informed budgeting decisions.

When data synchronization is enabled, the system generates a backup confirmation output, confirming whether the data was successfully saved to the cloud, offering reassurance that financial records are securely preserved. Finally, the app displays the user profile settings, where the current preferences such as theme, language, and sync status are shown, with options to edit them. This output supports a highly customizable and user-centric application experience.

Use Case Diagram

The use case diagram for the Budget and Expense Tracking Mobile App illustrates the interaction between the user and the system's core functionalities in a top-down layout as shown in figure 2. The user, as the primary actor, engages with various features such as registering an account, logging in, adding income and expense records, setting budget limits, and viewing financial summaries. Additional functions include generating reports, setting reminders, changing app preferences, syncing data to the cloud, and logging out. Each of these use cases represents a specific task the user performs within the application. The diagram also shows an interaction with the cloud service, which occurs during data synchronization to ensure secure backup and multi-device access. This vertical structure clearly organizes the flow of user-system interactions, making it easier to visualize the comprehensive capabilities of the app from a user's perspective.

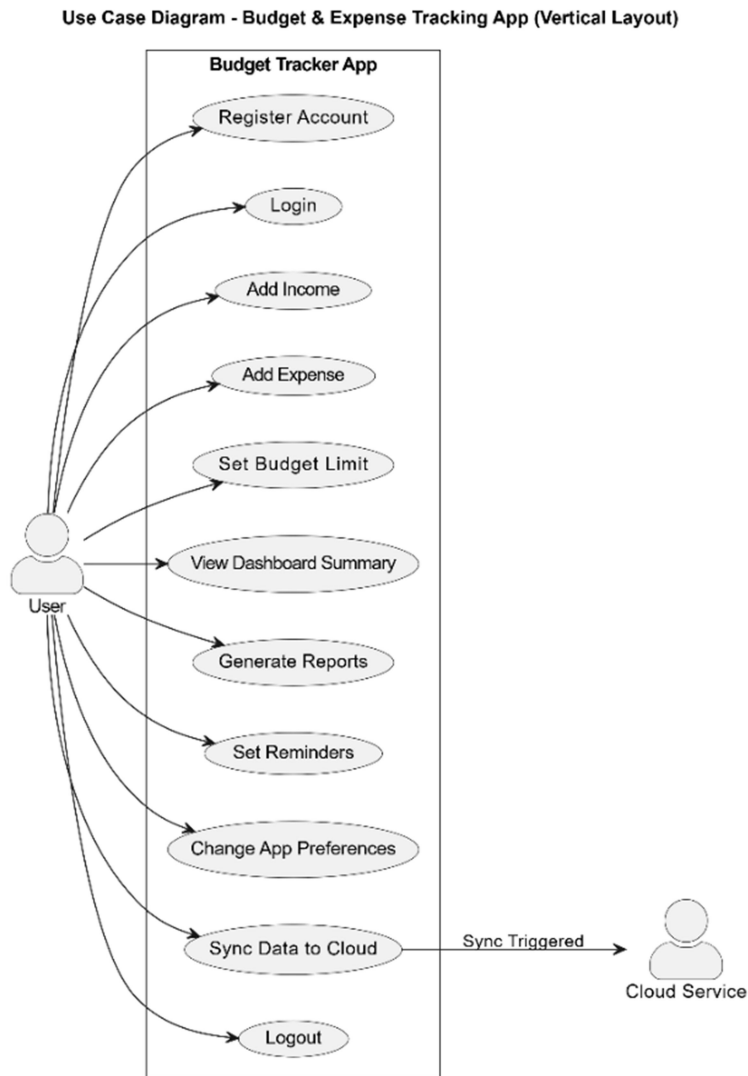


Figure 2 Use Case Diagram

System Requirements

For the development and smooth running of the Expense Tracker mobile application, both software and hardware requirements were considered.

- **Software Requirements:** The version of Android Operating System (OS) should not less than Android 8.0 (Oreo) or higher, Android Studio (latest stable version) as the Development Environment, Kotlin as the Programming Language, Firebase Firestore (for cloud storage and synchronization) as the Database, Git and GitHub as the Version Control, Gradle serve as Build Tools and and Installation of Firewall.
- **Hardware Requirements:** The computer to install and run the application should have Developer Machine for Development, with a Processor: Intel Core i5 or higher, Minimum 8GB

RAM, Storage capacity of 256GB SSD or higher, Windows 10 / macOS / Linux as the Operating System, Android Emulator (Pixel series recommended) as the Emulator and Installation of firewall.

- **For End Users (Mobile Devices):** Android Smartphone serve as the mobile Device: with a Minimum 2GB RAM, Minimum Storage 50MB free space, 5.0 inches Screen Size and above (responsive design supported) and Internet Connection is required for synchronization.

4. DISCUSSION OF THE RESULTS

The application consists of several interfaces that allow the user to authenticate, create security credentials, and manage expenses and budgets. Each interface is described below with figures showing the implementation.

- The first objective was to integrate a budgeting feature that allows users to set spending limits and receive notifications when those limits are exceeded. This was achieved by creating a budget module in the mobile application where users can enter their monthly income and set a maximum amount for different expense categories. The system automatically tracks all spending and sends alerts once a user reaches or exceeds the set limit.
- The second objective was to implement an expense categorization feature that classifies expenditures based on predefined categories. This was achieved by designing a function that automatically assigns each expense to a category such as food, transport, bills, or entertainment. Users can also add new categories or modify existing ones, making it easy to organize and understand their spending habits.
- The third objective was to develop a user-friendly Android mobile application that combines the budgeting and expense categorization features and allows users to record and track their daily expenses. This was achieved by developing the application using Android Studio with an intuitive interface that is easy to navigate. The app integrates both the budgeting and categorization systems so users can view their spending reports, set limits, and monitor expenses in one place.
- The fourth objective was to test and evaluate the app. This was achieved through functionality testing to ensure all features worked as expected and user testing to confirm that the interface was simple and effective.

Login Page

Figure 3 shows the login page of the system. This page is the first interface the user encounters upon launching the application. It provides fields for the user to enter their email and password to gain access to the system. Additionally, it contains links for creating a new account and for password recovery in case the user forgets their login credentials. This ensures both security and easy account management.

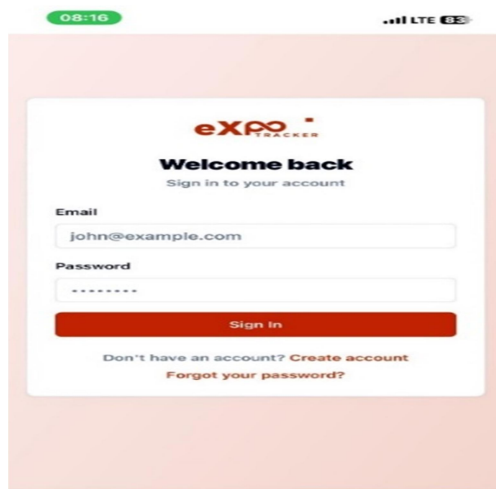


Figure 3: Login Page

Create Account Page

This page allows new users to register by providing the required details such as name, email, and password as shown in figure 4. The purpose of this interface is to capture user information and store it securely in the database, enabling the user to have a personalized expense tracking account.

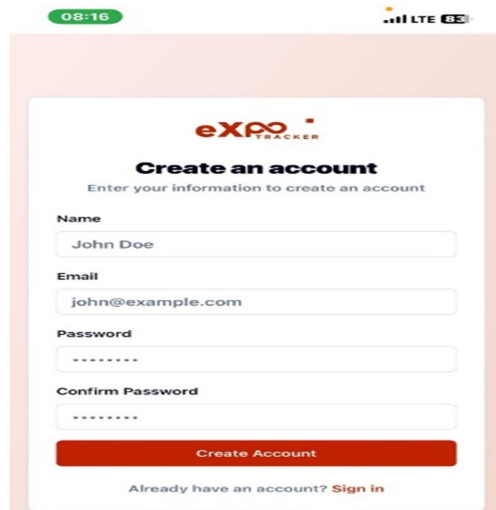


Figure 4: Create Account Page

After account creation of account, the system prompts the user to set up a 4-digit PIN. This PIN provides quick access to the account in subsequent logins without requiring email and password every time. At the confirm pin page, the user re-enters the PIN created in the previous step to ensure accuracy and avoid errors. This confirmation step guarantees that the user remembers their chosen PIN and prevents unintended lockouts. It enhances both convenience and security as shown in figure 5.

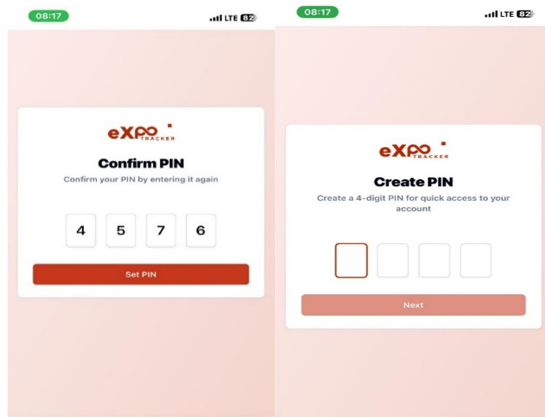


Figure 5: Create and Confirm Pin

Dashboard Page

Figure 6 shows the dashboard page, which is the main interface of the application after successful login. The dashboard provides a summary view of the user’s financial data, including:

- Total expenses for the month,
- Highest single expense,
- Active budgets within limits.

The dashboard also provides quick navigation to other parts of the application such as expenses, budgets, and categories, making it the central hub of the system.

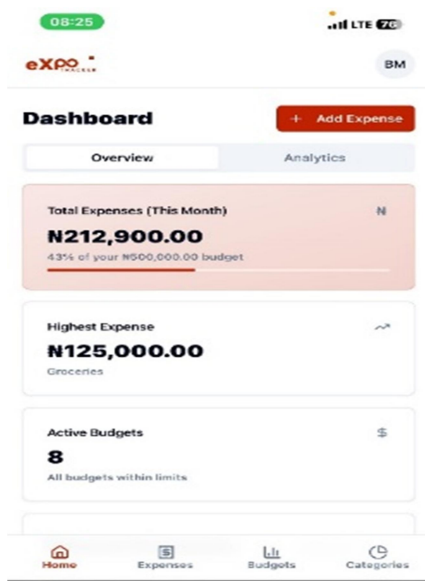


Figure 6: Dashboard

Budget Page

This page enables users to set spending limits across different categories such as food, transport, utilities, and others. The purpose is to help users plan and monitor their finances effectively by ensuring they do not overspend in specific areas. The budget overview page provides detailed information about each active budget, including the amount spent versus the set budget, percentage of budget utilization, and remaining balance. It helps users track their financial discipline and make informed spending decisions as shown in figure 7.

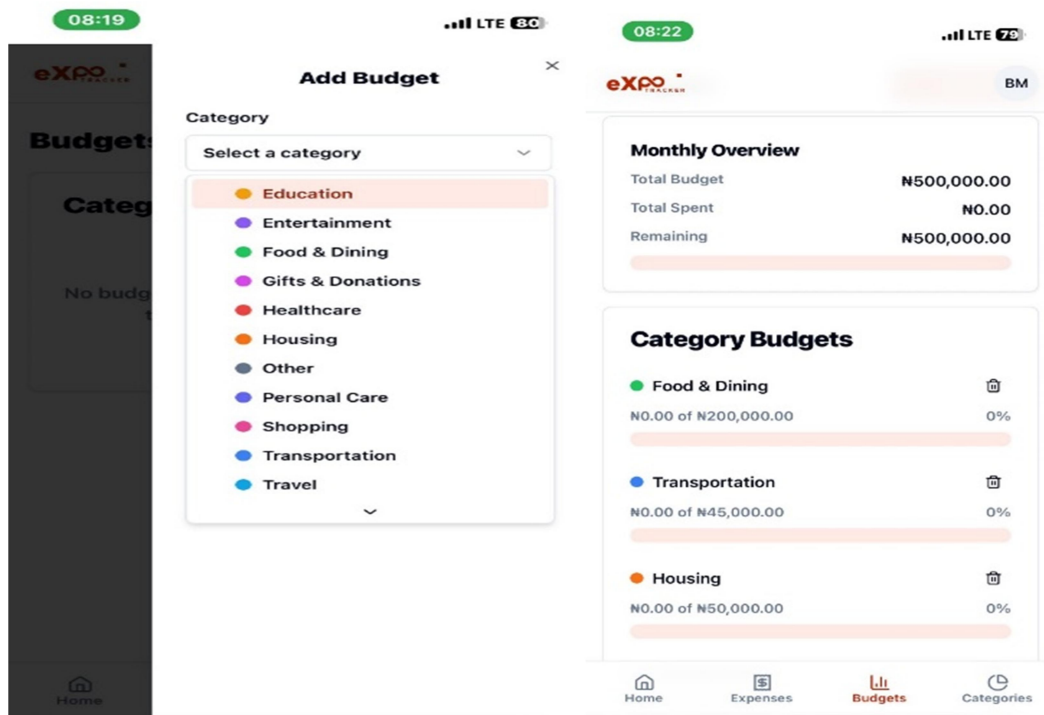


Figure 7: Budget Page

Expense Page

Figure 8 displays the expense page where users can add new expenses and view all recorded expenses. Each expense entry includes details such as amount, category, and date. This page is central to the expense tracking functionality of the system as it serves as the record-keeping interface. The expense overview page. This page presents all expenses in a summarized manner, showing the total amount spent, categorized breakdowns, and date-wise listings. It allows users to review their spending patterns over time.

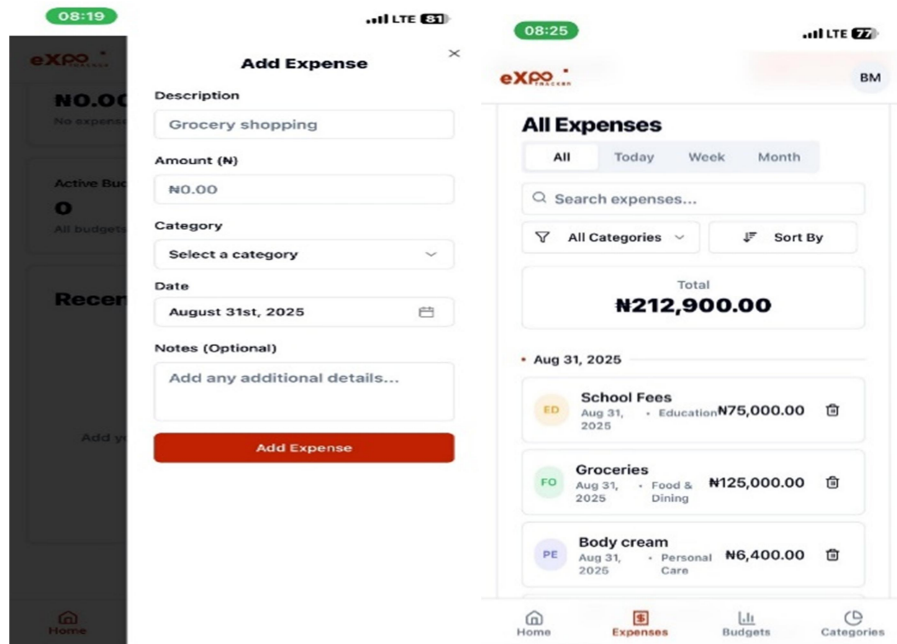


Figure 8 Expense Page

Discussion

The development of the Expense Tracker mobile application was carried out using Kotlin as the programming language and Android Studio as the Integrated Development Environment (IDE). The choice of Kotlin was primarily influenced by the fact that it is the official programming language recommended by Google for Android app development. Kotlin provides a modern and concise syntax that reduces boilerplate code, making development faster and more efficient compared to Java. Its strong type system and null safety features help in minimizing runtime errors, while its support for coroutines makes it suitable for handling asynchronous tasks such as real-time expense updates and data synchronization with Firebase. These features ensured that the application was not only reliable but also maintainable and scalable for future improvements.

Android Studio was chosen as the development environment because it is the official IDE for Android and provides a robust set of tools tailored specifically for mobile application development. It offers features such as an advanced layout editor for designing user interfaces, a built-in emulator for testing across different devices, real-time debugging, and Gradle-based build automation. The IDE also integrates seamlessly with Firebase services, which were used in this project for authentication and cloud-based database management. By combining Kotlin with Android Studio, the development process was streamlined, the quality of the application was improved, and deployment to Android devices was made more efficient.

5. PERFORMANCE TESTING

Performance testing was conducted to evaluate the responsiveness, stability, and efficiency of the mobile version of the Expense Tracker application. The goal was to ensure that the app performs smoothly on mobile devices under normal and peak usage conditions.

The following performance metrics were tested:

1. **Application Launch Time:** The app's startup time was measured from the moment the user tapped the app icon until the login screen appeared. On average, the application launched within 2–3 seconds, which is acceptable for a mobile application.
2. **Login and PIN Authentication Speed:** Authentication through email and password, as well as quick access via PIN, was tested. The app consistently completed authentication in less than 2 seconds, ensuring users could access their accounts without noticeable delay.
3. **Dashboard Responsiveness:** The dashboard, which provides an overview of expenses and budgets, was tested for data loading time. Updates to expenses and budgets were reflected almost instantly on the dashboard with no lag, demonstrating high responsiveness.
4. **Expense Entry Performance:** The process of adding new expenses was tested repeatedly. Each entry was successfully saved and updated in the system within 1 second, and the changes were immediately visible in the expense list and dashboard overview.
5. **Budget Tracking and Updates:** Budget creation, modification, and deletion were tested to verify real-time updates. The app recalculated budget balances and percentages instantly, with smooth transitions between the budget and overview pages.
6. **Memory and Battery Usage:** The app was monitored for memory consumption and battery drain during prolonged use. The application demonstrated efficient memory usage and had a minimal impact on battery life, making it suitable for daily use on mobile devices.
7. **Offline Handling and Data Sync:** The app was tested in offline mode by disabling the network connection. Users could still access stored data and records, although new entries were saved locally. Once the connection was restored, the app successfully synchronized the offline data with the server.
8. **Multi-Device Responsiveness:** The app was tested across different screen sizes (small, medium, and large smartphones). The user interface adapted seamlessly, and navigation remained consistent across devices.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

In conclusion, the project successfully achieved its objectives by producing a functional Android mobile application that simplifies budget management and expense tracking for individual users. The system allows users to securely log in, record daily expenses, categorize their spending, and create budgets that can be monitored through a responsive and interactive dashboard. By integrating Firebase for authentication and cloud storage, the application ensures both data security and accessibility. The development and testing process demonstrated that the system is efficient, reliable, and capable of supporting individuals in achieving better financial discipline. Although some advanced features were not implemented, the application stands as a useful tool for personal financial management and provides a solid foundation for future enhancements.

6.2 Recommendations

1. **Centralized Money Management:** Adopt the software to replace scattered records and banking apps with a single, organized platform that keeps all financial information in one place.
2. **Improved Data Security:** Use the software for its strong protection measures, including biometric and layered password options, which safeguard sensitive personal and financial data.
3. **Insightful Financial Analysis:** Implement the system to gain clear spending trends and forecasts, helping users make better budgeting and saving decisions.

4. **Shared Budgeting for Groups:** Encourage adoption for families, roommates, or small teams so everyone can view and manage shared expenses without confusion.
5. **Automatic, Real-Time Updates:** Recommend the software because it links directly to banks and payment services, ensuring transactions are captured instantly and accurately.

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