

Need Analysis Document

Project: AI Expense Tracker

1. Introduction

Managing personal and business finances can be complex and time-consuming. Users need efficient and smart tools to accurately track expenditures, gain insights into spending habits, and automate reporting for better financial health. The AI Expense Tracker aims to simplify this process using modern technology and intelligent features.

This project aims to build a robust system using the **MERN Stack (MongoDB, Express, React, Node.js)** that utilizes AI and advanced data aggregation to automate transaction tracking and provide deep financial insights.

2. Problem Statement

- **Manual tracking is tedious and error-prone:** Users struggle to manually log every transaction, leading to incomplete or inaccurate financial records.
- **Difficulty in data entry:** Inputting transaction details from physical receipts is slow.
- **Lack of clear financial overview:** Users need advanced visualizations and breakdowns to understand where their money is going.
- **Time-consuming monthly reporting:** Generating comprehensive financial summaries for personal or business use is a significant chore.

3. Quantification

A Google Form survey with 41 responses was conducted to quantify the market need and validate the proposed features. The key findings strongly support the development of an AI-powered solution:

Finding	Survey Result	Implication for Project
High Importance of Tracking	70.7% of respondents rated tracking expenses as a '5' on a 1-5 scale.	Confirms a critical user need for effective expense management tools.

Finding	Survey Result	Implication for Project
Current Method Pain Points	80.5% find tracking Too Time-consuming ; 80.5% face Difficulty Categorizing Expenses ; 78% report Manual Data Entry Errors .	Directly validates the need for AI Receipt Scanning and Automatic Categorization features.
Appeal of AI Solution	The idea of an AI-powered tracker that automatically scans receipts received an Average Rating of 4.17/5 , with 63.4% rating it '4' and 29.3% rating it '5'.	Shows overwhelming market acceptance and demand for the core AI automation feature.
Feature Demand	Automatic receipt scanning and Automatic categorization were tied as the most valuable features, both desired by 85.4% of respondents.	Prioritizes the development of the Upload & Scan Receipt with AI and robust data pipelines.
Analytic Needs	Financial reports and insights and Real-Time Analytics were each deemed valuable by 75.6% of users.	Confirms the necessity of the Beautiful Advanced Analytics and Auto-Generated Monthly Report features.

This data confirms that the primary pain points in current expense management are **time, manual errors, and a lack of intelligent insights**, all of which the AI Expense Tracker is designed to solve.

4. Objectives

- Implement secure **Authentication (Email + Password with JWT)** for user data safety.
- Develop functionality to **Create & Edit Transactions** accurately
- Integrate an **AI capability to Upload & Scan Receipts** to automate transaction entry.

- Provide **Beautiful Advanced Analytics** including **Expenses Breakdown Pie Chart** and **Income & Expense Line Chart** powered by a **MongoDB Aggregate Pipeline**.
- Enable flexible transaction filtering by **Date Ranges** (e.g., Last 30 Days).
- Implement **Recurring Transactions with a Cron Job** for automated, scheduled entries.
- Develop a system for **Auto-Generated Monthly Reports (Emailed to User)**.

5. Stakeholders

- Individuals seeking better personal finance management.
- Users who frequently deal with physical receipts and paper trails.
- Small Business Owners and Freelancers need automated expense tracking for tax and compliance.

6. Business Need

- **Save time and effort** by automating data entry through AI receipt scanning.
- **Improve financial decision-making** by providing clear, detailed, and accurate insights through advanced analytics.
- **Reduce risk** of losing receipts or misclassifying expenses for budgeting and tax purposes.
- Offer a **competitive advantage** over basic trackers through advanced features like recurring transactions and automated reports.

7. Requirements

Functional Requirements:

- **User Management:** Secure user registration, login, and data storage using JWT.
- **Transaction Management:** CRUD (Create, Read, Update, Delete) for transactions.
- **AI Receipt Processing:** Ability to process an uploaded image and extract transaction details (merchant, amount, date).
- **Data Aggregation & Reporting:** Implementation of MongoDB Aggregate Pipelines for **Advanced Analytics** and generating **Monthly Reports**.
- **Scheduling:** Use of a **Cron Job** to manage **Recurring Transactions** and trigger monthly report generation.
- **Data Import/Export:** Support for **CSV transaction Import**.

Non-Functional Requirements:

- **Security:** Robust security for financial data and authentication (using JWT).
- **Usability:** A **User-friendly Interface** (React-based Dashboard) for ease of tracking and visualization.

- **Performance/Scalability:** Fast loading of analytics and efficient handling of a growing number of transactions.
- **Accuracy:** High accuracy in **AI Receipt Scanning** and data aggregation.

8. Success Criteria

- The AI receipt scanner successfully extracts transaction data with an accuracy rate of over 90%.
- Users find the system easy to use and state the analytics (charts) provide genuinely useful financial insights.
- All key features (Authentication, Recurring Transactions, Monthly Report Email) function reliably underload.
- The system can process and display analytics for a large volume of transactions quickly and efficiently.