

# Savvy



Personal Finance Management Application

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# Agenda

- Introduction and motivation
- Problem and objectives
- Related work common features
- Feature matrix
- Scientific background
- Software models
- SWOT analysis
- Prototype



22/01/2025

# Savvy

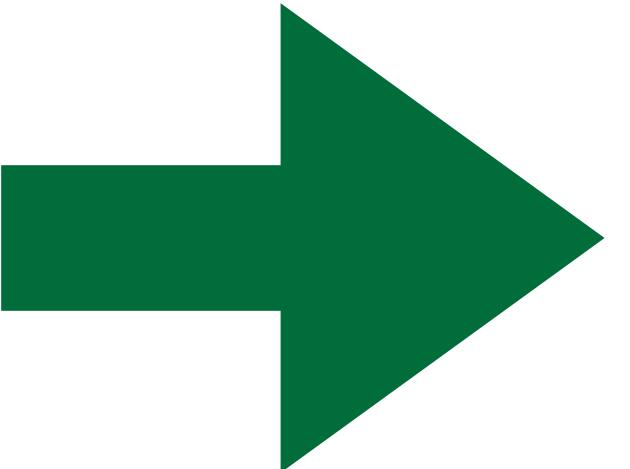


Personal Finance Management App



# Why Savvy?

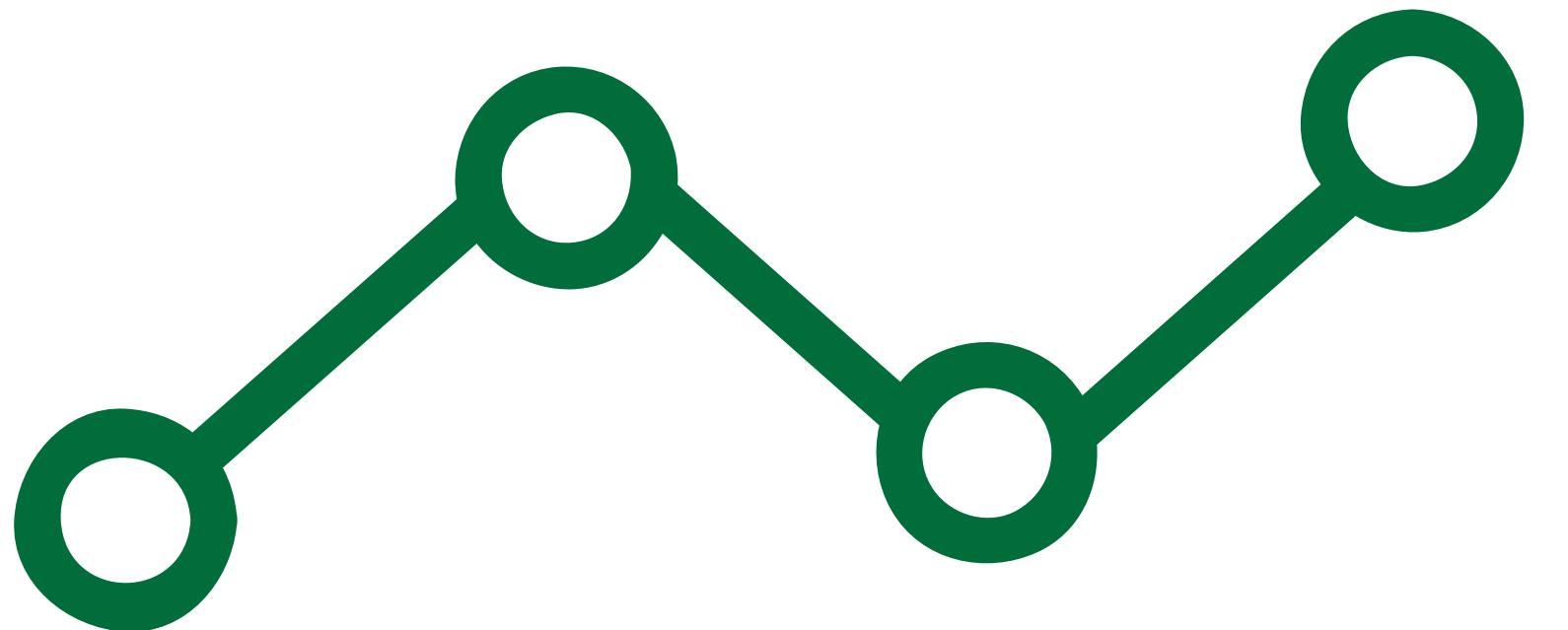
Many people struggle with managing their finances effectively



Overspending  
poor budgeting



**More reasons why Savvy is needed  
will be clarified**

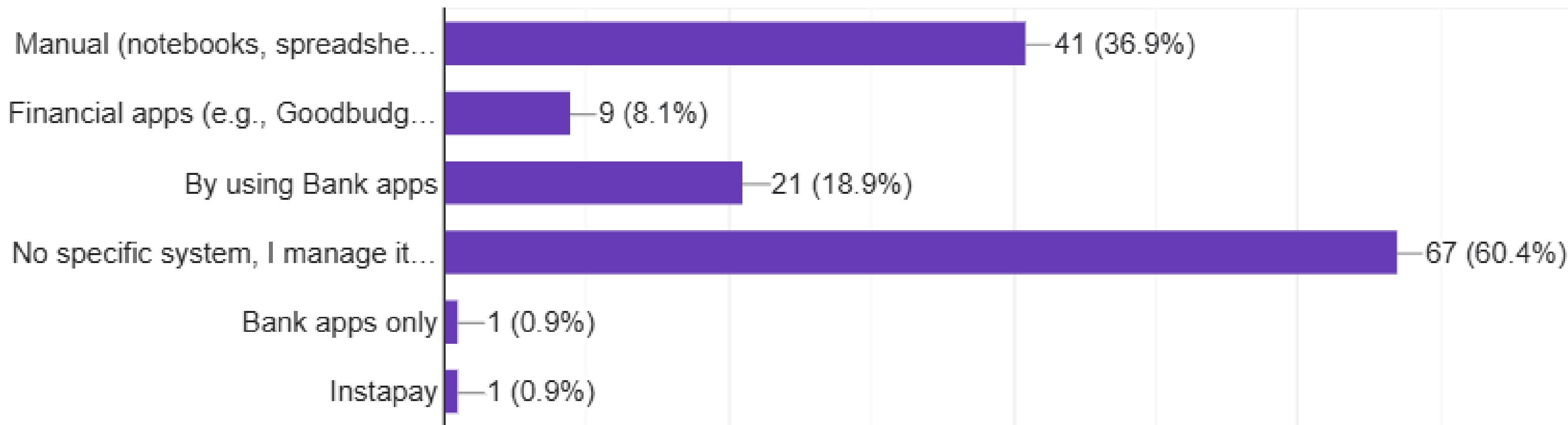


# Survey Overview



# Why Savvy is needed?

Many individuals, especially young people, struggle with managing their finances effectively due to a lack of financial literacy, discipline, and accessible tools.



# Why Savvy is needed?

common challenges people face include:

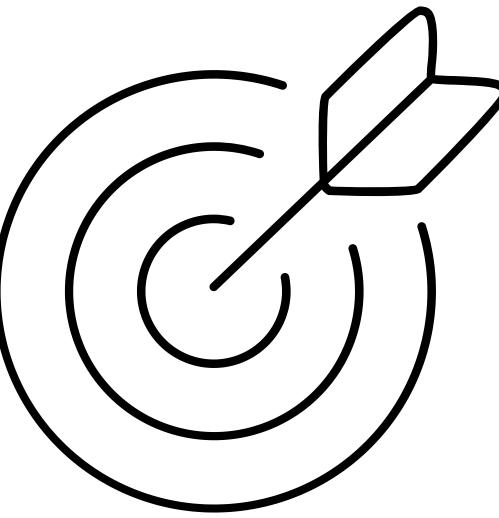
- Overspending due to lack of awareness.
- Failure to set and achieve financial goals.
- Laziness

# Why Savvy is needed?

Existing financial tools can be:

- too complex or difficult to use
- not globally used
- not free
- not personalized to users' needs
- lacking automation for easy tracking and budgeting



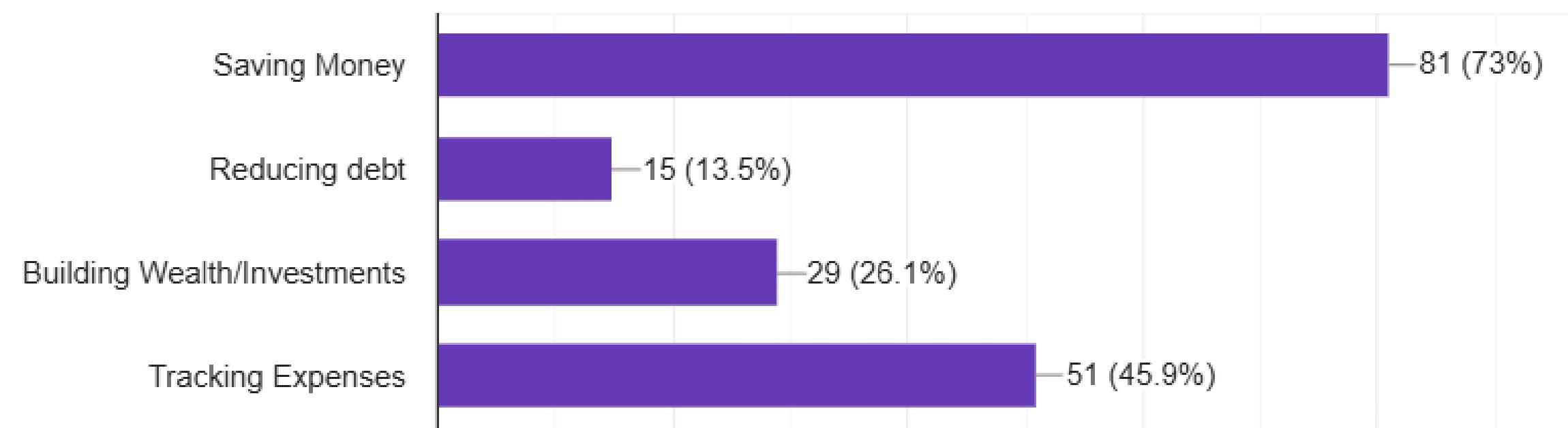


# Financial Goals

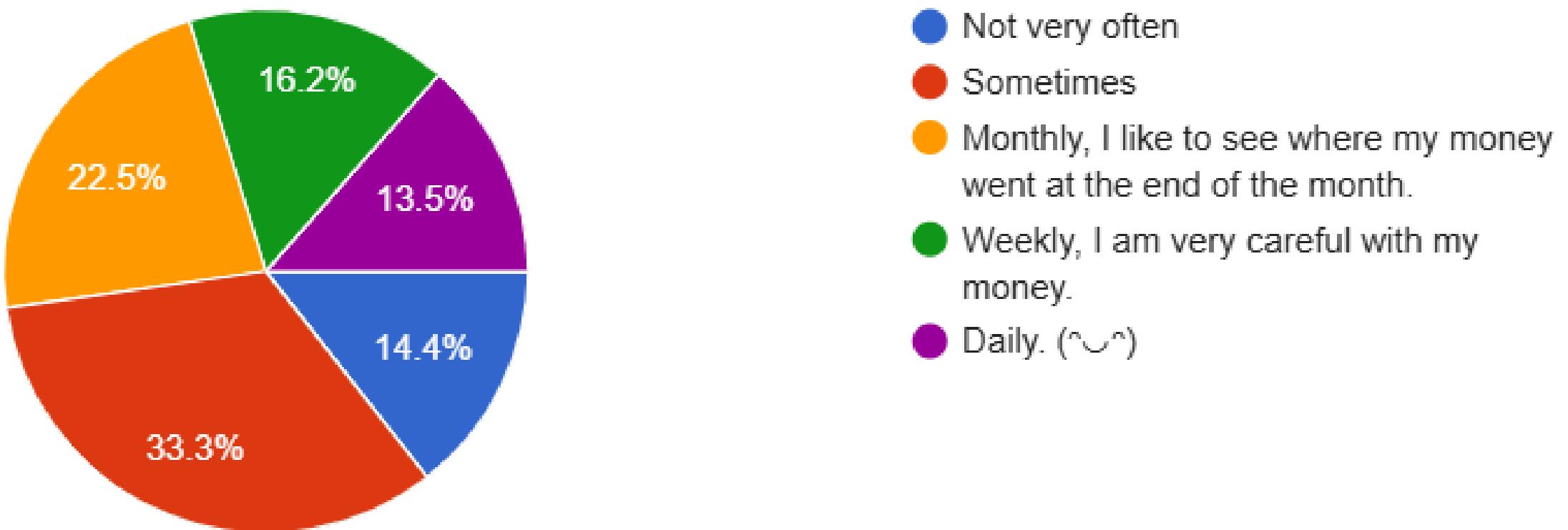
Common goals:

Saving Money

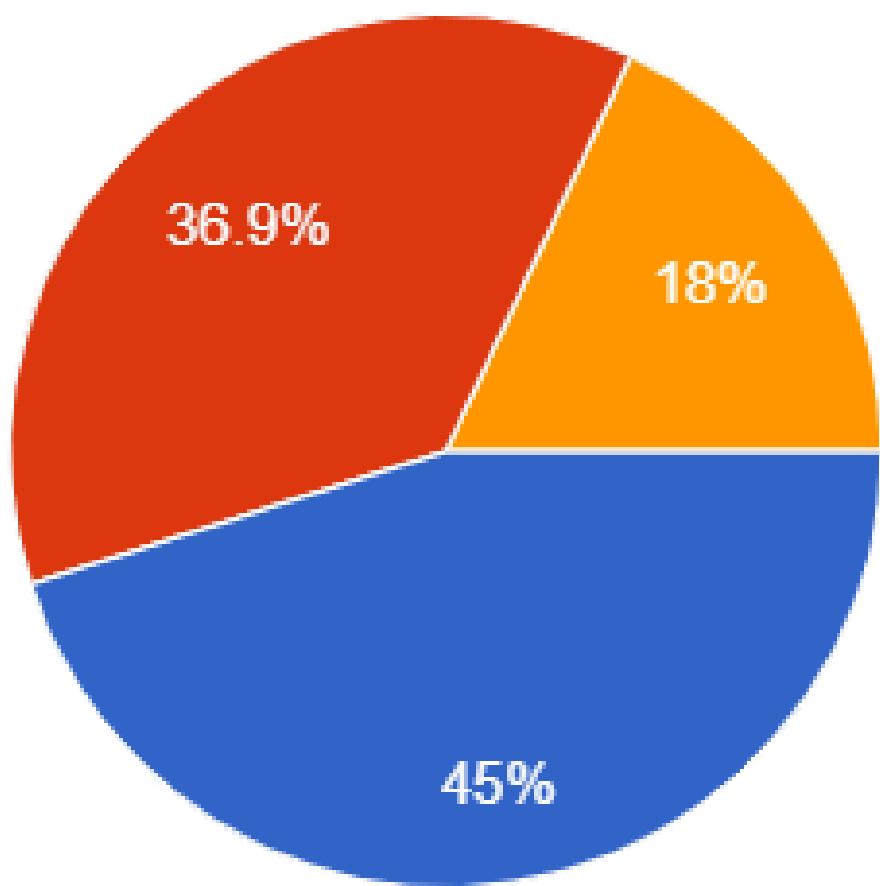
Tracking expenses  
Investments



# Frequency of expense tracking



# Preferred features in a budget tracker



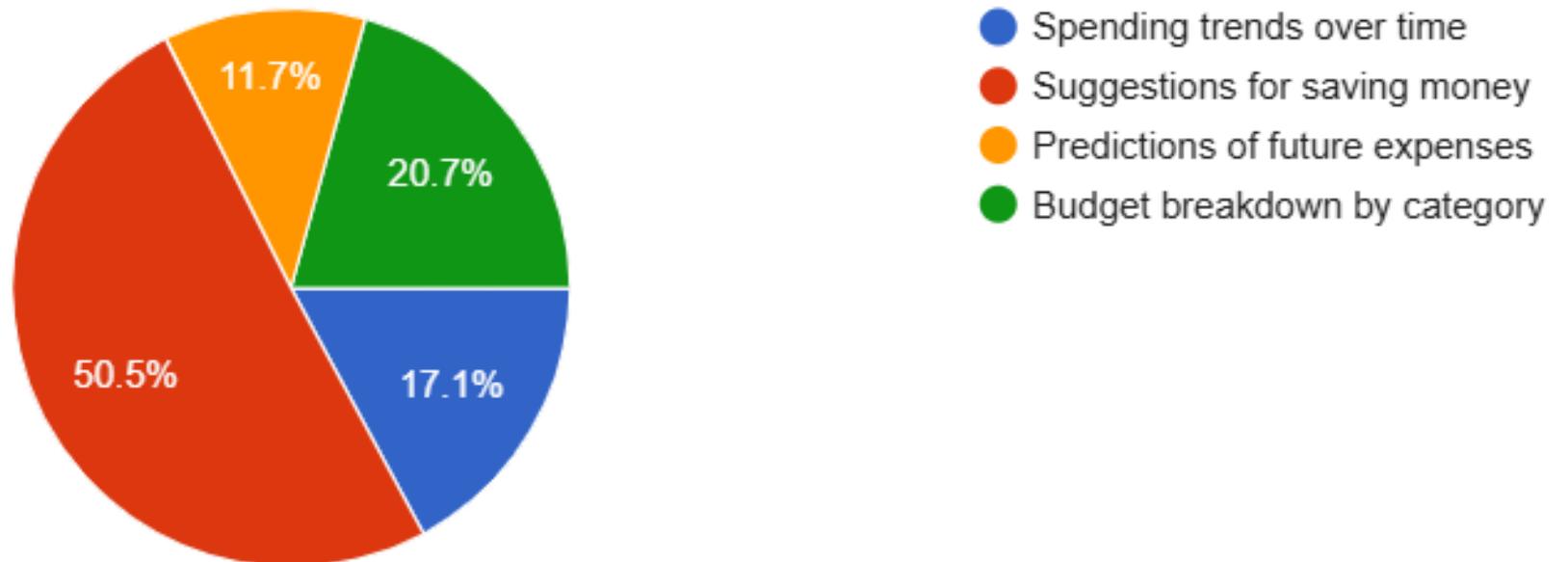
- Automatic categorization of your expenses (e.g., food, rent, entertainment)
- Alerts for overspending
- Visual graphs for better understanding

# Features

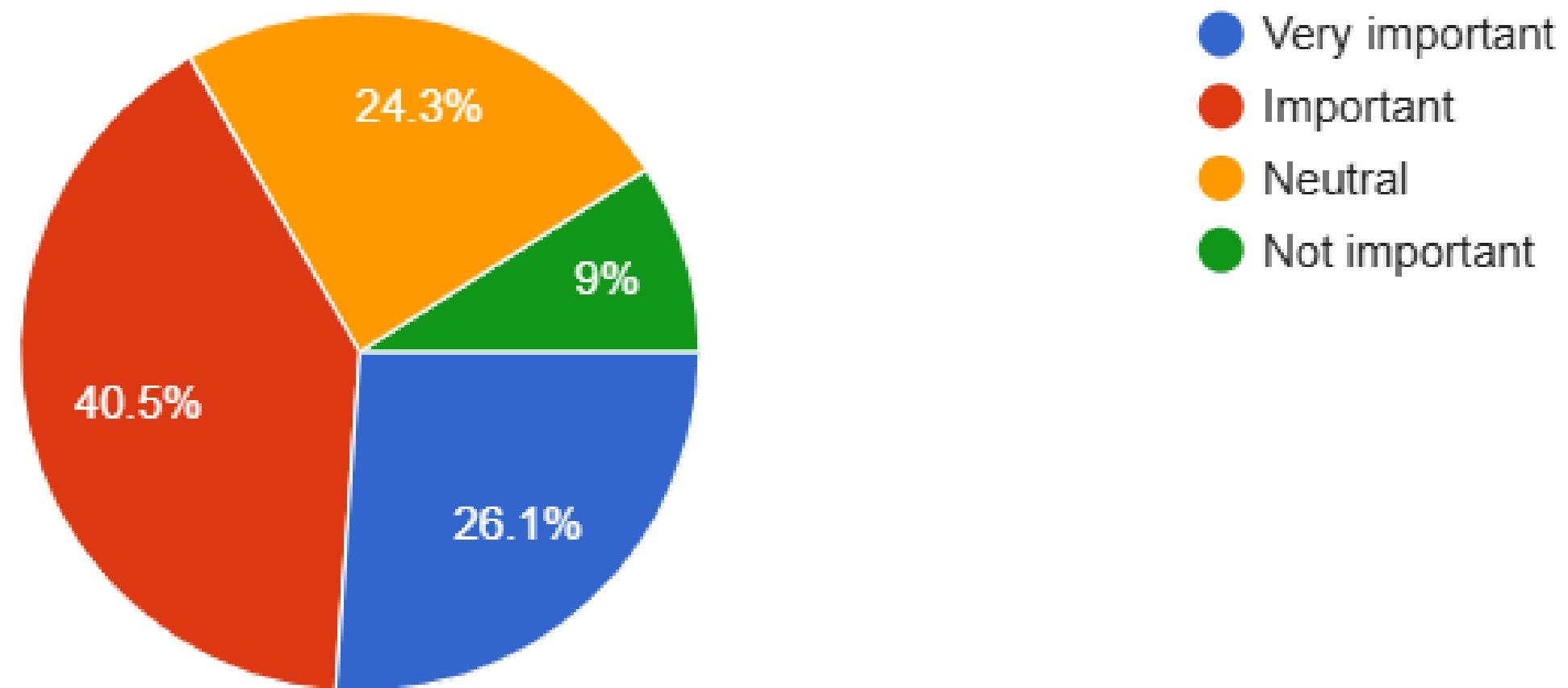
prioritize suggestions for again saving money, followed by budget breakdowns by category.

What kind of insights would you value most?

111 responses

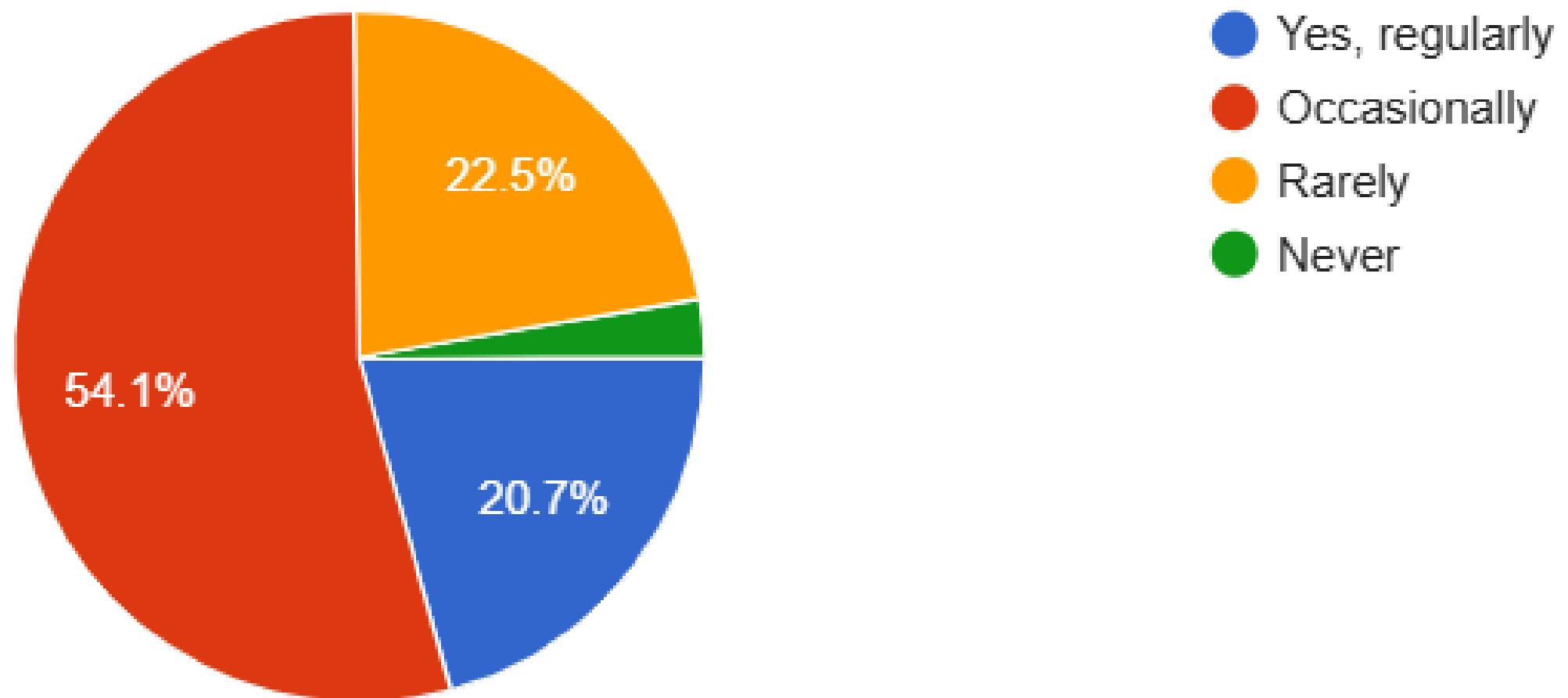


# Importance of visual spending representation



# Set financial goals

Do you currently set financial goals?

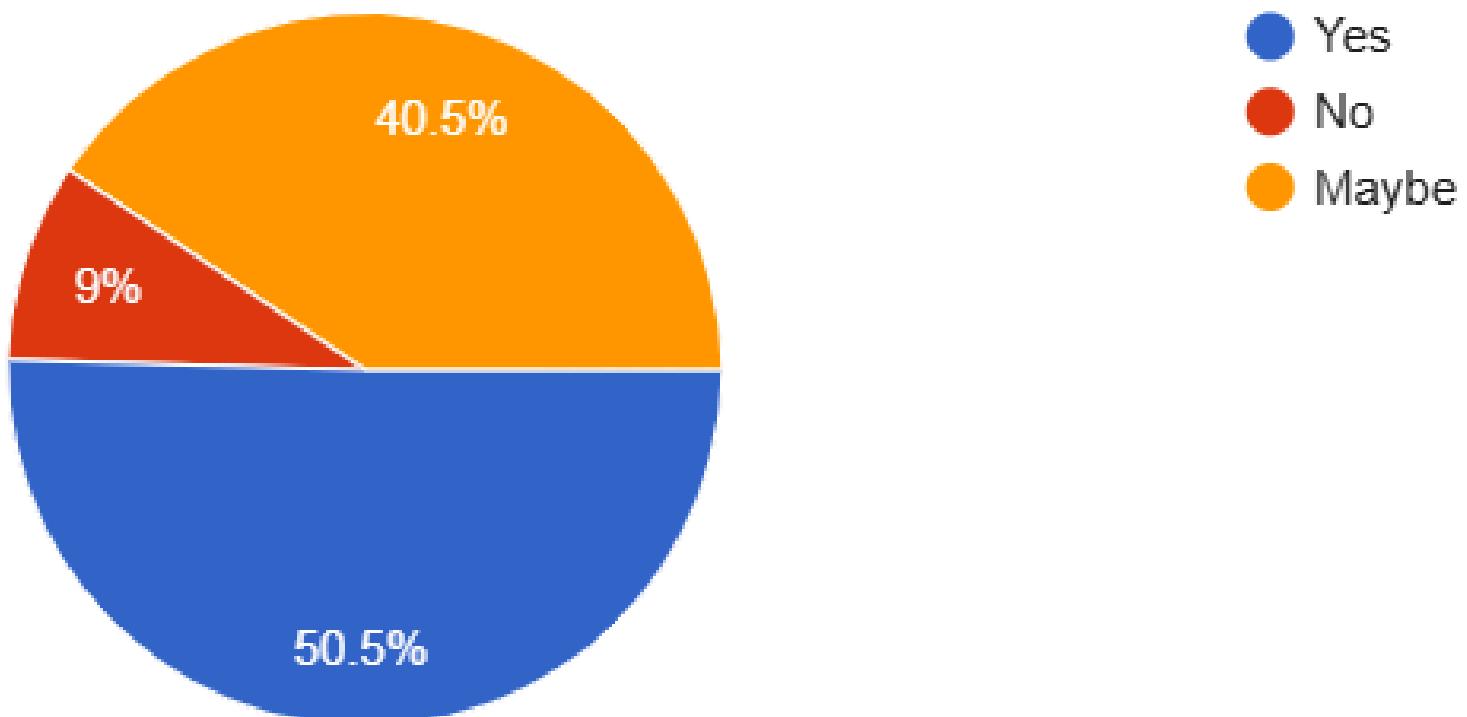




# Trust in recommendations

Would you trust AI to provide recommendations and insights on your spending habits?

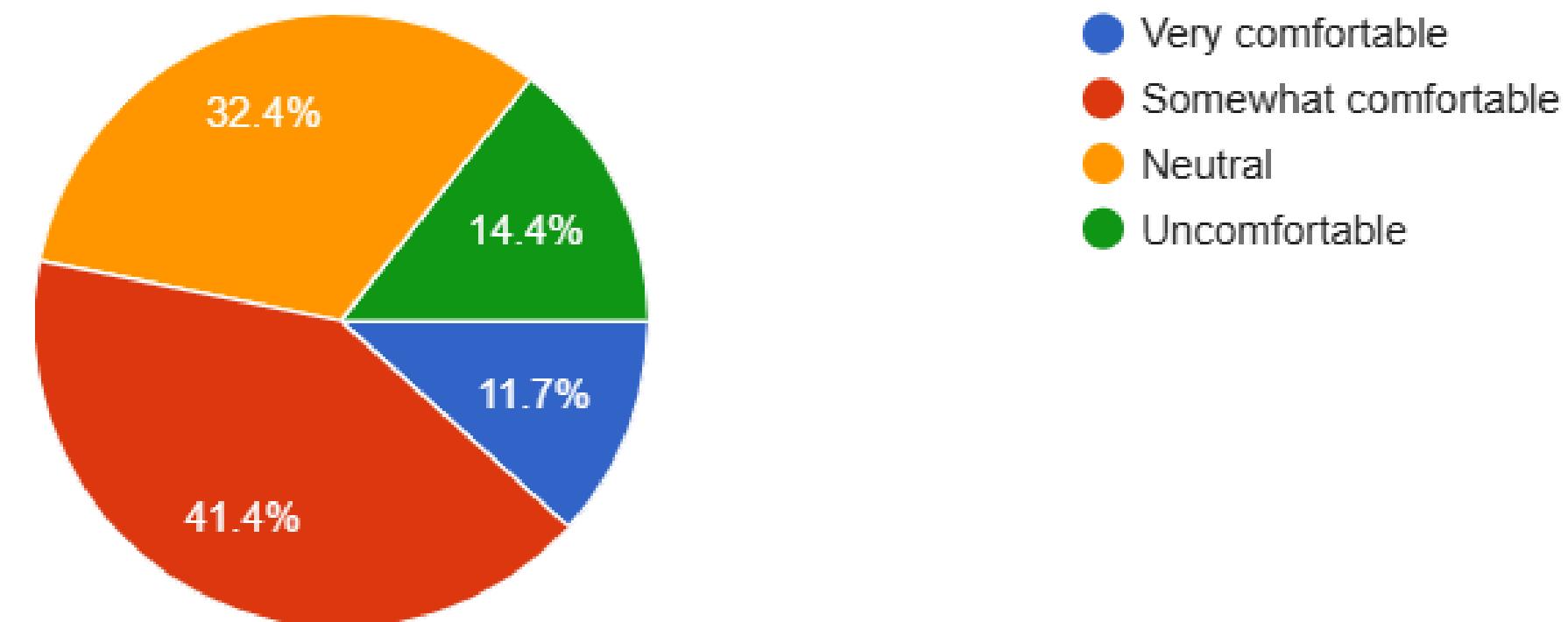
111 responses



# Sharing financial data

How comfortable are you with sharing your financial data with the app for personalized recommendations?

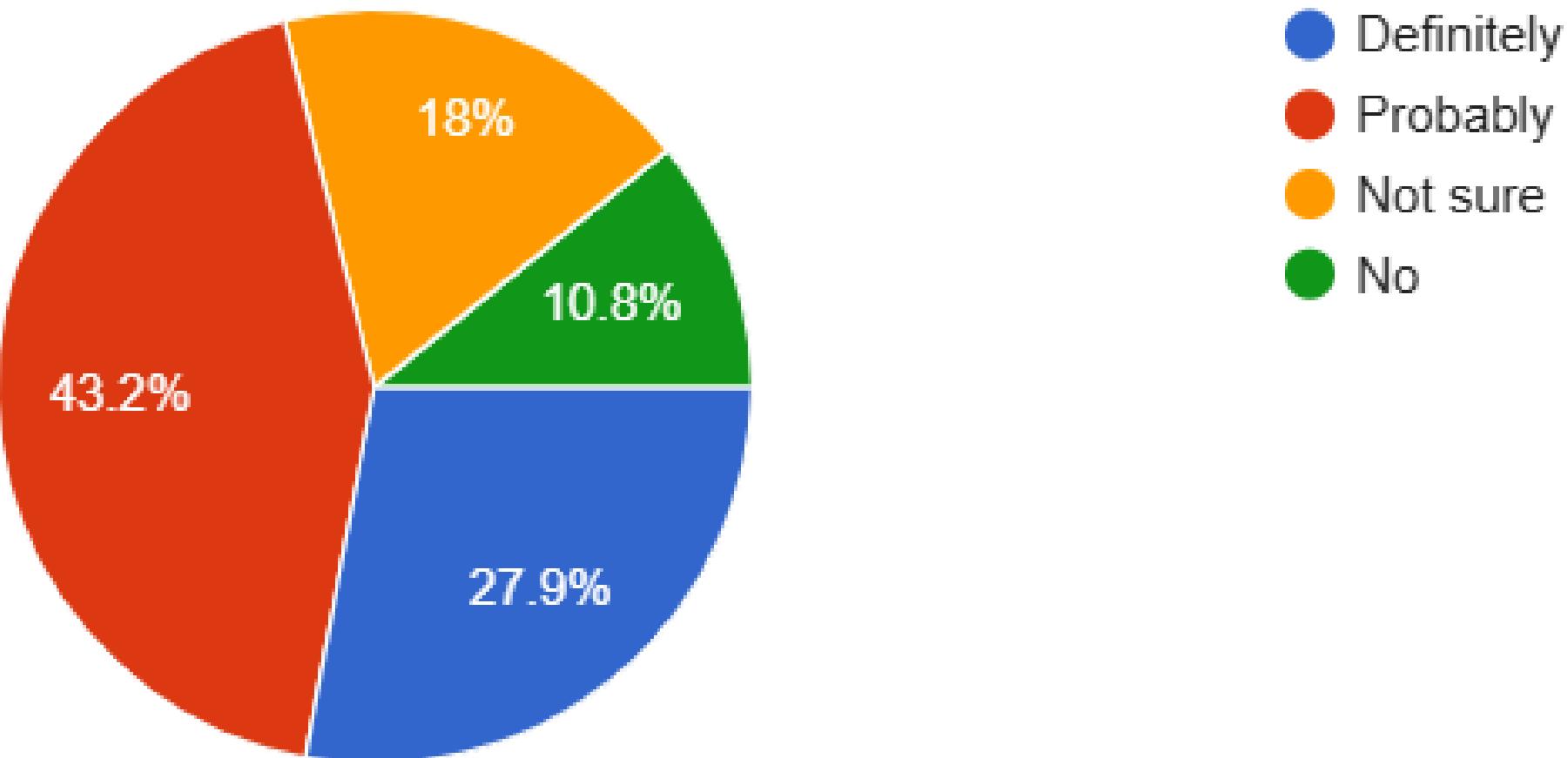
111 responses





# Financial tracking needed

Would you use a feature that tracks your progress toward financial goals?

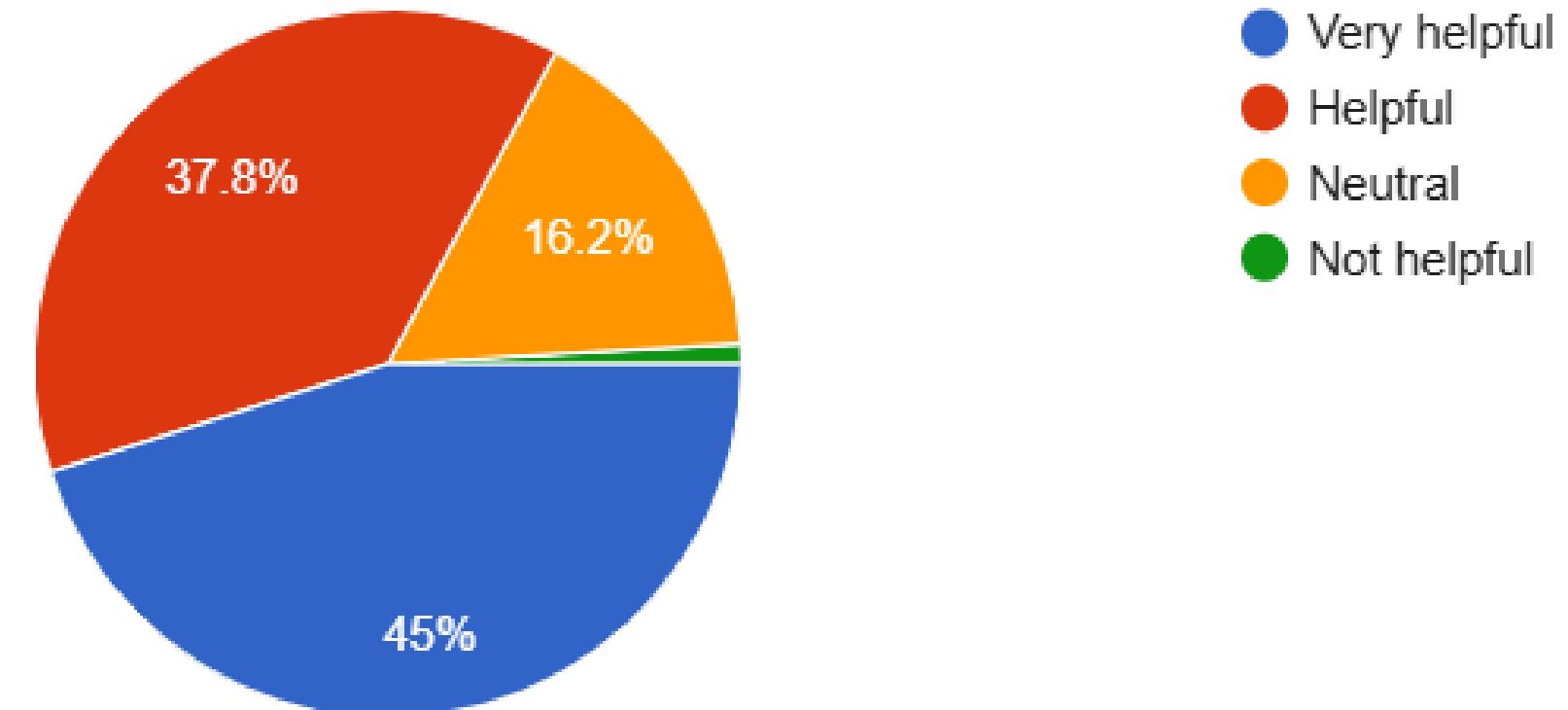


# Reminders



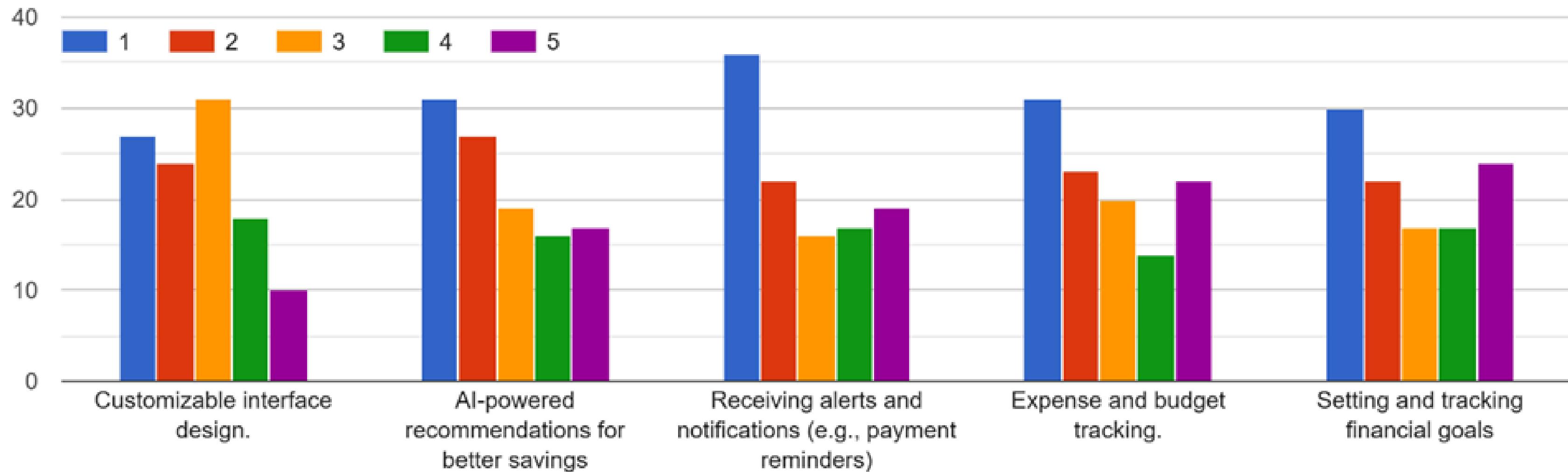
How helpful would reminders for bill payments or savings goals be?

111 responses

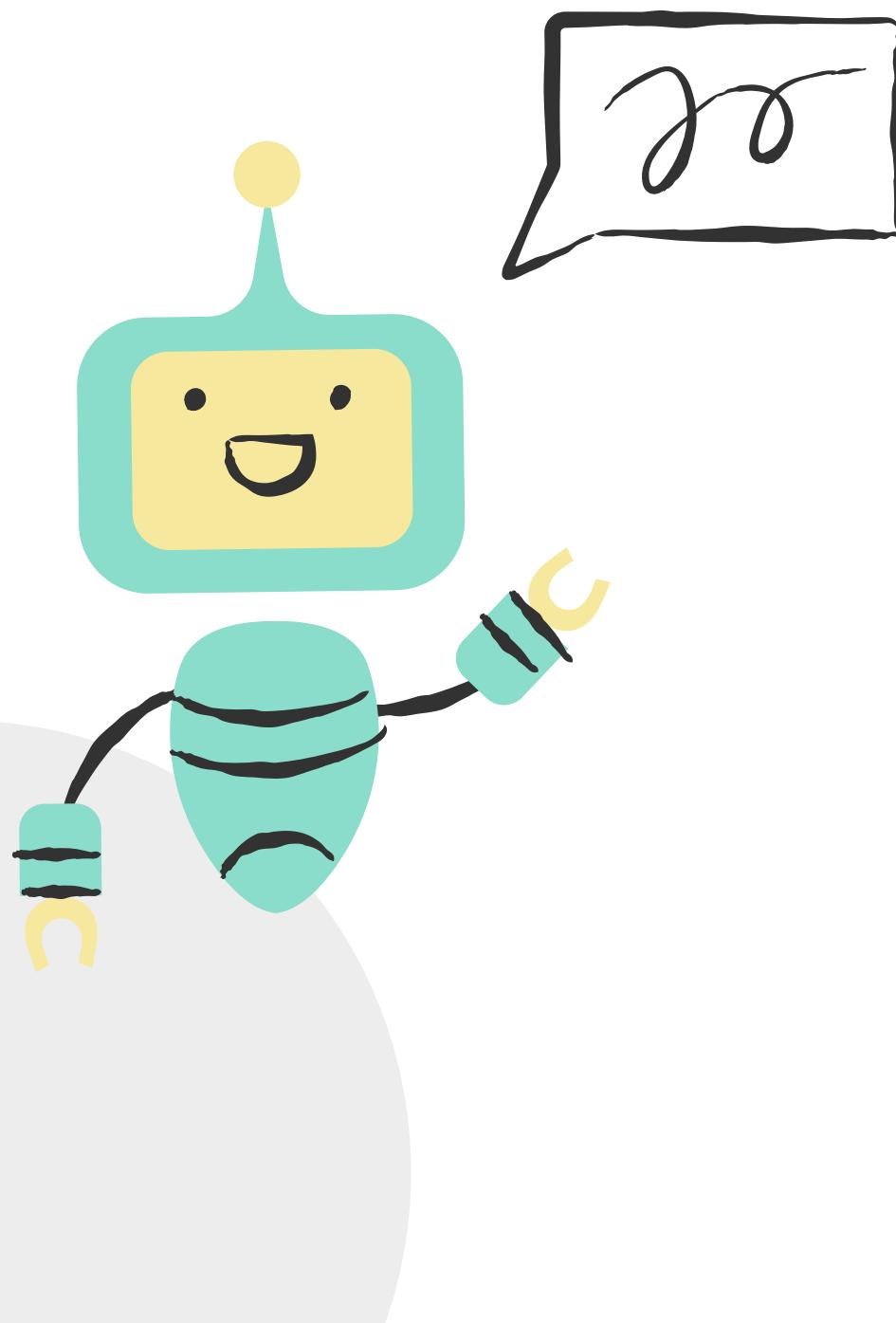


# Ranking features

Rank the following features based on their importance to you (1 for the most important, 5 for the least important):

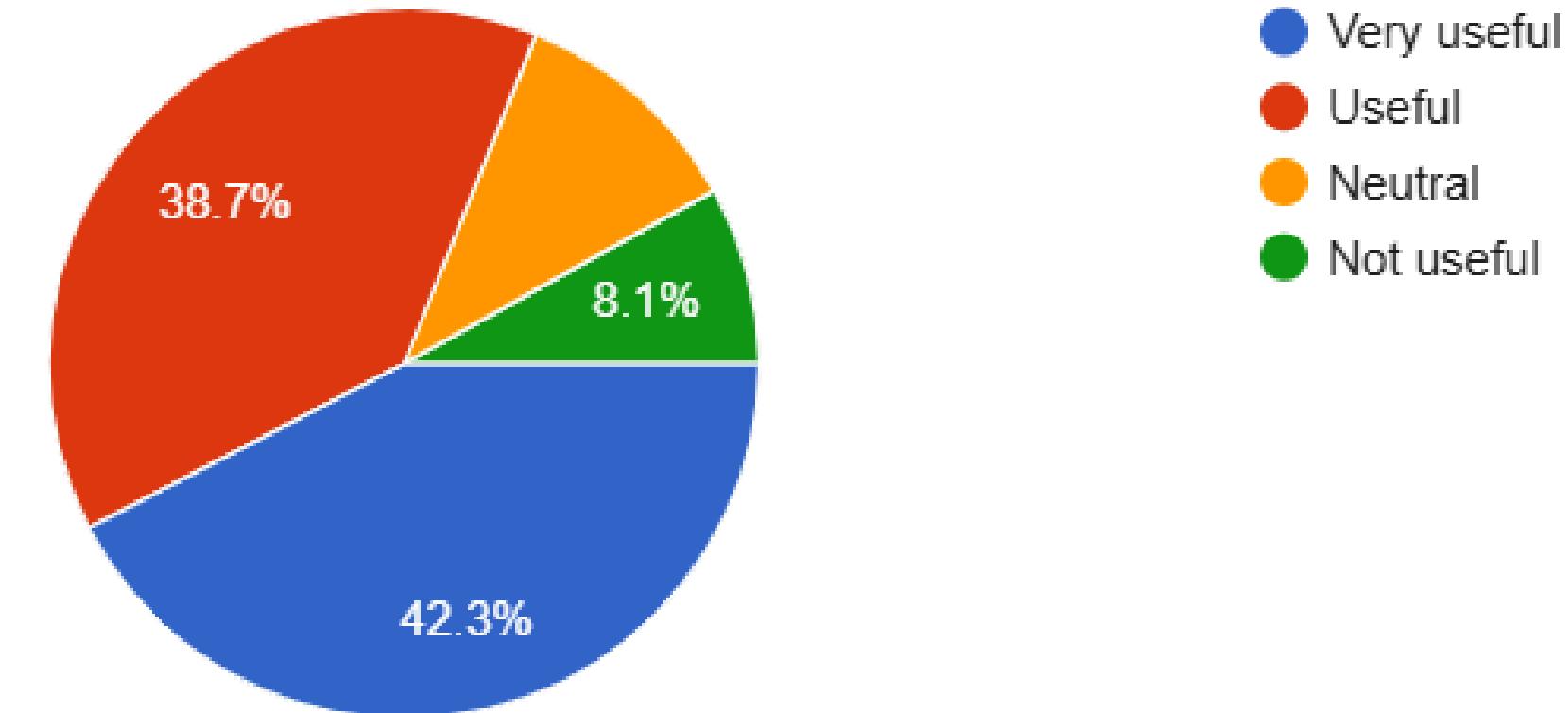


# Chatbot



How useful would chatbot for Answering queries like "What did I spend on food last month?" be?

111 responses



# Suggestions

for improving the user experience of a personal finance app



## Visualization

Tailor views based on individual preferences



## Not complex

simple UI



## Integration

with existing platforms  
(e.g bank APIs)

**What would be  
Savvy**

why would it be a solution?



# Goals

01



**Mindful Spending**

user being aware  
about his money

02



**Vision and clear representations**

03



**Better user experience  
and more automated**

04



**financial  
goals**





# Related Work

The study of personal finance management focuses on how people obtain, develop, and allocate financial resources to meet their current and long-term financial goals.



# Main Features

Expense  
Tracking



Income  
Tracking



Goal Setting



Budgeting and  
Customizable  
Categories



Reports &  
Analytics



Notifications  
and Alerts



Data Security  
and User  
Privacy



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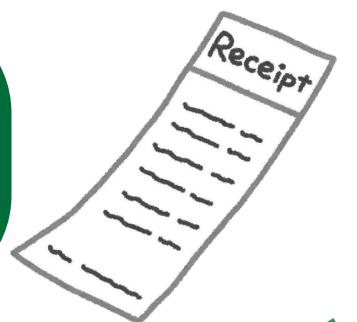


Data Security  
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# Main Features

Expense  
Tracking



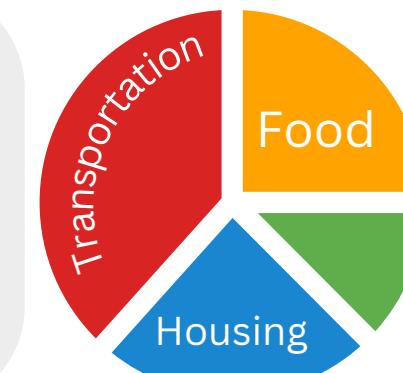
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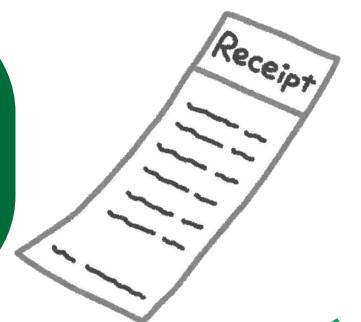


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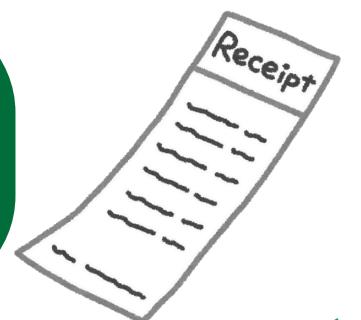


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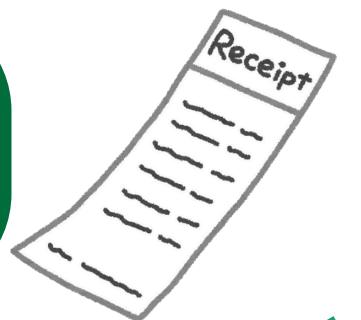


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# Main Features

Expense  
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Income  
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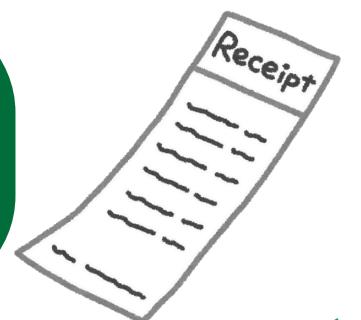


Data Security  
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# Main Features

Expense  
Tracking



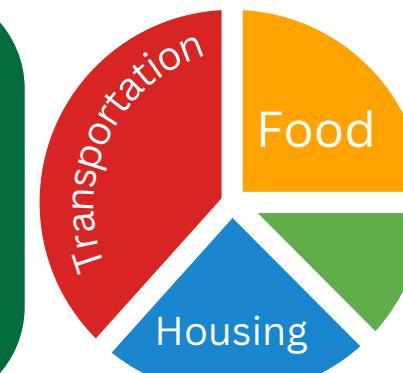
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# Our Features

Expense  
Tracking



Income  
Tracking



Goal Setting



Budgeting and  
Customizable  
Categories



Reports &  
Analytics



AI Chatbot



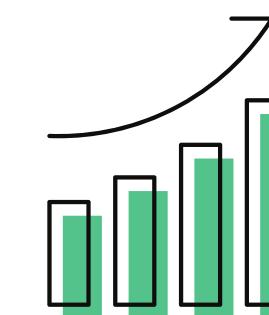
Notifications  
and Alerts



Data Security  
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Privacy

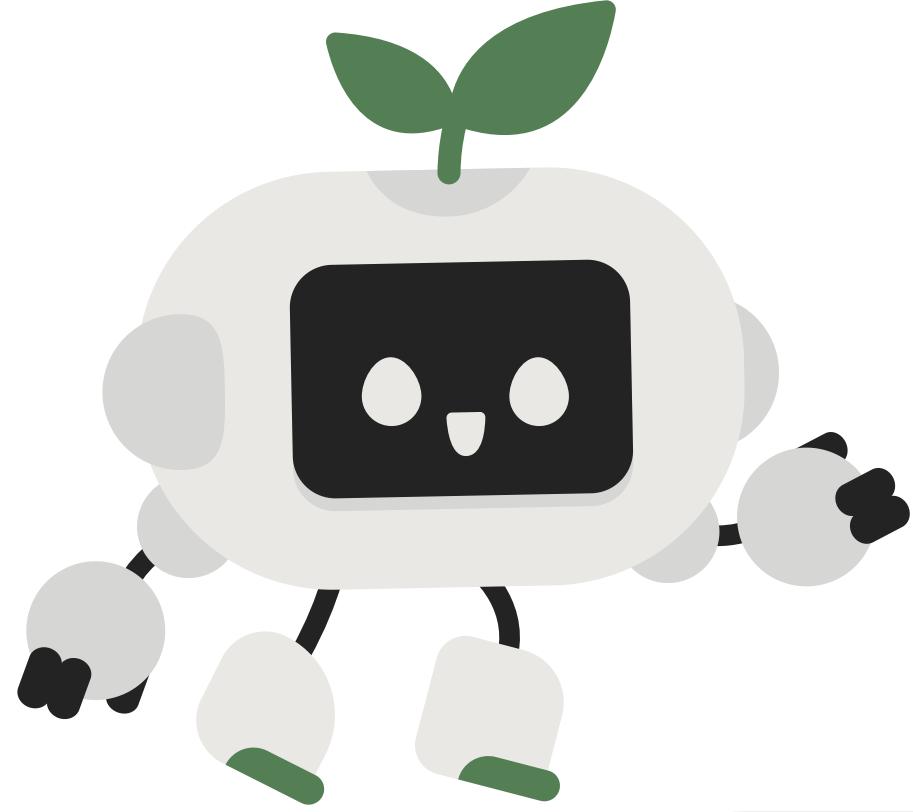


Predictive  
Analysis



# Feature Matrix

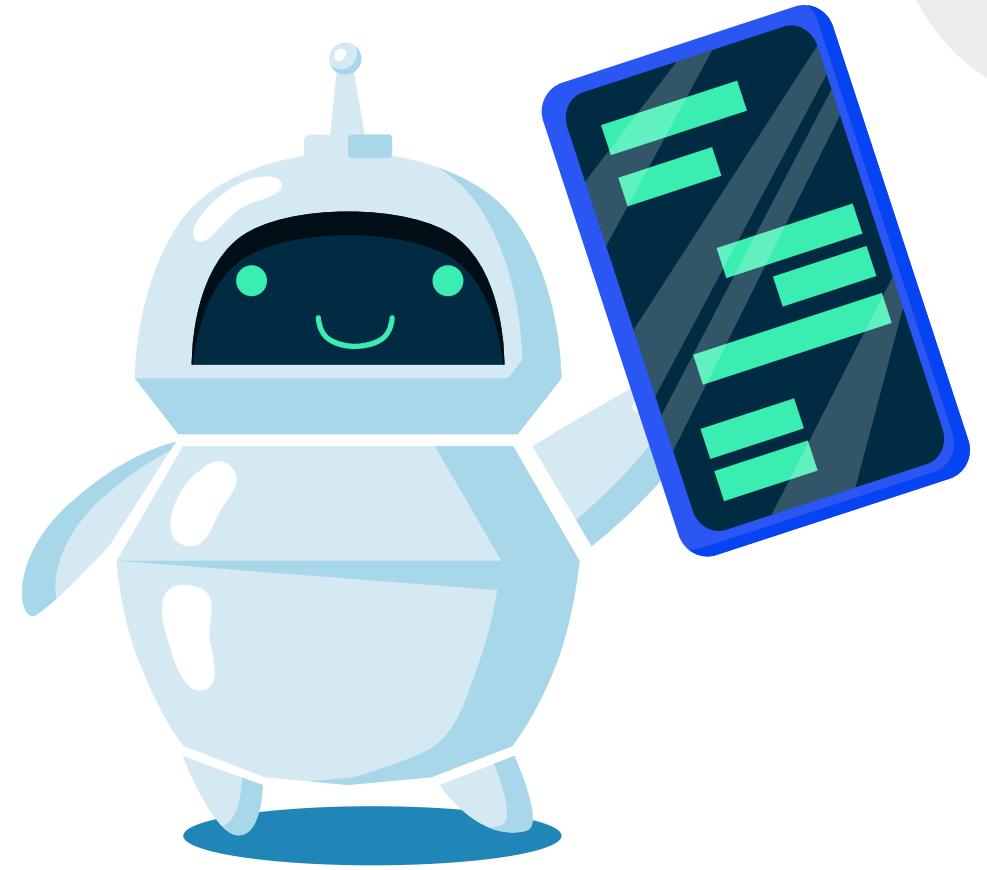
Feature	Savvy	Mint	YNAB	PocketGuard	EveryDollar	GoodBudget
Expense & Income Tracking	✓	✓	✓	✓	✓	✓
Budget Tracking	✓	✓	✓	✓	✓	✓
Customizable Categories	✓	✓	✓	✓	✓	✓
Goal Setting & Monitoring	✓	✓	✓	✓	✓	✓
Reports & Analytics	✓	✓	✓	✓	✓	✓
Spending Notifications	✓	✓	✓	✓	✓	✓
Security & User Management	✓	✓	✓	✓	✓	✓
Personalized Recommendations	✗	✓	✓	✓	✗	✗
Expense Predictions	✓	✓	✗	✗	✗	✗
Auto Categorization	✓	✓	✓	✓	✗	✓
Bank Sync	✗	✓	✓	✓	✓	✓
AI Chatbot	✓	✗	✗	✗	✗	✗



# AI & ML Algorithms



# Chatbot



# Chatbot Functionalities

## Domain-Specific AI-Powered Hybrid Chatbot

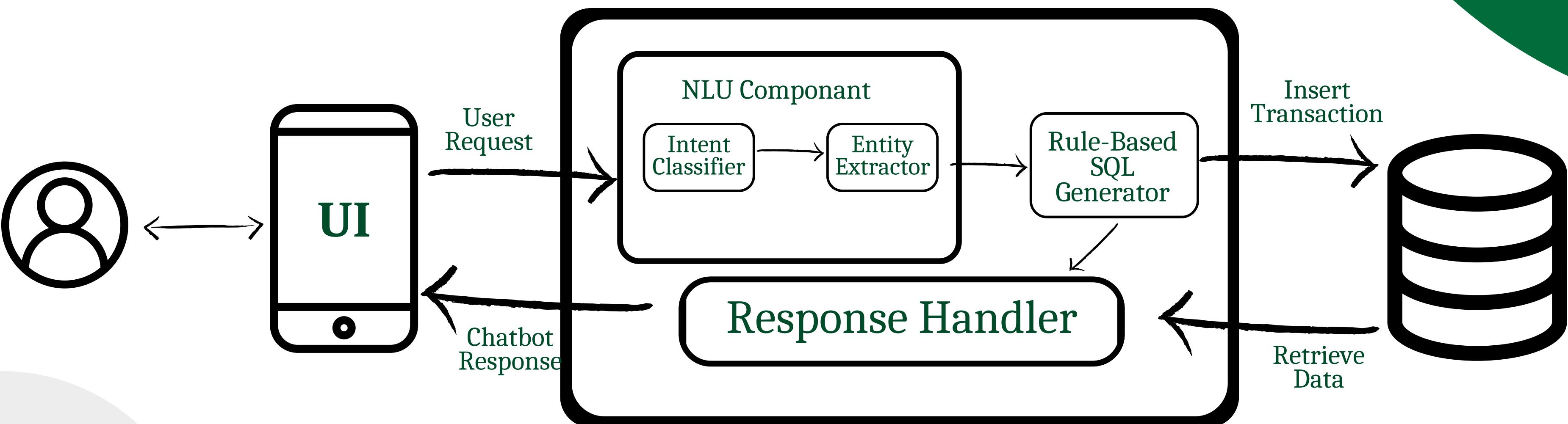
### Adding Transactions

Records user-provided financial data into a database.

### Retrieving Historical Data

Fetches and summarizes past transactions based on user queries.

# Chatbot Architecture



# BERT

# BERT

which stands for Bidirectional Encoder Representations from Transformers, was developed by Google.

## Bert Tasks:

Question -answering

Text Generation

Text Classification

## The basic idea of Bert:

It is designed to understand the contextual meaning of words in a sentence by analyzing both the left and right contexts simultaneously.

## Why Use BERT for Question-Answering Tasks?

BERT is powered by a powerful neural network architecture known as Transformers. This architecture incorporates a mechanism called self-attention.

One of the major reasons for its success is that it is a context-based embedding model, unlike any popular embedding model like word2vec which is context-free.

### How does BERT work?

**incorporates a mechanism called self-attention.**

**BERT has been pre-trained on vast amounts of text data, including Wikipedia and books.**

**BERT can understand the relationships between words across the entire sentence.**

## Scenario: Adding Expense Transactions with Categorization

Imagine a user interacting with a personal finance app to log their expenses. Here's how BERT can understand and accurately categorize the transaction based on natural language input:

**User Input Example:** Add 200 for transportation expenses.

- **Action:** "Add," "Log," or "Record" indicate that the user wants to add an expense/income.
- **Amount:** Recognizes numbers like "50," "100 bounds," or "200" as monetary amounts.
- **Category:** Uses the context of words like "groceries," "transportation," and "rent" to assign the appropriate category.

# Time Series Analysis



# Time Series Analysis

we aim to predict future expenses to help individuals optimize their budgets and save money.



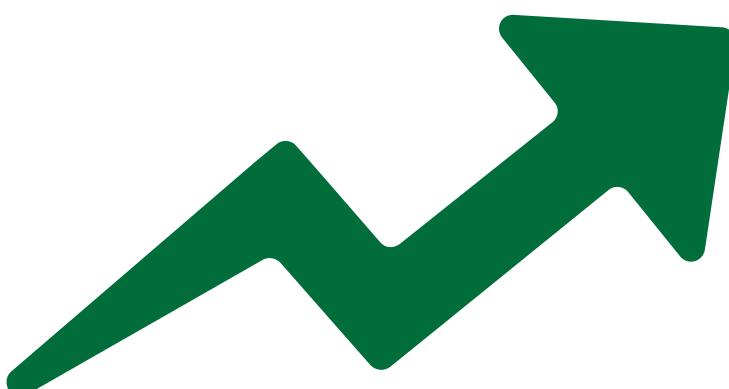
Since expenses are recorded over time (daily, monthly, or annually) time series analysis is the ideal approach because it allows us to uncover patterns in the historical data and project them into the future.

Time series analysis captures temporal patterns like trends and seasonality, which are essential for expense prediction, unlike methods that treat data as static.

# Time Series Analysis

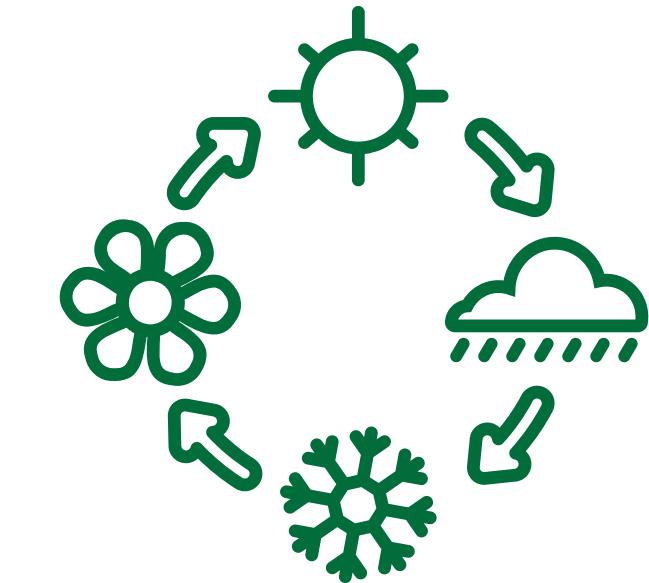
## Trend

Long-term upward or downward movements in expenses (e.g., inflation or declining costs of specific services) are also identified.



## Seasonality

Many expenses have recurring patterns over time, such as increased utility costs in winter or higher spending during holiday seasons. Time series analysis captures these seasonal trends.



# Time series Forecasting Method

Goal is to predict future expenses based on historical data. Expense data often has complex patterns, such as trends, seasonality, and irregular variations.

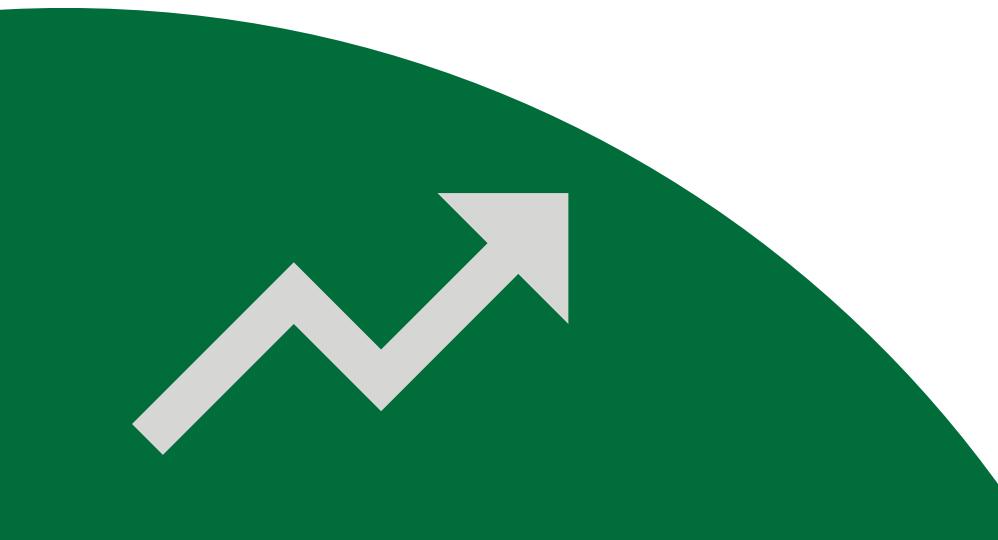
To make accurate predictions, we need a model that can effectively capture these time-dependent patterns.

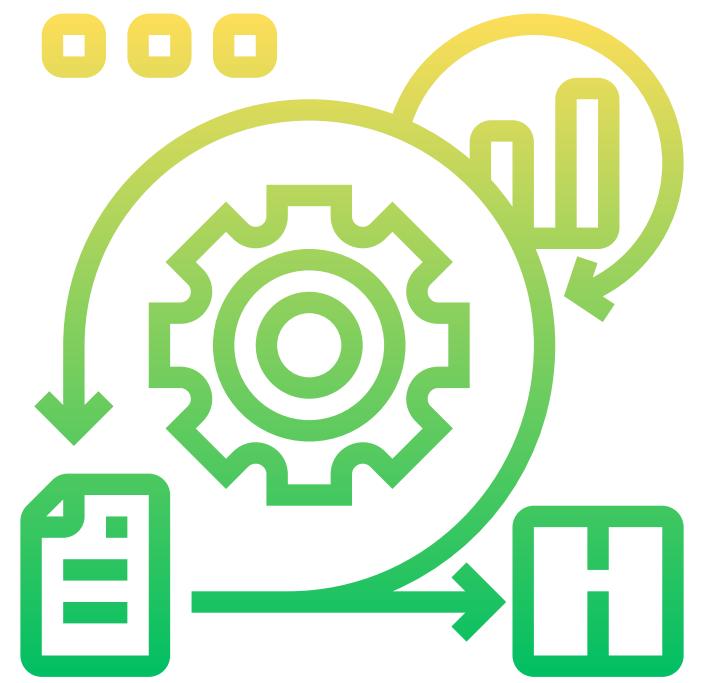
LSTM is ideal for our case because it excels at capturing both short-term and long-term dependencies

# LSTM for Time Series Prediction

LSTM is a kind of Recurrent Neural Network (RNN) that is good at handling sequence data.

LSTM's strengths in capturing sequential dependencies, handling complex patterns, and modeling non-linear relationships make it the most suitable model for our time series forecasting task.





# Software Methodology



# Software Model

Our project, requires multiple components like developing mobile application, mange database, machine learning algorithms and Chatbot.

Additionally, we are a small team, which means we need a methodology that helps us focus on delivering functional parts of the system in manageable steps.

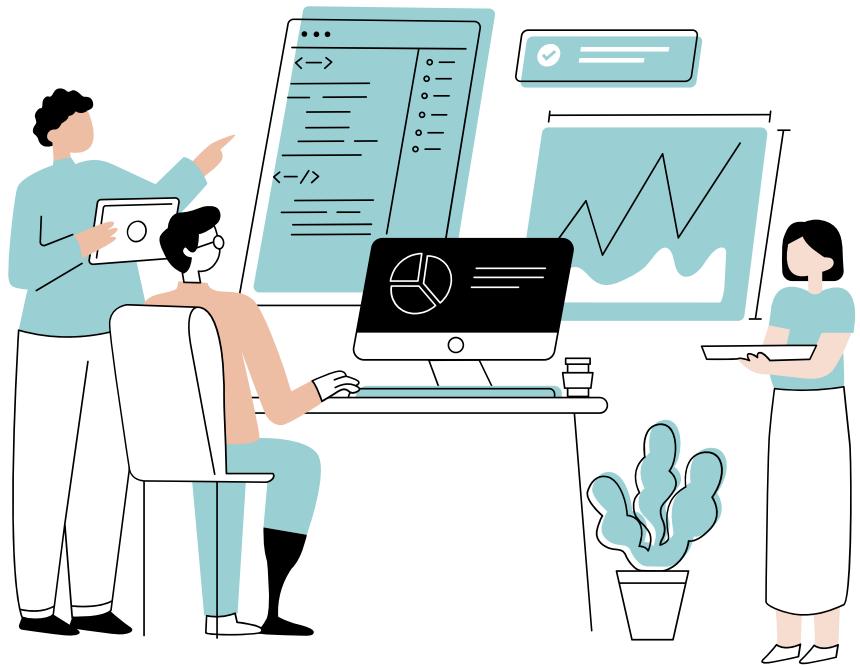
feedback is critical to refining the system. Therefore, we needed a methodology that allows us to adapt to these changes and continuously improve our system.

# Software Model

We needed a way to ensure that each part of the system is reliable and functional before moving on to the next.

This minimizes the chances of discovering major issues late in development.

To address these challenges, we chose the **Incremental Model**. This methodology allows us to divide the project into smaller, manageable increments, deliver functional parts early, and gather feedback to improve subsequent increments.



# Incremental Model Versions

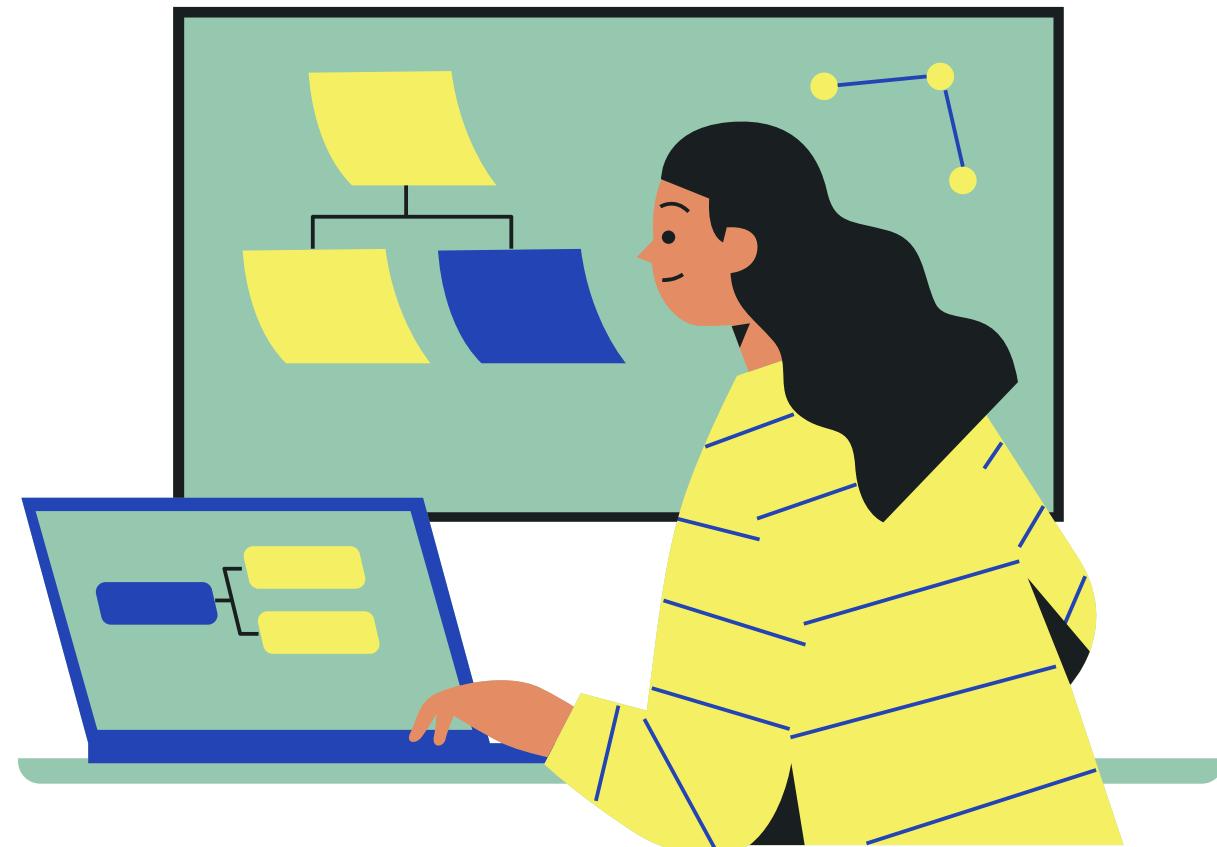
Project consists of three increments each increment should deliver a working version of the system that contributes to the overall functionality.

## Increment 1: Core Features

A basic interface for inputting financial data.

### Features to develop:

1. User Registration and Authentication.
2. Autocategorization Expenses using BERT.
3. Income Tracking: Input sources of income .
4. Goal Setting: Users can define financial goals.



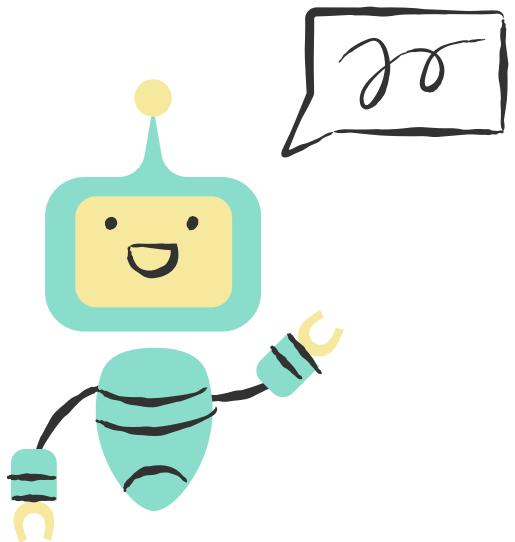
# Incremental Model Versions

## Increment 2: Budgeting and chatbot

Add budgeting limits for each category and integrate chatbot for answer users questions.

### Features to develop:

1. Budgeting: Users can set budgets for specific categories.
2. Notifications and Alert: Notify users about Approaching budget limits.
3. Chatbot: Users can interact with the chatbot.



# Incremental Model Versions

## Increment 3: Spending Analysis

Implement insights for spending patterns and tools to help users track financial goals.

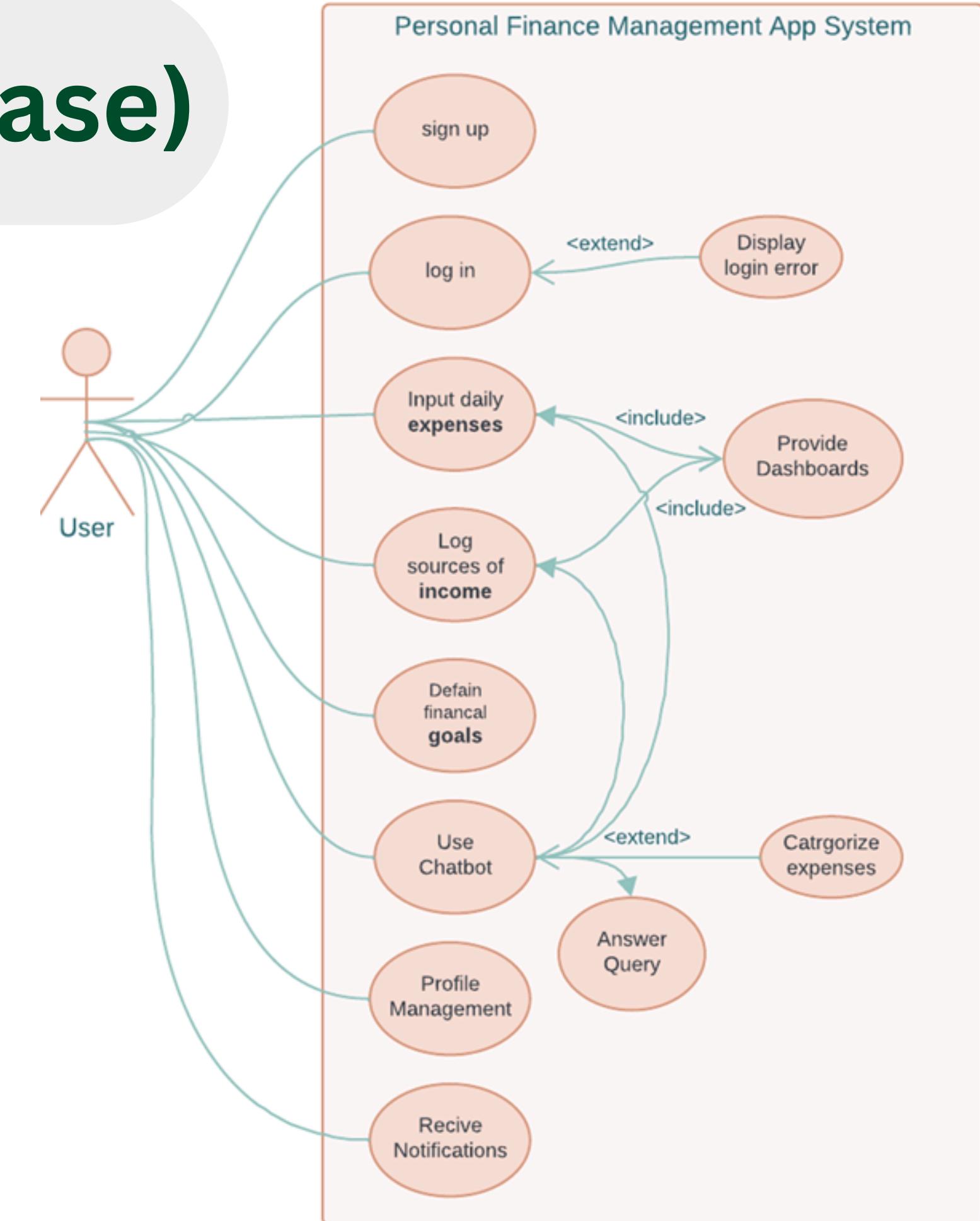
### Features to develop:

1. Time Series Model: Develop a financial forecasting system using historical expense data.
2. Spending Analysis Charts: Create visual reports and summaries of income, expenses, and savings

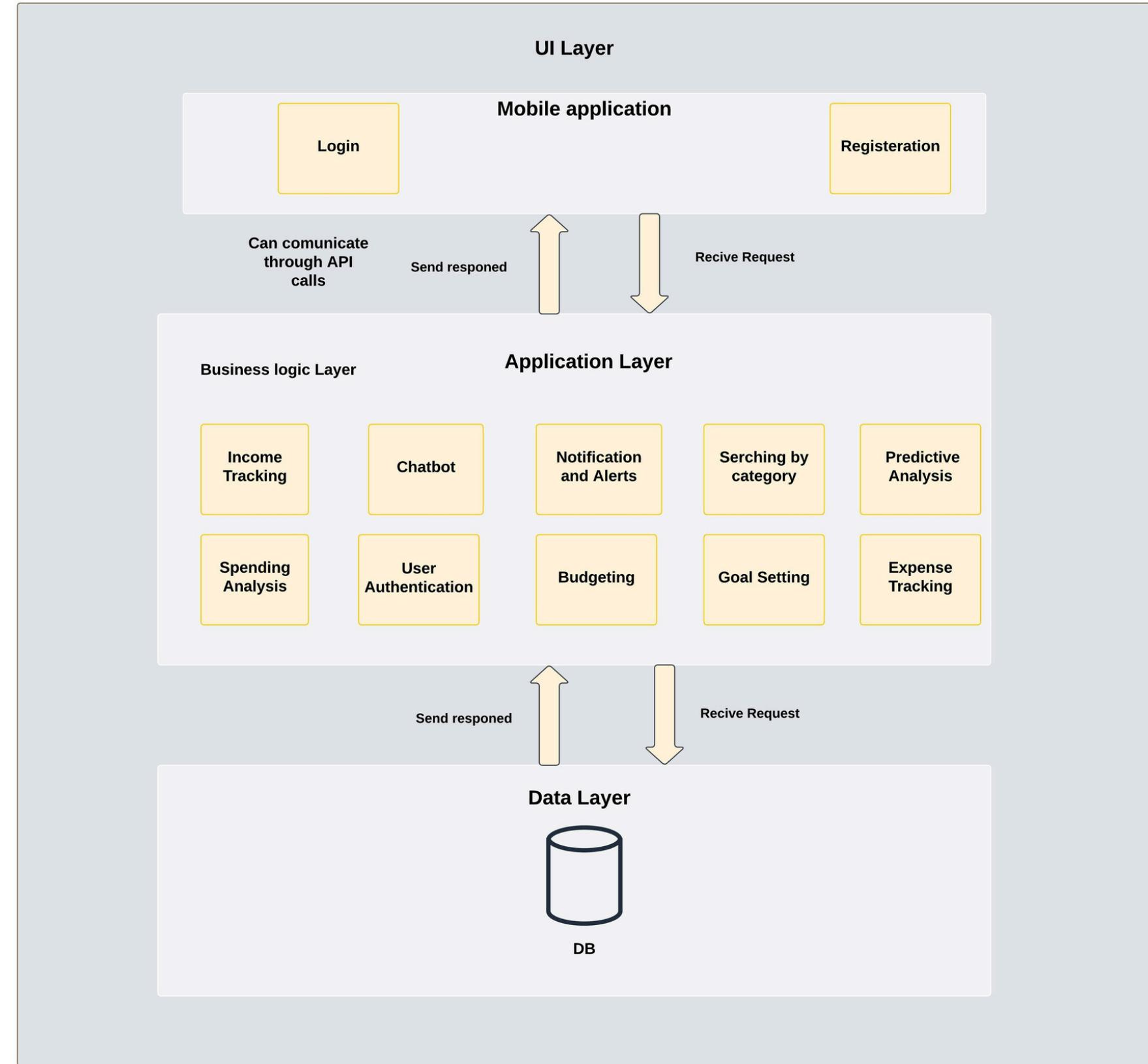


# Software Diagram: (Use Case)

- User: The primary user of the system who interacts with various functionalities provided by the app.
- System Boundary: The rectangle labeled Personal Finance Management App System encloses all the use cases (functionalities) available in the system.



# Software Diagram: (system architecture)



# The 50/30/20 Budget Rule

The 50-30-20 rule involves splitting your after-tax income into three spending categories: 50% goes to needs, 30% goes to wants, and 20% goes to savings.

This rule can be implemented to help users track, analyze, and improve their spending habits.

**Notifications:** Send alerts when a user is nearing or exceeding their budget in any category

At the end of each month, provide a detailed report showing:

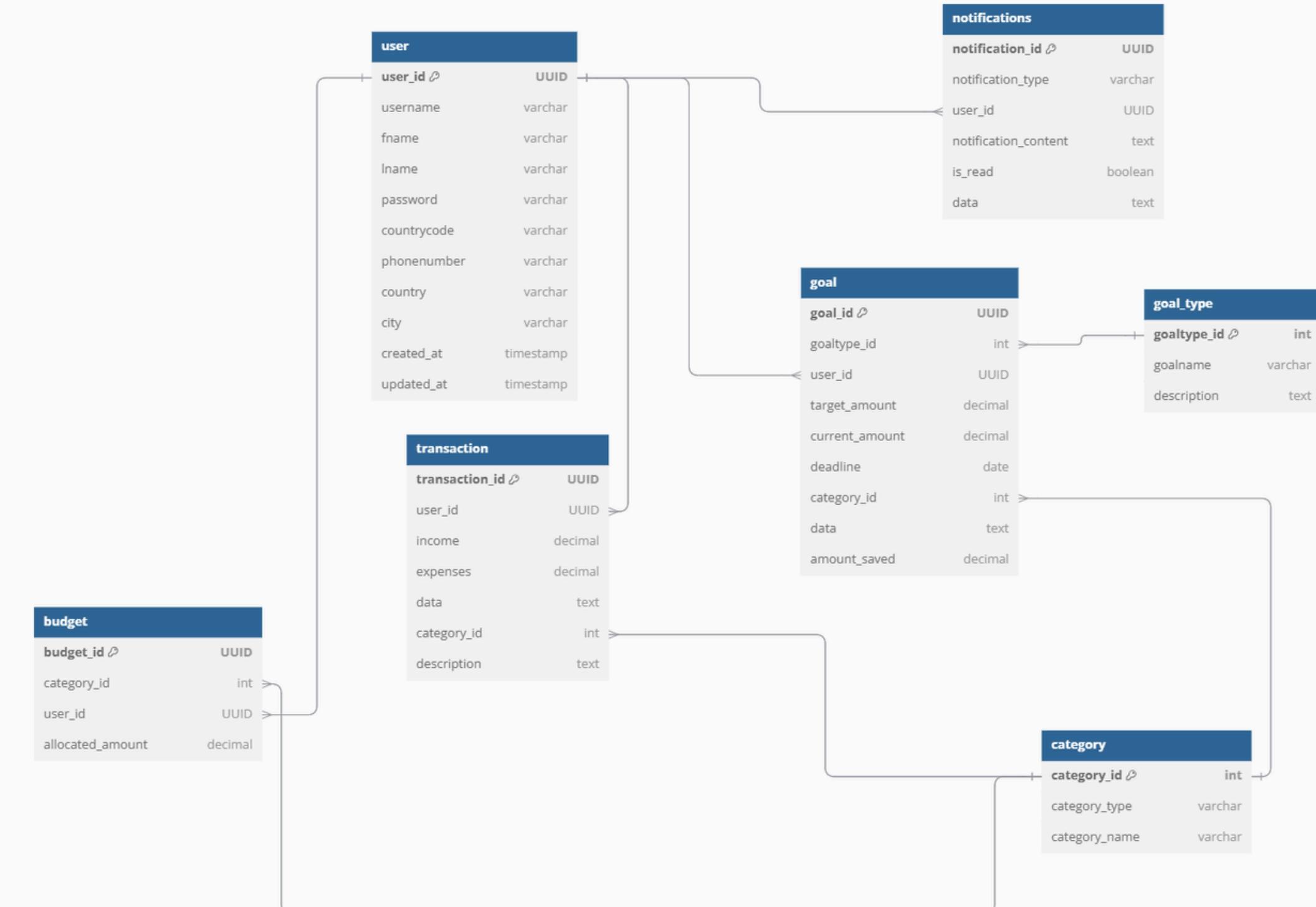
- Actual spending vs. budgeted amounts in Needs, Wants, and Savings



# Software Diagram: (ERD)

## Tables:

- User
- Goal
- Goal Type
- Category
- Transaction
- Budget
- Notifications





# SWOT Analysis



# SWOT

## STRENGTHS

- AI Chatbot
- Predictive Analysis
- Auto Categorization
- User-Friendly Interface

## WEAKNESSES

- Limited Resources
- Technical Challenges
- User Adoption
- Data Privacy Concerns

## OPPORTUNITIES

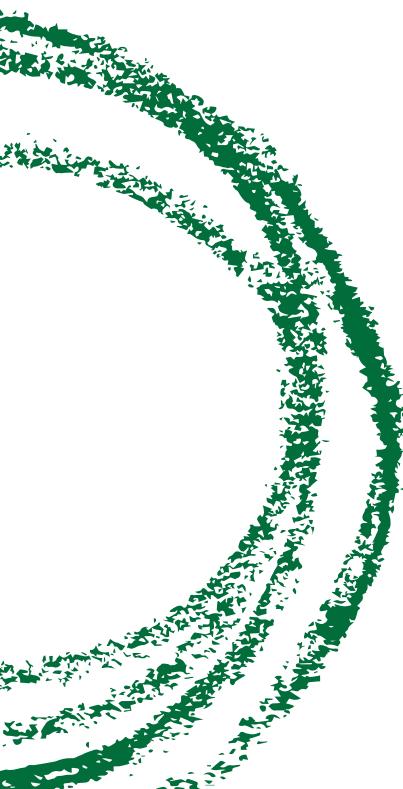
- Growing Demand
- Partnerships
- Growing Awareness
- Technological Advancements

## THREATS

- Technical Failures
- Competition



**Prototype Time !**



*Thank  
You*

