



MKSSS's Cummins College of Engineering for Women, Pune • • • •

# BUDGETWISE

An Intelligent Personal Finance Management System

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TY COMP C- C4

# Problem

- Managing personal finances is difficult for many users.
- **People struggle with:** Tracking expenses and income manually, Forecasting monthly spending and savings, Setting budgets and goals, Understanding where their money goes
- Existing solutions are either too manual or lack AI insights.

# Solution

- A web app that automates personal finance management.
- Key capabilities:
  - Track income and expenses easily
  - Use AI/ML to predict expenses & savings
  - Upload bills and auto-extract transaction details using OCR
  - Set budget & savings goals
  - Personalized financial recommendations
  - Generate PDF reports for overview

# System Architecture

## 1. Frontend (Client Layer):

- HTML/CSS/JS dashboard for user input and visualization
- Upload transactions, view reports & recommendations

## 2. Backend (Application Layer):

- Flask API handles requests
- Preprocesses transaction data
- Calls ML models (XGBoost, Prophet) for predictions

## 3. Database Layer:

- MySQL stores user profiles, transactions, and model results

## 4. Machine Learning Models:

- XGBoost: Expense prediction
- Prophet: Future expense forecasting

Frontend → Backend → Database → ML Models → Backend → Frontend



# Models Used:

- XGBoost for regression with cross-validation & regularization
- Prophet for time-series forecasting

## XGBoost Performance:

- Training R<sup>2</sup> Score: 0.9890
- Testing R<sup>2</sup> Score: 0.9697 → Good generalization
- Cross-validation R<sup>2</sup> mean:  $0.9696 \pm 0.0265$
- Mean Absolute Error: ₹3,917.42
- Root Mean Squared Error: ₹19,395.94
- Mean Absolute Percentage Error: 64.47%

## Prophet (Time-series) Performance:

- Mean Absolute Error: ₹632,572.61
- Root Mean Squared Error: ₹788,906.47
- Trained on 48 days of historical data

# Data Preprocessing

- Handle missing values and duplicates
- Standardize date formats
- Normalize amount column (handle negatives/outliers)
- Correct typos in category & payment\_mode
- Encode categorical features for ML models
- BudgetWise Personal Finance Dataset(Kaggle)

<https://www.kaggle.com/datasets/mohammedarfathr/budgetwise-personal-finance-dataset>

Rows: 15,000+ | Columns: 9

# Key Features

- User Authentication & Transactions
- Bill OCR Integration
- AI Predictions
- Budget & Savings Goals
- AI Recommendations
- PDF Report Generation

# Future Enhancements

- Mobile app version
- Multi-currency support
- Better ML models with larger datasets
- Real-time recommendations and alerts
- Bank API integration for auto-importing transactions

# Conclusion

- BudgetWise simplifies personal finance management
- Combines AI, ML, OCR, and data analytics
- Helps users track, predict, and optimize their finances
- Encourages financial discipline and goal setting



# BudgetWise

Create your account

Username

Choose a username

Email

your.email@example.com

Password

Create a strong password

**Create Account**



# BudgetWise

Smart Finance Management with AI

Username

Enter your username

Password

Enter your password

**Login**

OR

Don't have an account? [Sign up here](#)

# Manage Your Finances

Add transactions and get AI-powered insights about your spending

## Upload Bill/Receipt (Auto-fill with AI)

 Choose Image Take Photo

 Upload any bill/receipt and AI will automatically extract transaction details!

## Add Transaction

DATE

18 - 11 - 2025



TYPE

Expense

CATEGORY

e.g. Food, Rent, Salary

## Predict Monthly Expense

Get AI-powered predictions for your expenses this month based on your spending patterns.

 Predict Expense**₹53,781**

Predicted Monthly Expense

## Predict Monthly Savings

Find out how much you're likely to save this month based on your income and expense trends.

 Predict Savings**₹42,037.18**

Predicted Monthly Savings

 3-Month Forecast

See your predicted expenses, income, and savings for the next 3 months.

[Generate Forecast](#)**December 2025**

## EXPENSE

**₹51,406.82**

## INCOME

**₹91,588.25**

## SAVINGS

**₹40,181.43****January 2026**

## EXPENSE

**₹54,961.68**

## INCOME

**₹97,921.72**

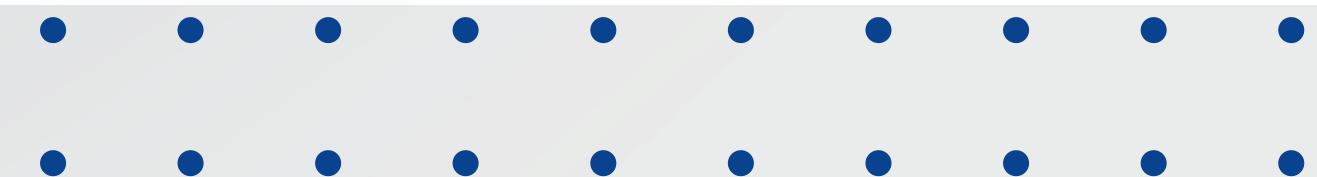
## SAVINGS

**₹42,960.04****February 2026**

## EXPENSE

## INCOME

## SAVINGS





# Financial Overview

[Generate Report](#)

Track your income, expenses, and savings with intelligent insights

Time Period:

All Time

Last Week

Last Month

Last 3 Months

Custom Range:

dd-mm-yyyy

to

dd-mm-yyyy

TOTAL INCOME

₹1,054,000.00

TOTAL EXPENSES

₹645,372.00

SAVINGS RATE

38.8%

TRANSACTIONS

105

### Budget Goals

[+ Add Budget Goal](#)

Food

November 2025

SPENT  
₹1,000

REMAINING  
₹0.00

BUDGET  
₹10,000

X

### Savings Goals

[+ Add Savings Goal](#)





## AI-Powered Recommendations

### AI-Powered Recommendations

PERSONALIZED FOR YOU

Refresh



✓ Excellent Savings Rate: You're saving 38.8% - well above the 20% target! Consider investing surplus in mutual funds or fixed deposits for wealth building.



Reduce Rent Spending: Your Rent expenses are 40% of total spending (₹260,000). Cut by 15% (₹39,000) to balance your budget better.



Great Progress on Expenses: Your spending is decreasing! Keep this momentum by setting a lower expense target for next month and celebrating small wins.



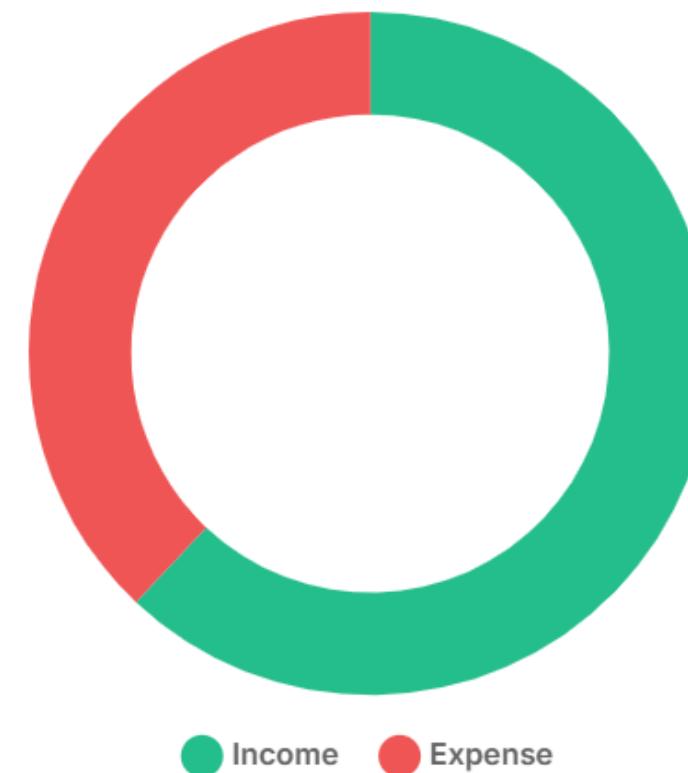
✓ Budget Discipline: You're managing 1 budgets well! Add 2-3 more categories to strengthen financial control and track seasonal variations.



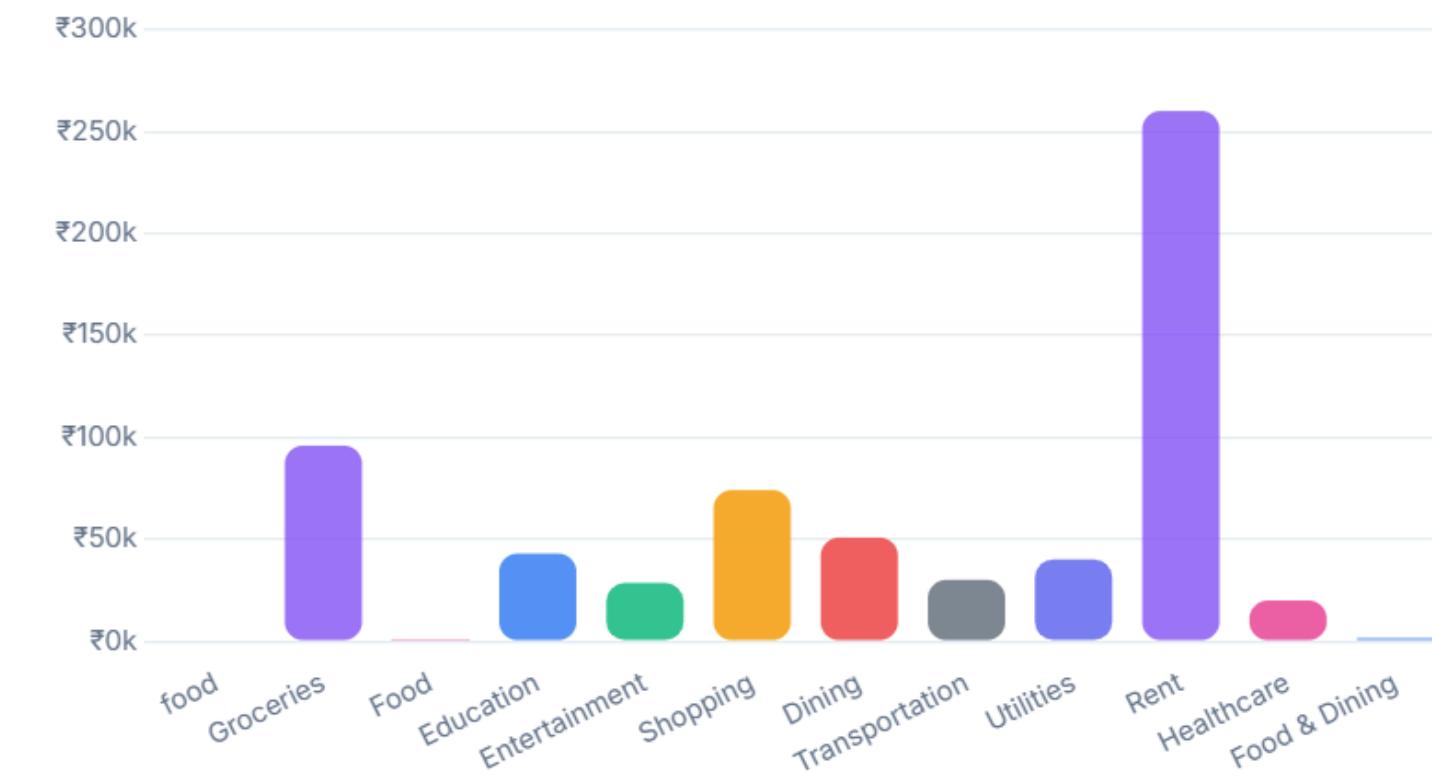
Build Emergency Fund: Create a savings goal for ₹322,686 (6 months expenses). Start with ₹26,890/month to build financial safety in 1 year.



### Income vs Expense

[OVERVIEW](#)

### Expense Breakdown

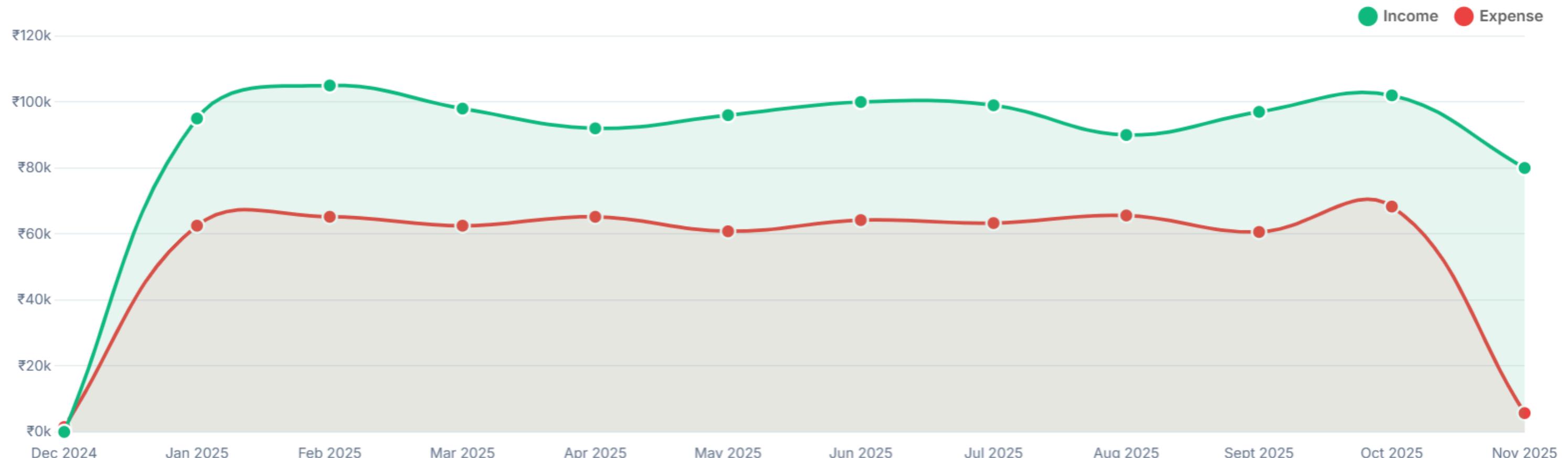
[CATEGORIES](#)



## BudgetWise Dashboard

[Home](#)[Logout](#)Income ExpenseGroceries Education Entertainment Shopping Utilities Transportation Utilities Healthcare Food & Dining

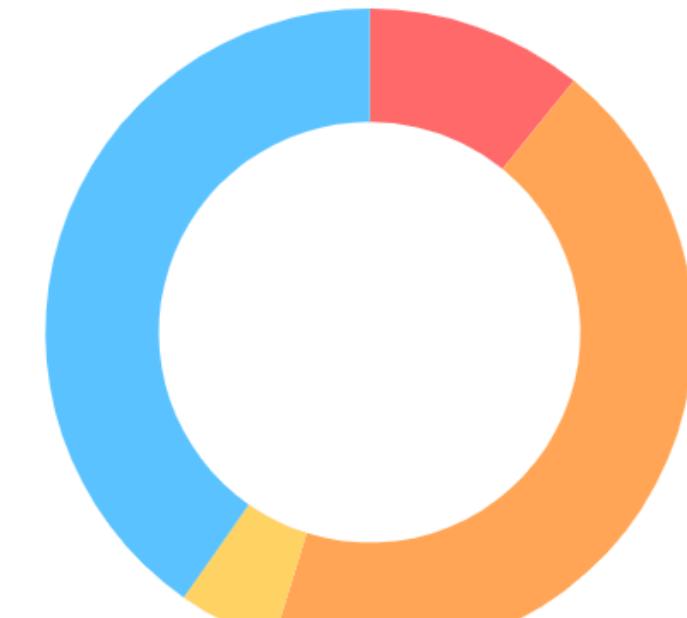
### Monthly Trend Analysis

[TIME SERIES](#)

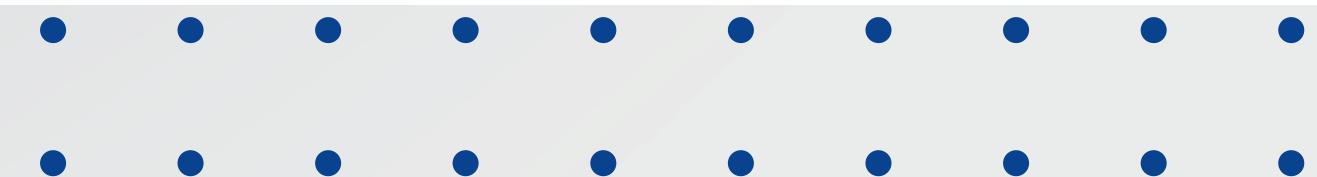


### Payment Methods

DISTRIBUTION



UPI Credit Card Cash Bank Transfer

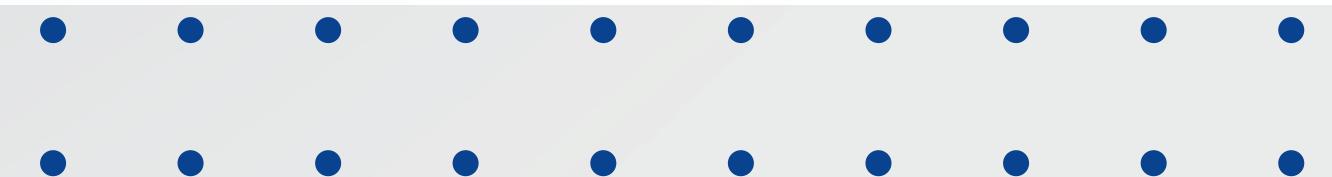




## Recent Transactions



Date	Type	Category	Amount	Payment Mode	Location
17 Nov 2025	Expense	food	₹700.00	UPI	Mumbai
02 Nov 2025	Expense	Groceries	₹4,500.00	Credit Card	Andheri
02 Nov 2025	Expense	Food	₹500.00	UPI	Mumbai
01 Nov 2025	Income	Salary	₹80,000.00	Bank Transfer	Mumbai
30 Oct 2025	Expense	Education	₹9,000.00	Credit Card	Online
27 Oct 2025	Expense	Entertainment	₹3,000.00	UPI	Lower Parel
24 Oct 2025	Expense	Shopping	₹8,000.00	Credit Card	Phoenix Mall



**THANK  
YOU**