Personal Expense Tracker & Financial Insights Dashboard using Excel and Power BI

1.Project Overview and Objective

Project Overview

This project focuses on analysing personal financial data to understand income, expenses, savings, and spending patterns. Using **Excel for data cleaning and preparation** and **Power BI for visualization**, the project transforms raw expense records into an interactive dashboard.

The dashboard provides a clear view of monthly expenses, income vs. expenditure, category-wise spending, payment mode analysis, and overall savings performance. It enables users to track financial behaviour effectively and make informed budgeting decisions.

Project Objectives

The main objectives of this project are:

- To **analyse total income, total expenses, and savings** over a specific time period
- To identify **monthly spending trends** and peak expense periods
- To evaluate **category-wise expenses** and highlight major spending areas
- To analyse expenses by **payment mode** (Cash, UPI, Bank Transfer, etc.)
- To compare **income vs. expenses** for better financial control
- To build an **interactive Power BI dashboard** with slicers for year, month, category, and payment mode
- To support **better budgeting and financial planning** through data-driven insights

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2. Data Sources

- Data Source: GitHub (Open-source dataset)
- Dataset Type: Personal Expense Tracker
- Domain: Finance / Personal Expense Analytics
- Time Period: 2021
- Data Format: Excel (.xlsx)

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3. Problem Statement

Managing personal finances effectively is challenging without a structured way to track income, expenses, and savings. Raw financial data stored in spreadsheets often lacks clarity, making it difficult to identify spending patterns, control unnecessary expenses, and evaluate savings performance over time.

The objective of this project is to **analyse personal income and expense data** and transform it into meaningful insights using **Excel and Power BI**. The project aims to answer key financial questions such as:

- How much income is generated versus how much is spent?
- Which categories contribute the most to total expenses?
- How do expenses vary across different months?
- What payment modes are used most frequently?
- How much is saved after expenses?

By building an **interactive dashboard**, this project helps users monitor financial behaviour, compare income and expenses, track savings, and support better budgeting and financial planning decisions.

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4. Attribute (Column /Features) Details

Attribute Name	Data Type	Description
Transaction_ID	Text / Integer	Unique identifier for each transaction record
Date	Date	Date on which the transaction occurred
Year	Integer	Year extracted from the transaction date
Month	Text	Month extracted from the transaction date
Description	Text	Brief explanation or note about the transaction
Main_Category	Text	Primary category of the transaction (Food, Housing, Transportation, etc.)
Sub_Category	Text	Detailed classification within the main category (Rent, Groceries, Fuel, etc.)
Category_ID	Text	Unique ID assigned to each main category for consistency and modelling
Transaction_Type	Text	Indicates whether the transaction is **Income** or **Expense**
Amount	Decimal / Currency	Transaction amount (positive values after cleaning)
Payment_Mode	Text	Mode of payment used (UPI, Cash, Net Banking, Bank Transfer, Bank Credit)

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5. Tools & Technologies

Tool / Technology	Purpose & Usage
Microsoft Excel	Used for data cleaning and preprocessing, including removal of duplicates, handling missing values, standardizing formats, creating calculated columns, and building Pivot Tables for preliminary analysis.
Microsoft Power BI	Used for data modeling by creating relationships between fact and dimension tables, performing DAX calculations for key metrics, and developing interactive dashboards with slicers and visualizations to derive actionable insights.

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6. Data Pre-Processing (Excel / Power Query)

Tasks Performed

- **Data Cleaning & Transformation**
  The raw dataset was cleaned by removing duplicate records and handling missing or inconsistent values. Data formats were standardized (date, currency, and text fields) to ensure accuracy and consistency. Required calculated columns were created to support analysis.
- **Filtering & Sorting**
  The data was filtered and sorted to retain only relevant and valid transaction records, improving data quality and analysis efficiency.
- **Pivot Table Creation**
  Pivot Tables were created in Excel to summarize income and expense data by month, category, and payment mode. These summaries helped identify initial trends and patterns before dashboard development.

- **Fact and Dimension Table Conversion**
  The cleaned dataset was structured into **Fact** and **Dimension** tables where applicable. This step improved data organization and supported efficient data modelling and performance in Power BI.

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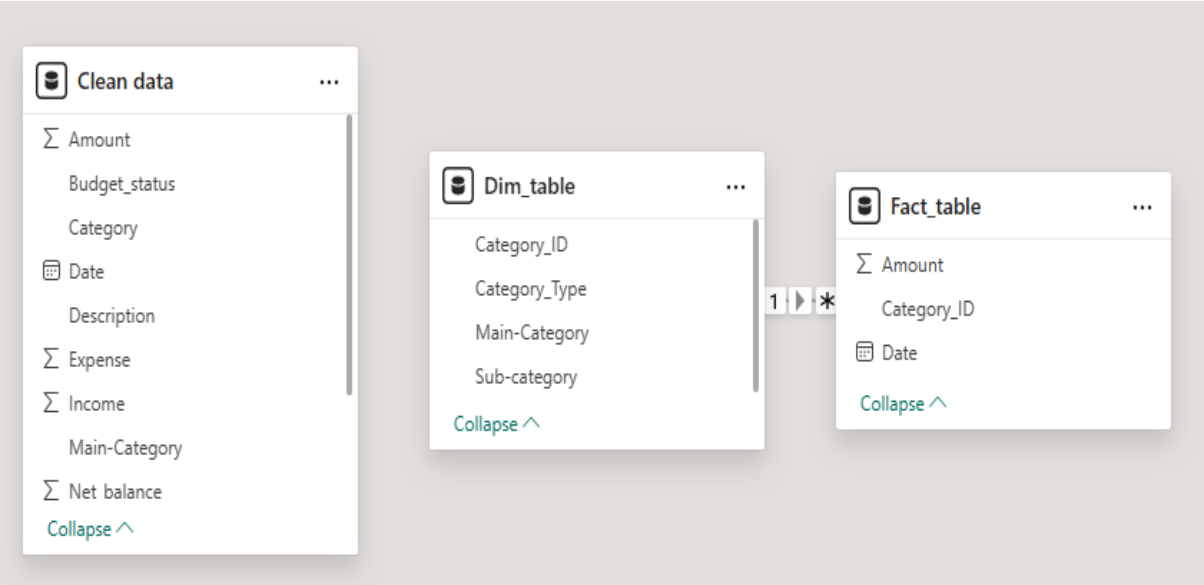
7. Data Modelling and DAX (Power BI)

Data Model

A structured data model was created in Power BI to support efficient analysis and visualization. The cleaned dataset was organized into **Fact** and **Dimension** tables to follow best data modeling practices.

- Relationships were established between tables using common key such as **Category_ID**
- Appropriate **cardinality (One-to-Many)** relationships were defined
- Lookup (Dimension) tables were used to reduce data redundancy
- The data model ensured improved performance and accurate aggregations



Calculated Columns & DAX Measures

DAX (Data Analysis Expressions) was used to create calculated columns and measures for key financial metrics and insights.

List of DAX Measures Implemented

DAX Measure Name	Description
Total Income	Calculates the total income amount
Total Expense	Calculates the total expense amount
Savings	Calculates savings as the difference between total income and total expense
Net Balance	Displays overall financial balance
Monthly Expense	Calculates total expense for each month
Category-wise Expense	Calculates expense distribution across categories
Expense Percentage	Calculates percentage contribution of each category to total expense
Income vs Expense	Compares total income and total expense
Spending Percentage	Calculates percentage of expense against income
Budget Status	Indicates whether the user is in *Saving* or *Spending* status

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8. Analysis and Visualizations (Power BI)

Dashboard Features

A consolidated and interactive Power BI dashboard was developed to analyze income, expenses, savings, and spending patterns. The dashboard effectively communicates insights through well-structured visuals aligned with the problem statement.

Visualizations Used (Listed)

Visualization Type	Purpose
Card Visuals	Display key KPIs such as Total Income, Total Expense, Savings, and Net Balance
Clustered Column Chart	Compare Total Income vs Total Expense
Line Chart	Analyze monthly expense trends over time
Bar Chart	Show category-wise expense distribution
Pie / Donut Chart	Analyze expense distribution by payment mode
Table / Matrix	Display detailed transaction-level or category-level summaries
Gauge / KPI Visual	Visualize budget status and spending vs savings percentage

Visualization Explanation and Analytical Insights

Chart 1 & 2:

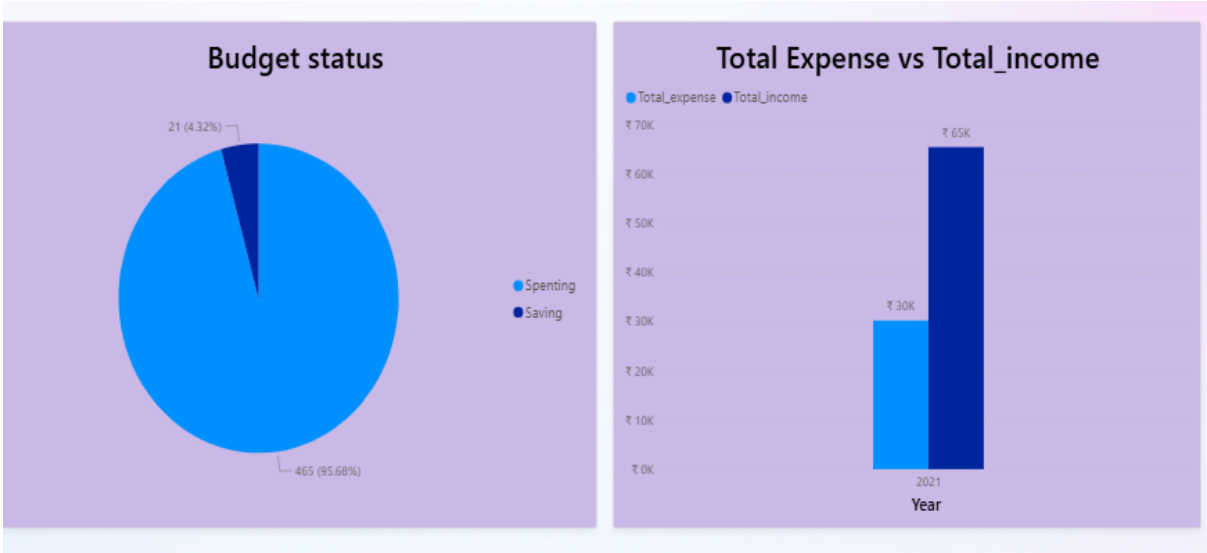

Chart 1:Budget Status (Spending vs Saving)

Explanation

This pie chart represents the **overall budget distribution** between **Spending** and **Saving** for the selected period.

- **Spending** forms the major portion of the budget.
- **Saving** represents a very small share compared to spending.

Key Insights

- Around **95% of income is spent**, while only **about 4–5% is saved**.
- This indicates a **high spending pattern** with **minimal savings**.
- The current saving level may not be sufficient for **future financial goals or emergencies**.

Chart 2: Total Expense vs Total Income (Year-wise)

Explanation

This clustered column chart compares **Total Income** and **Total Expense** for the year **2021**.

- The **income bar** is significantly higher than the **expense bar**.
- Both values are shown in absolute monetary terms for easy comparison.

Key Insights

- **Total Income (~₹65K)** is higher than **Total Expense (~₹30K)**.
- This shows a **positive cash flow**, meaning income exceeds expenses.
- Even though income is sufficient, **most of it is being spent**, as seen in the Budget Status chart.

Chart 3:

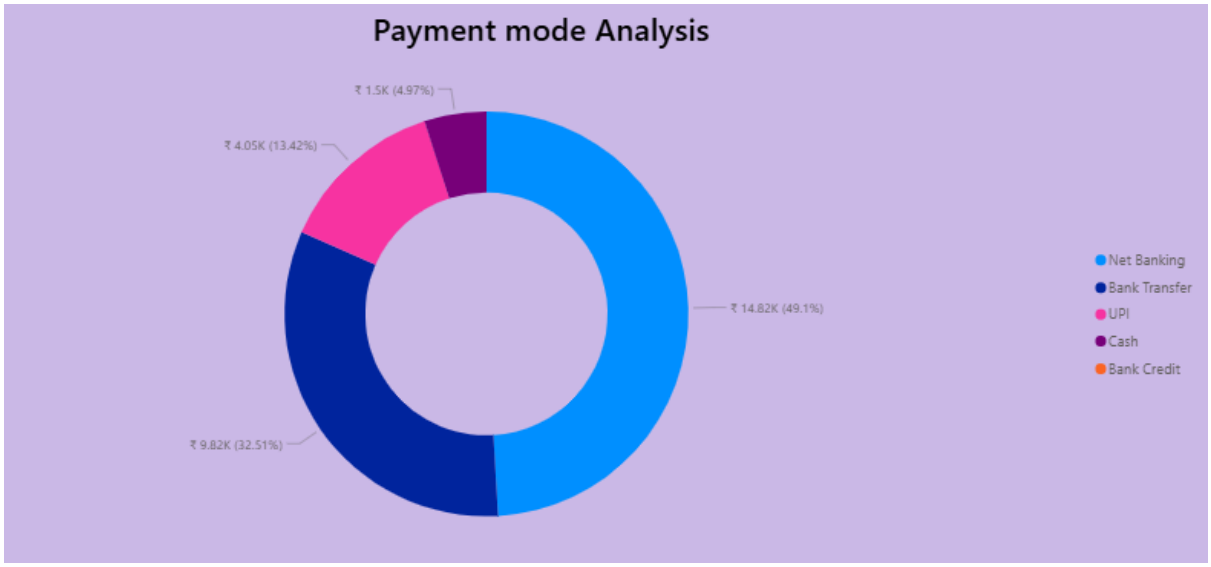

Chart 3: Donut Chart – Payment Mode Analysis

Explanation:
The donut chart shows the **distribution of expenses across different payment modes**, highlighting how payments are made.

Key Insight:
Net Banking is the most used payment mode, followed by **Bank Transfer**, indicating a strong preference for **digital payments**, while **cash and credit** usage is minimal.

Chart 4:

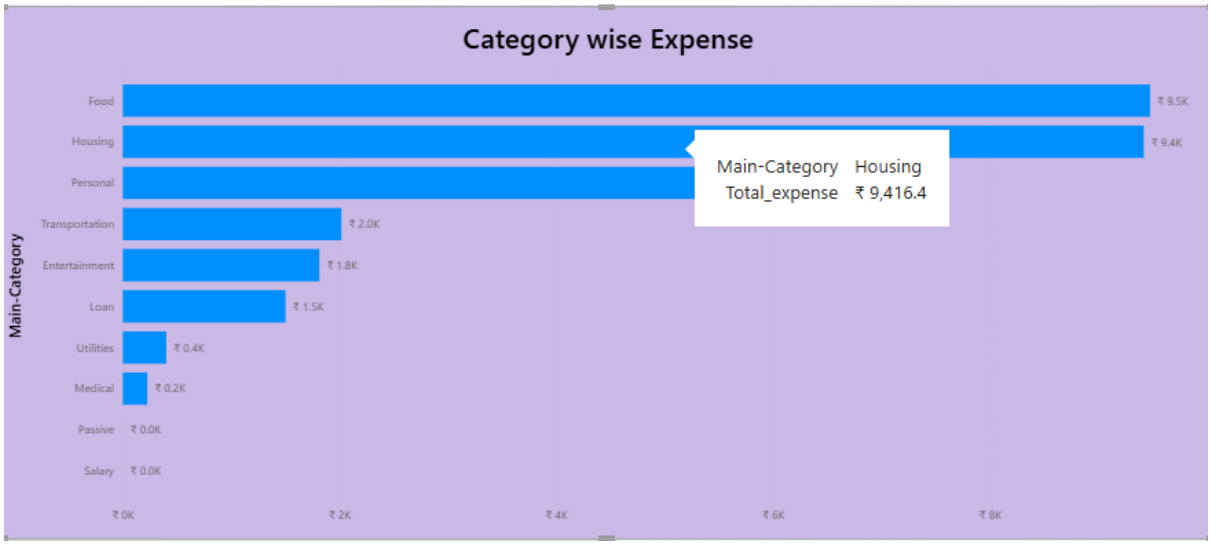

Chart 4:Category-wise Expense Analysis

Explanation:
This bar chart shows the **total expenses for each main category**, making it easy to compare where most money is spent.

Key Insight:
Food and Housing are the highest expense categories, followed by **Personal and Transportation**, indicating that essential living costs account for the majority of total spending, while other categories contribute only a small share.

Chart 5:

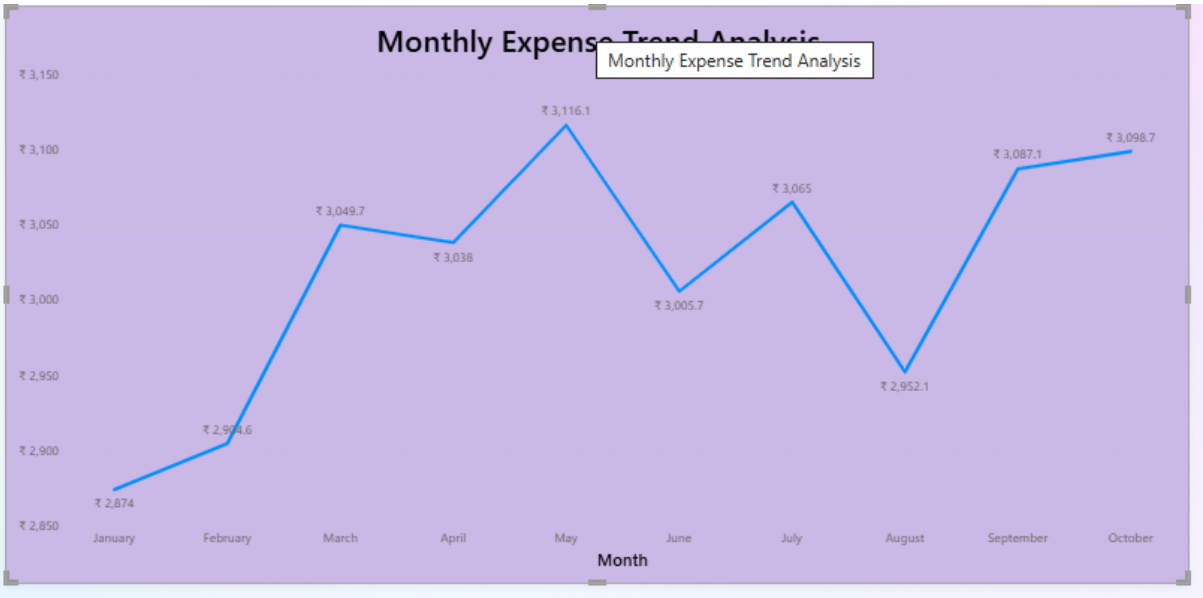

Chart 5:Monthly Expense Trend Analysis

Explanation:
This line chart shows the **trend of total expenses across different months**, helping to track how spending changes over time.

Key Insight:
Expenses **fluctuate month to month**, with **higher spending around March–May and September–October**, and a noticeable **dip in August**, indicating seasonal or event-based variations in spending patterns.

Interactivity & Report Design

- **Slicers** were added for:
  - Month
  - Main Category
  - Payment Mode
- **Filters** enabled dynamic data exploration across visuals

- **Drill-down functionality** allows users to analyze data from high-level summaries to detailed views
- **Clear titles, data labels, and tooltips** were applied to all visuals for better understanding
- **Bookmarks** were used to improve report navigation and user experience

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Consolidated Dashboard

All visuals were integrated into a **single consolidated report layout**, providing a holistic view of personal financial performance. The dashboard supports quick decision-making by presenting insights in an intuitive and visually appealing manner.

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9. Insights & Conclusions

Key Findings

- Total income is higher than total expenses, resulting in savings.
- Food and Housing are the highest expense categories.
- Monthly expenses vary and are not constant every month.
- Net Banking payment methods are used more frequently than cash.
- Spending is mostly within the planned budget.

Analysis Insights

1.Descriptive Analysis (What happened?)

The descriptive analysis summarizes the overall financial performance by presenting **total income, total expenses, and total savings**. It gives a clear picture of how money is earned, spent, and saved during the selected period.

Monthly expense analysis shows how spending changes across different months, helping to identify **months with higher or lower expenses**. This helps in understanding spending fluctuations over time.

Category-wise expense analysis highlights how expenses are distributed across categories such as **Food, Housing, Transportation, and Personal expenses**, making it easy to identify the **highest spending categories**.

Overall, this analysis helps users clearly understand **spending behavior, expense distribution, and savings patterns** through simple and effective visualizations.

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2. Diagnostic Analysis (Why did it happen?)

• Higher expenses mainly occur due to regular and essential spending on **Food and Housing**.
• Some months show increased expenses because of **recurring payments** such as rent and bills.
• **Digital payment modes** are used more frequently because they are quick, easy, and convenient.

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3. Predictive Analysis (What may happen next?)

• If the current spending pattern continues, **future expenses are likely to follow a similar trend**.
• High-expense categories such as Food and Housing are expected to **remain the major contributors** to total expenses.

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4. Prescriptive Analysis (What should be done?)

• Reduce unnecessary or non-essential expenses to **increase savings**.
• Set **monthly budgets** for each expense category to control spending.
• Regularly monitor expenses using the dashboard to **avoid overspending and improve financial planning**.

10.Conclusion

This project uses Excel and Power BI to analyze personal financial data and visualize income, expenses, and savings.
The insights gained help identify major spending areas, control expenses, and support effective budgeting and financial planning.

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