Personal Finance Dashboard Project Documentation

1. Executive Summary

The Personal Finance Dashboard is a business intelligence solution developed in Microsoft Power BI designed to provide individuals with a comprehensive, real-time view of their financial health. The project focuses on transforming raw transaction data (Income and Expenses) into actionable insights, enabling users to monitor spending habits, track savings progress, and manage budgets effectively. The solution leverages robust data modeling techniques and custom DAX measures to deliver accuracy and performance.

2. Project Scope and Objectives

2.1. Objectives

- **Monitor Cash Flow:** Visualize the monthly and yearly trends of income and expenses.
- **Analyze Spending:** Break down expenditure by category (e.g., Groceries, Rent, Entertainment) to identify high-spend areas.
- **Track Savings:** Calculate and display the Savings Rate as a percentage of income.
- **Budget Management:** Provide a mechanism to compare actual spending against predefined monthly budgets.
- **Time Intelligence:** Allow users to analyze financial performance over various time periods (Year-to-Date, Month-over-Month).

2.2. Scope of Data

Component	Description	Fields Included
Fact Table (Transactions)	Consolidated ledger of all financial transactions (Income and Expenses).	Transaction ID, Date, Amount, Type (Income/Expense), Category, Subcategory, Notes
Dimension Table (Calendar)	A dedicated date table used for time intelligence and slicing across various periods.	Date, Year, Month, Month Name, Day of Week, Week Number
Dimension Table (Categories)	A lookup table to standardize and simplify transaction categories.	Category ID, Category Name, Budgeted Amount

3. Data Model and Transformation (ETL)

3.1. Data Sources

The primary data source is typically a consolidated CSV/Excel file exported from banking and financial platforms.

3.2. Power Query (M Language) Steps

1. **Data Cleaning:** Remove redundant or irrelevant columns (e.g., transaction notes that are not needed for analysis).
2. **Date Standardisation:** Ensure the Date column is correctly formatted as a Date data type.
3. **Categorization:** Implement conditional columns to map raw transaction text to standardized categories (e.g., mapping multiple coffee shop names to the single category "Food & Drink").
4. **Date Table Generation:** A dedicated Calendar dimension table is generated and marked as a Date Table for use in DAX time intelligence functions.

3.3. Relationships

The model uses a **Star Schema** with the following relationship:

- Transactions[Date] **<-- 1:Many -->** Calendar[Date]

4. Key Performance Indicators (KPIs) and DAX Measures

The following key measures were implemented using **Data Analysis Expressions (DAX)** to facilitate high-performance calculations:

Measure Name	**DAX Function (Conceptual)**	**Description**
Total Income	CALCULATE(SUM(Transactions[Amount]), Transactions[Type] = "Income")	Total sum of all transactions classified as Income.
Total Expenses	CALCULATE(SUM(Transactions[Amount]), Transactions[Type] = "Expense")	Total sum of all transactions classified as Expense.

Net Flow	[Total Income] - [Total Expenses]	The difference between income and expenses, representing cash flow.
Savings Rate	DIVIDE(Total Savings, Total Income)	Calculated as a percentage, showing how much of the income is saved.
Monthly Trend	CALCULATE([Net Flow], DATESYTD('Calendar'[Date]))	Calculates the running total of the Net Flow, typically used for comparison visuals.
Category % of Total	DIVIDE([Total Expenses], CALCULATE([Total Expenses], ALL(Categories)))	Percentage contribution of a single category's expense to the total expense.

5. Dashboard Components and Visualization

The dashboard is designed for high-level monitoring on the first page, with drill-down capabilities on subsequent pages.

5.1. Dashboard Layout

- **Filters/Slicers:** Prominent slicers for Year, Month, and Top-Level Category are positioned in the top-left section.
- **KPI Cards:** Large, formatted cards displaying Total Income, Total Expenses, Net Flow, and Savings Rate are placed at the top of the dashboard.

5.2. Key Visualizations

Visual Component	Purpose	Data Source
Line Chart	Shows monthly trend of Income vs. Expenses over the selected period.	Calendar[Month Name], [Total Income], [Total Expenses]
Donut/Pie Chart	Displays the distribution of spending, highlighting the largest expense categories.	Categories[Category Name], [Total Expenses]

Treemap	Visualizes expense distribution by Subcategory within a selected main category.	Categories[Subcategory Name], [Total Expenses]
Gauge Chart	Used to compare the [Total Expenses] against the Budgeted Amount for the current period.	[Total Expenses], Categories[Budgeted Amount]
Table/Matrix	Provides drill-through details, showing a list of transactions when a category or month is selected.	All columns from the Transactions table.

6. Maintenance and Future Enhancements

6.1. Maintenance Checklist

- **Data Refresh:** Verify scheduled data refresh (if applicable) or manual refresh upon opening.
- **Categorization Review:** Periodically review new transaction types to ensure accurate category mapping in Power Query.

6.2. Future Enhancements

- Integration of investment and asset data to calculate and track **Net Worth**.
- Addition of forecasting models (Python integration) to predict future spending based on historical data.
- Implementation of row-level security (RLS) if the dashboard were to be shared across multiple independent users.