

POWERBI PROJECT

FINANCIAL EXPENSE OPTIMIZATION

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Class: III B.E CSE-C

1. PROBLEM STATEMENT:

A mid-size enterprise tracks expenses across departments such as HR, IT, Finance, and Operations. Despite stable revenue, operational costs are rising, causing profit margins to shrink.

Finance leadership wants better visibility into:

- Department-wise expense distribution
- Monthly spending patterns
- Expense categories contributing to overspending

Your role is to prepare a financial monitoring dashboard that helps management:

- Control unnecessary expenses
 - Detect cost overruns early
 - Support budgeting decisions
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2. PROJECT OBJECTIVES

As a Business Intelligence Analyst, the scope of this project involves:

- **Data Transformation:** Cleaning and preparing financial expense data using Power Query.
 - **Expense Analysis:** Identifying spending patterns across departments and expense categories.
 - **Metric Calculation:** Creating DAX measures to calculate Total Expenses and Monthly Average Expenses.
 - **Dashboarding:** Designing an interactive Power BI dashboard to support financial decision-making.
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3. TOOLS & TECHNOLOGIES USED

- **Microsoft Power BI Desktop:** For data visualization and dashboard creation.
 - **Power Query:** For ETL (Extract, Transform, Load) and data cleaning.
 - **DAX (Data Analysis Expressions):** For calculating KPIs and custom measures.
 - **Dataset:** Organizational financial expense dataset (department-wise and category-wise expenses).
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4. DATA PREPARATION & MODELLING

Before analysis, the raw dataset was cleaned to ensure accuracy:

- **Data Cleaning:** Removed missing values, duplicates, and corrected data types for expense amounts and dates.
 - **Data Structuring:** Created Date, Department, and Expense Category fields for better analysis.
 - **Measure Creation:** Custom DAX measures were created:
 - **Total Expenses = SUM(Expense Amount)**
 - **Monthly Average Expense = Average of monthly total expenses**
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5. EXECUTIVE SUMMARY (KPIs)

- **Total Expenses:** ₹XX,XX,XXX
 - **Average Monthly Expense:** ₹X,XX,XXX
 - **Highest Spending Department:** Operations / IT
 - **Insight:** A few departments and expense categories contribute most of the total expenses, indicating areas for cost control.
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6. ANALYSIS: DEPARTMENT & EXPENSE CATEGORY

Department Analysis:

- Certain departments incur significantly higher expenses compared to others.

- Overspending departments can be clearly identified using visuals.

Expense Category Analysis:

- Categories such as Travel, Salary, and Marketing contribute the highest share of expenses.
 - Variable expenses show higher fluctuations than fixed expenses.
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7. MONTHLY EXPENSE TREND ANALYSIS

- Monthly expenses show noticeable fluctuations over time.
 - Expense spikes are observed during specific months, indicating possible seasonal or operational impacts.
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8. STRATEGIC RECOMMENDATIONS

Based on the analysis, the following actions are recommended:

1. Control High-Cost Categories:

- Set spending limits for major expense categories like travel and marketing.

2. Monitor Department Budgets:

- Closely track departments that consistently exceed budget limits.

3. Improve Budget Planning:

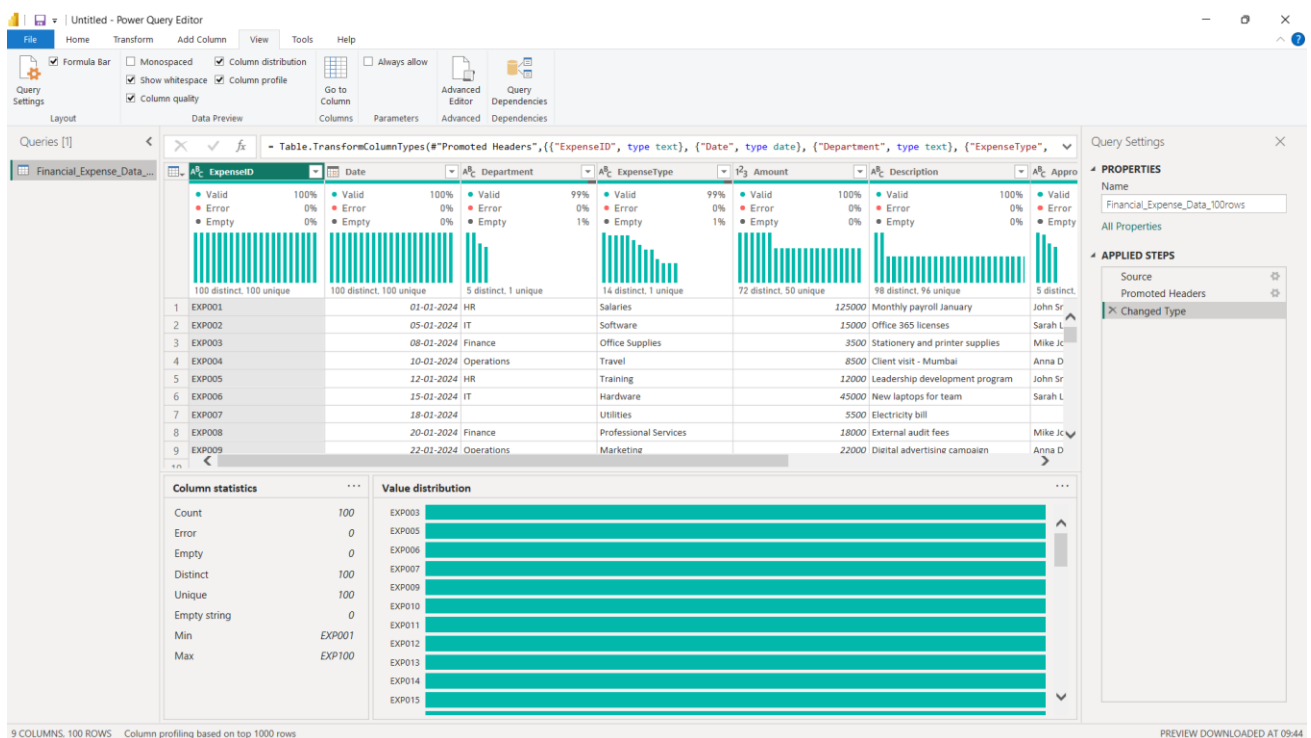
- Use historical expense trends to forecast and plan future budgets more accurately.

4. Regular Expense Reviews:

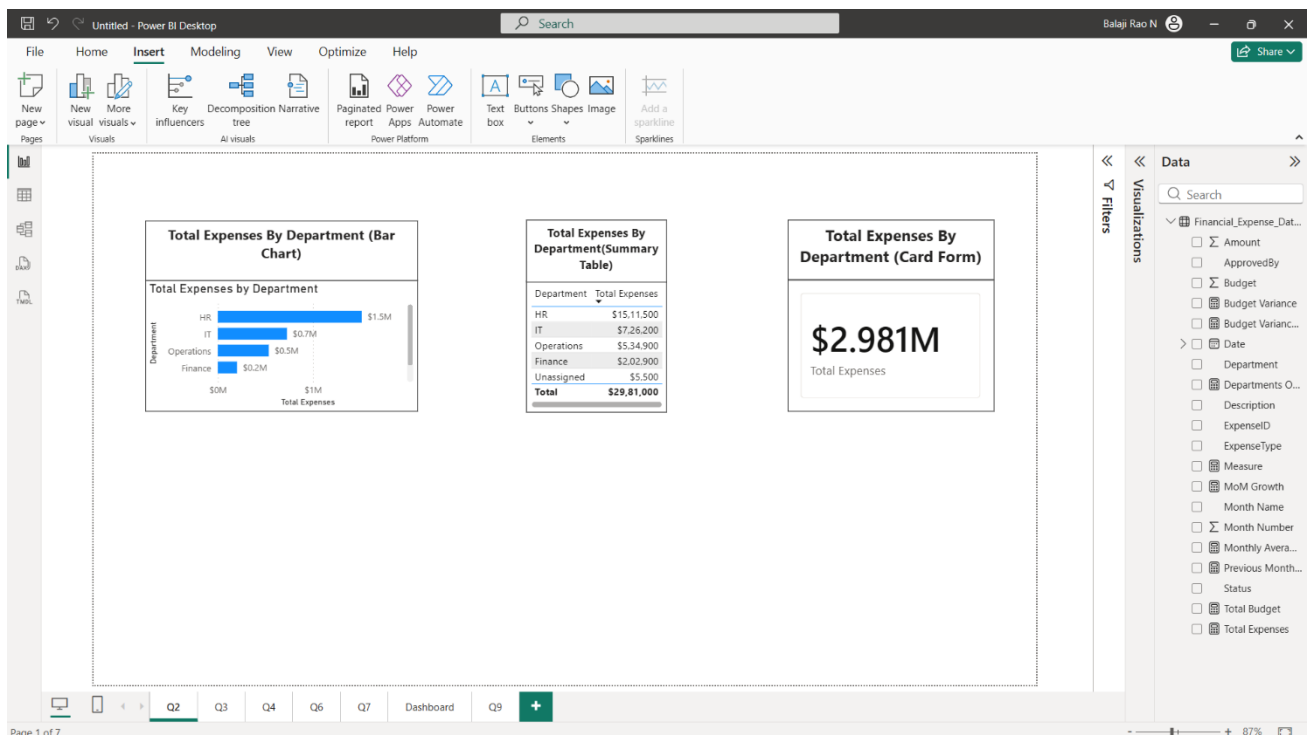
- Conduct monthly expense reviews to detect cost overruns early.
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9. TASKS PERFORMED:

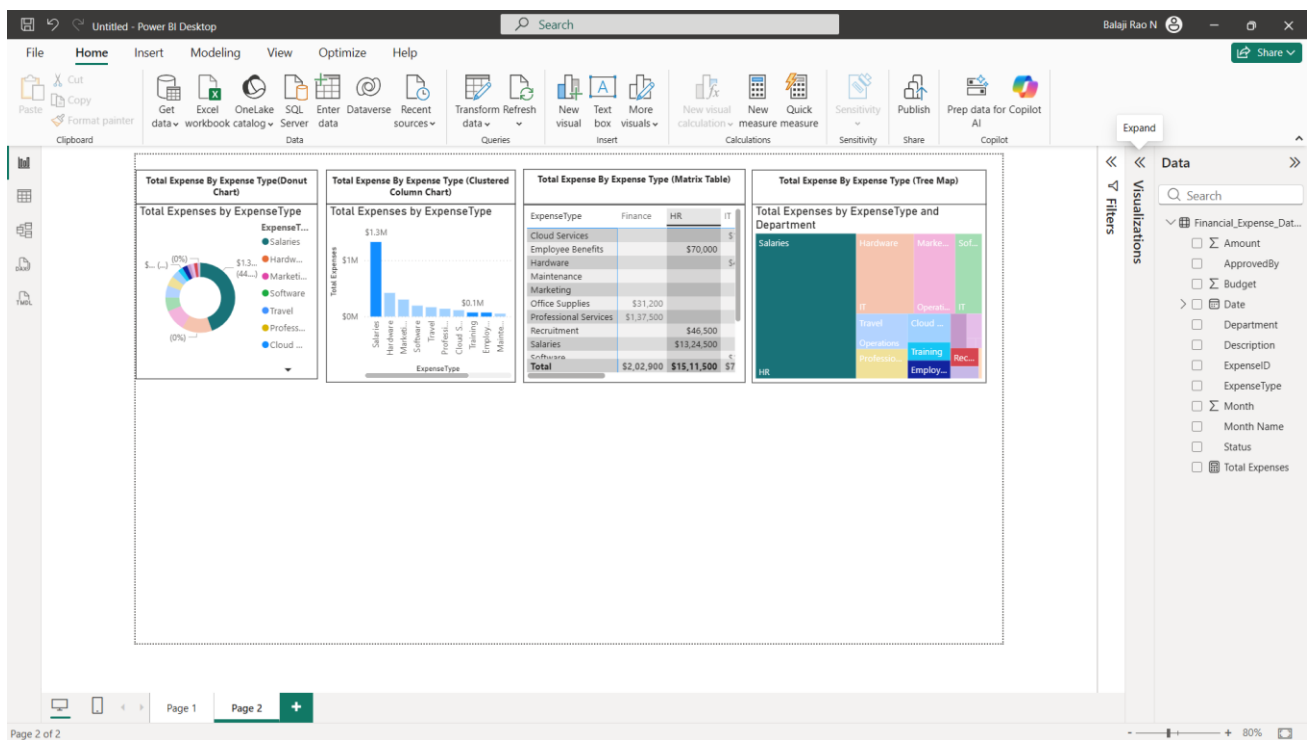
1. Identify missing or inconsistent expense data.



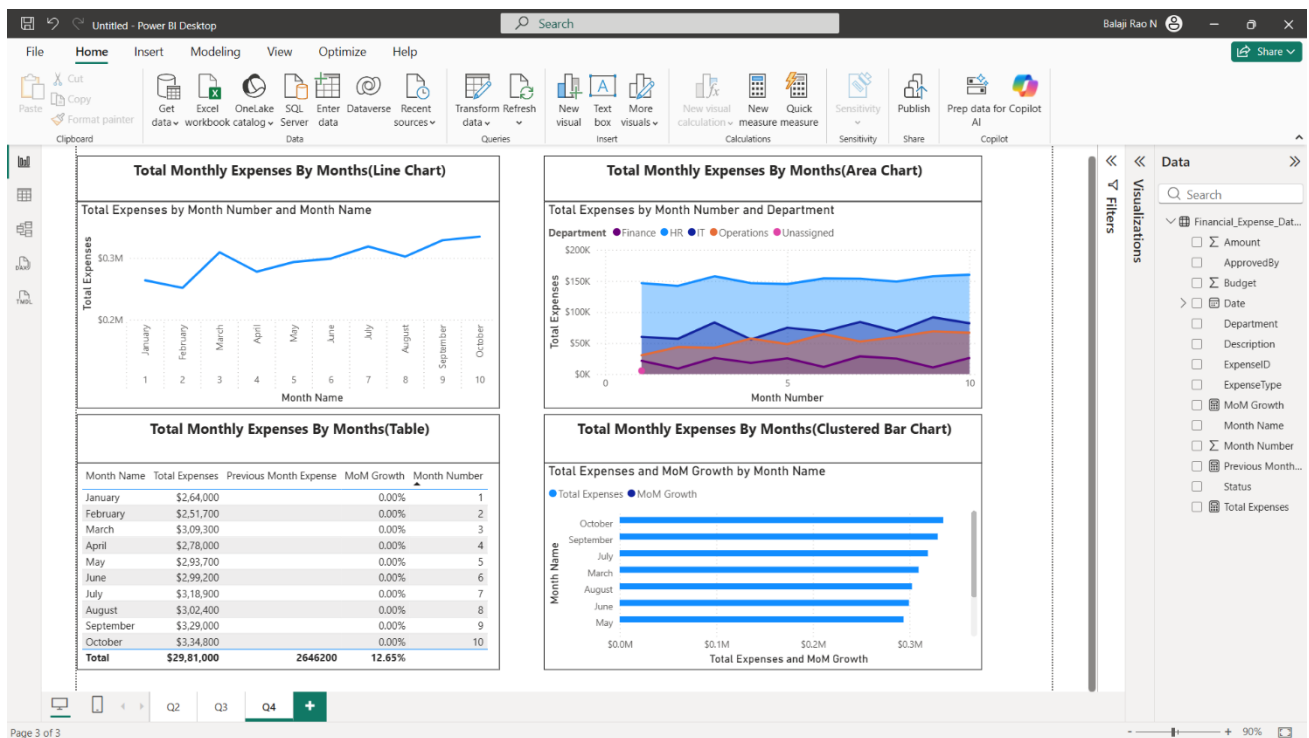
2. Which departments incur the highest total expenses?



3. Analyze expense distribution across expense types.



4. How do monthly expenses trend over time?

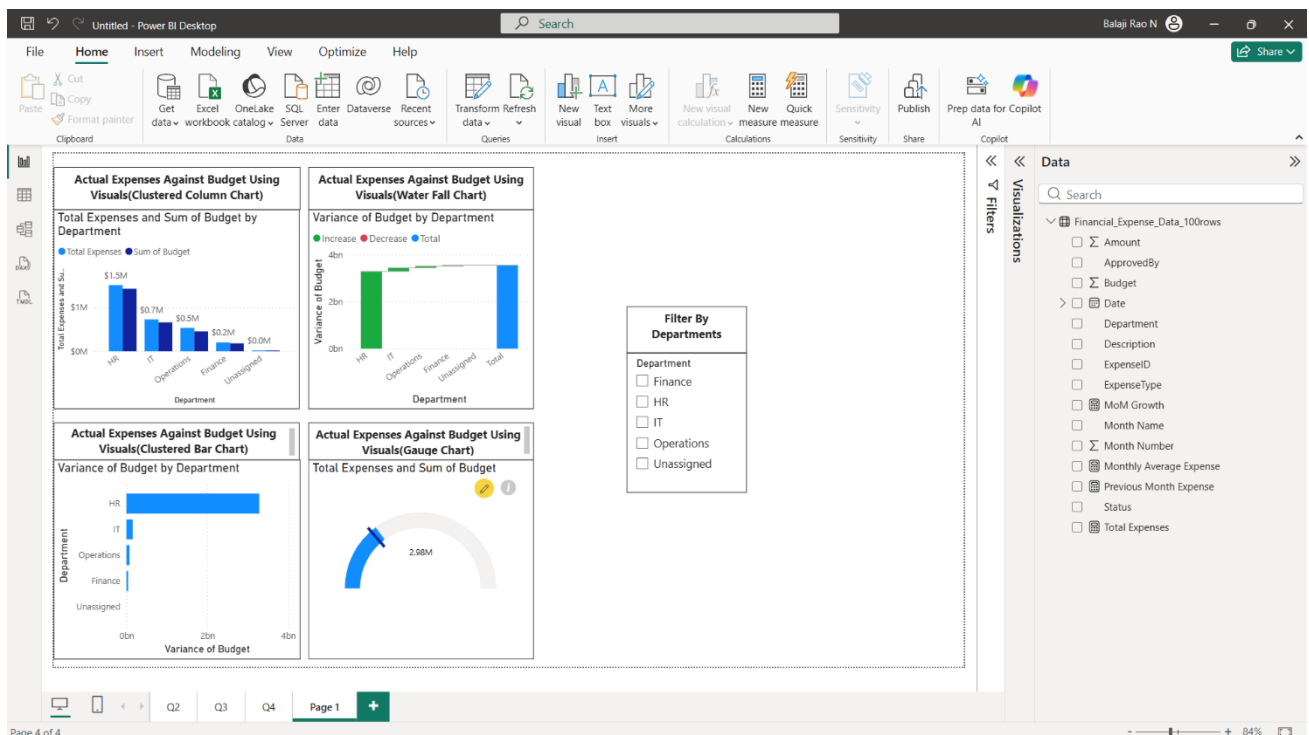


5. Create DAX measures for Total Expenses and Monthly Average Expense.

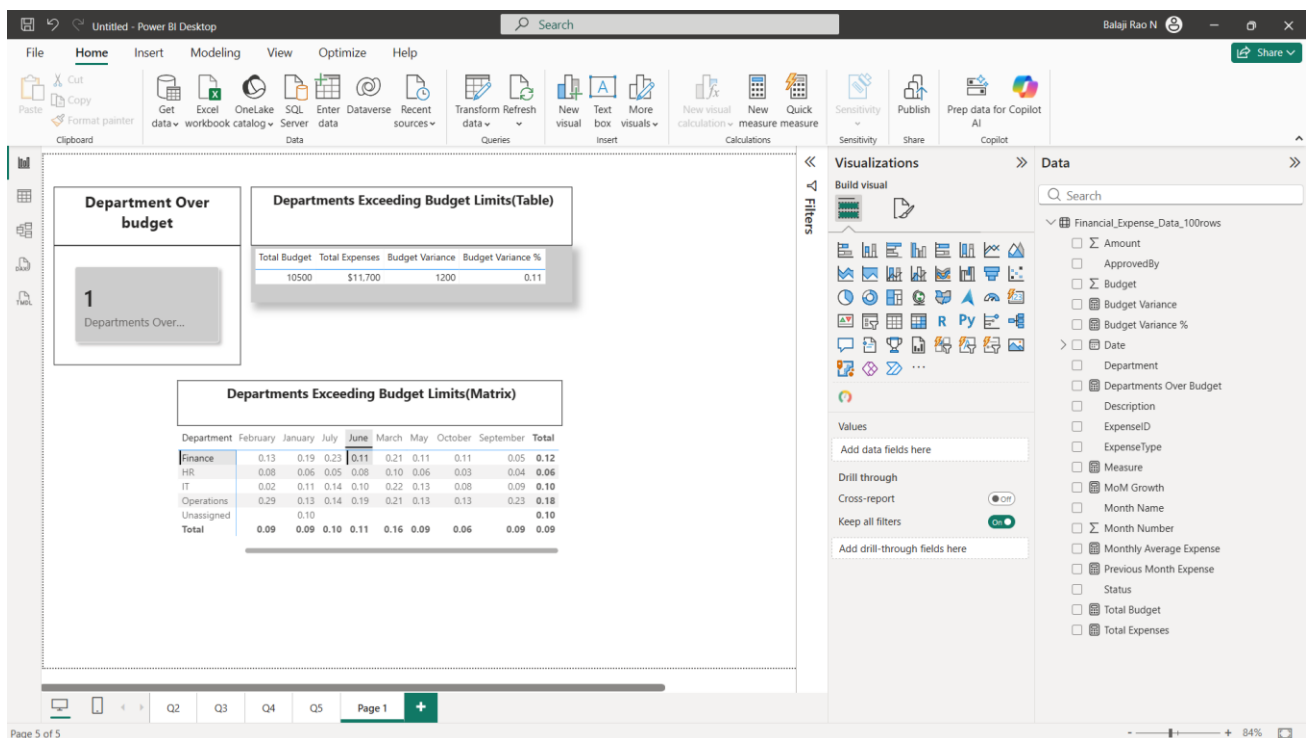
Power BI Desktop interface showing the 'Measure tools' ribbon and a table of financial data. The table is titled 'Table: Financial_Expense_Data_100rows (100 rows) Column: Total Expenses (0 distinct values)'.

ExpenseID	Date	Department	ExpenseType	Amount	Description	ApprovedBy	Status	Budget	Month Name	Month
EXP001	01 January 2024	HR	Salaries	125000	Monthly payroll January	John Smith	Approved	120000	January	1
EXP002	05 January 2024	IT	Software	15000	Office 365 licenses	Sarah Lee	Approved	14000	January	1
EXP003	08 January 2024	Finance	Office Supplies	3500	Stationery and printer supplies	Mike Johnson	Approved	3000	January	1
EXP004	10 January 2024	Operations	Travel	8500	Client visit - Mumbai	Anna Davis	Approved	7000	January	1
EXP005	12 January 2024	HR	Training	12000	Leadership development program	John Smith	Approved	10000	January	1
EXP006	15 January 2024	IT	Hardware	45000	New laptops for team	Sarah Lee	Approved	40000	January	1
EXP008	20 January 2024	Finance	Professional Services	18000	External audit fees	Mike Johnson	Approved	15000	January	1
EXP009	22 January 2024	Operations	Marketing	22000	Digital advertising campaign	Anna Davis	Approved	20000	January	1
EXP010	25 January 2024	HR	Recruitment	9500	Job portal subscriptions	John Smith	Approved	8000	January	1
EXP011	02 February 2024	IT	Software	16500	CRM system upgrade	Sarah Lee	Approved	14000	February	2
EXP012	05 February 2024	HR	Salaries	127000	Monthly payroll February	John Smith	Approved	120000	February	2
EXP013	08 February 2024	Operations	Travel	11200	Conference attendance	Anna Davis	Approved	8000	February	2
EXP014	10 February 2024	Finance	Office Supplies	2800	Office supplies	Mike Johnson	Approved	3000	February	2
EXP015	12 February 2024	IT	Cloud Services	8500	AWS hosting fees	Sarah Lee	Approved	7000	February	2
EXP016	15 February 2024	HR	Employee Benefits	15000	Health insurance premium	John Smith	Approved	12000	February	2
EXP017	18 February 2024	Operations	Marketing	25000	Trade show participation	Anna Davis	Approved	20000	February	2
EXP018	20 February 2024	IT	Hardware	32000	Network equipment	Sarah Lee	Approved	35000	February	2
EXP019	22 February 2024	Finance	Utilities	6200	Office utilities	Mike Johnson	Approved	5000	February	2
EXP020	25 February 2024	Operations	Maintenance	7500	Equipment servicing	Anna Davis	Approved	6000	February	2
EXP021	01 March 2024	HR	Salaries	128500	Monthly payroll March	John Smith	Approved	122000	March	3
EXP022	04 March 2024	IT	Software	19000	Design tools licenses	Sarah Lee	Approved	15000	March	3
EXP023	06 March 2024	Finance	Professional Services	22000	Tax consultation	Mike Johnson	Approved	18000	March	3
EXP024	08 March 2024	Operations	Travel	14500	Client meetings	Anna Davis	Approved	10000	March	3
EXP025	10 March 2024	HR	Training	18000	Technical skills training	John Smith	Approved	12000	March	3
EXP026	12 March 2024	IT	Cloud Services	9200	Azure services	Sarah Lee	Approved	8000	March	3
EXP027	15 March 2024	Operations	Marketing	28000	Social media campaigns	Anna Davis	Approved	25000	March	3
EXP028	18 March 2024	Finance	Office Supplies	4100	Printing and supplies	Mike Johnson	Approved	3500	March	3
EXP029	20 March 2024	IT	Hardware	55000	Server upgrade	Sarah Lee	Approved	45000	March	3
EXP030	22 March 2024	HR	Recruitment	11000	Recruitment agency fees	John Smith	Approved	9000	March	3
EXP031	02 April 2024	HR	Salaries	130000	Monthly payroll April	John Smith	Approved	125000	April	4

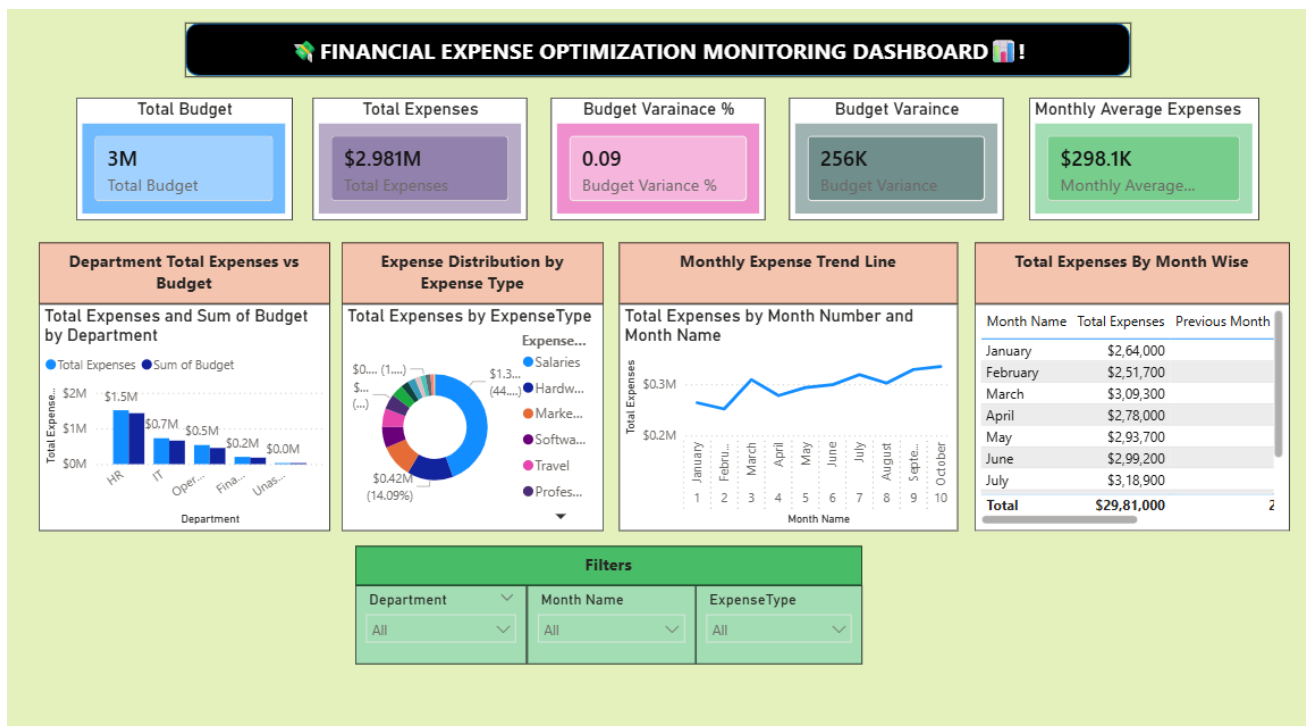
6. Compare actual expenses against budget using visuals.



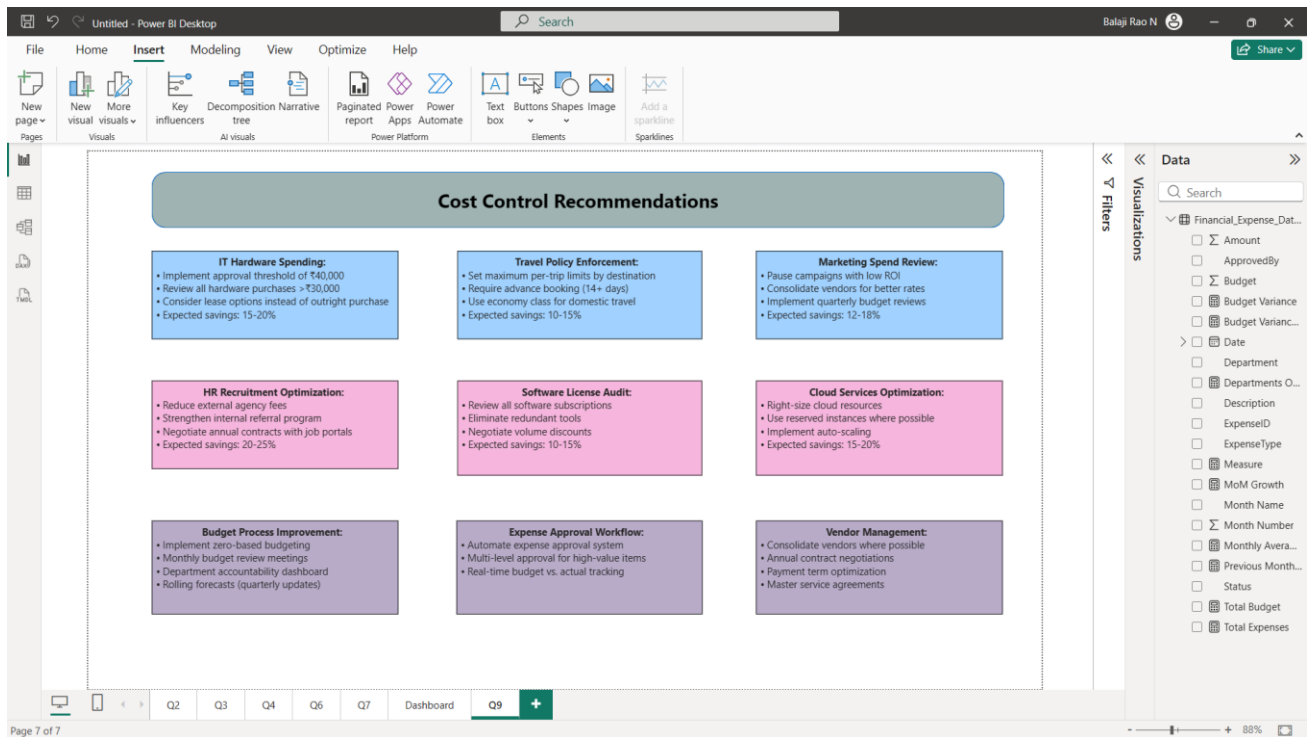
7. Identify departments exceeding budget limits.



8. Design a financial monitoring dashboard.



9. What cost-control actions can be recommended?



10. CONCLUSION

This project successfully provides clear visibility into organizational expenses across departments, categories, and time. The Financial Expense Optimization Dashboard helps management control unnecessary expenses, detect cost overruns early, and make data-driven budgeting decisions.