

# POWER BI PROJECT REPORT

## Financial Expense Optimization Dashboard

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**Title: Financial Expense Optimization using Power BI**



**Course:** Power BI – Professional Elective

**Project Type:** Dashboard & DAX-Based Analysis

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**Department / Year:** AI & DS – III Year

**Institution:** Sri Krishna College of Technology

**Academic Year:** 2025–2026

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# PROJECT OVERVIEW:

## Objective

The goal of this project is to analyse departmental expenses of a mid-size enterprise using **Power BI**, identify cost overruns, and provide actionable insights for expense optimization.

## Tools Used

- Power BI Desktop
- DAX
- Data Modelling
- Data Visualization

The screenshot shows the Power Query Editor interface with the following details:

- File Bar:** Untitled - Power Query Editor, File, Home, Transform, Add Column, View, Tools, Help.
- Toolbars:** Close & Apply, New Source, Recent Sources, Enter Data, Data source settings, Manage Parameters, Refresh Preview, Advanced Editor, Properties, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Split Column, Group By, Replace Values, Data Type: Text, Use First Row as Headers, Merge Queries, Append Queries, Combine Files, Combine.
- Queries List:** Querries [5] - Accounts-Payable, Accounts-Receivable, Budget-Forecast, Expense-Claims, General-Ledger.
- Table View:** A table titled "Table.TransformColumnTypes(#Promoted Headers, {{"APID", type text}, {"Vendor", type text}, {"InvoiceDate", Int64.Type}, {"DueDate", type text}, {"Amount", type number}, {"Currency", type text}, {"Status", type text}})" with 9 columns and 800 rows. The columns are: APID, Vendor, InvoiceDate, DueDate, Amount, Currency, Status.
- Query Settings Panel:** Shows the current query name is "Accounts-Payable".
- Applied Steps Panel:** Shows the last step taken was "Changed Type".
- Bottom Status:** 9 COLUMNS, 800 ROWS - Column profiling based on top 1000 rows, PREVIEW DOWNLOADED AT 22:44 IN 07-02-2026.

Table: Accounts-Payable (800 rows)

Update available (click to download)

## **PROBLEM STATEMENT:**

Despite stable revenue, the organization is facing increasing operational costs across departments such as HR, IT, Finance, and Operations. Finance leadership requires a centralized dashboard to monitor expenses, track trends, and compare actual spending against budgets.

Identifying missing or inconsistent expense data.

**Untitled - Power Query Editor**

File Home Transform Add Column View Tools Help

Close & Apply New Source... Enter Data Data source settings Manage Parameters Export query results Refresh Preview Advanced Editor Properties Choose Text... Remove Columns \* Columns \* Rows \* Sort Transform

Query Settings

**PROPERTIES**

Name: Financial\_Expense\_Data\_100rows  
All Properties

**APPLIED STEPS**

Source: Promoted Headers  
Changed Type: Replaced Value3  
Replaced Value: Replaced Value1  
Replaced Value4  
Replaced Value5

Queries [1]

= Table.ReplaceValue(#"Replaced Value", "", "Uncategorized", Replacer.ReplaceValue, {"ExpenseType"})

	ExpenseID	Date	Department	ExpenseType	Amount	Description	Approved
1	EXP001	01-01-2024	HR	Salaries	3500	Stationery and printer supplies	Mike J.
2	EXP002	05-01-2024	IT	Software	8500	Client visit - Mumbai	Anna D.
3	EXP003	09-01-2024	Finance	Office Supplies	12000	Leadership development program	John Sr.
4	EXP004	10-01-2024	Operations	Travel	45000	New laptops for team	Sarah L.
5	EXP005	12-01-2024	HR	Training	5500	Electricity bill	Pending
6	EXP006	15-01-2024	IT	Hardware	18000	External audit fees	Mike J.
7	EXP007	18-01-2024	Unassigned	Utilities	22000	Digital advertising campaign	Anna D.
8	EXP008	20-01-2024	Finance	Professional Services	9500	Job portal subscriptions	John Sr.
9	EXP009	22-01-2024	Operations	Marketing	16500	CRM system upgrade	Sarah L.
10	EXP010	25-01-2024	HR	Recruitment	127000	Monthly payroll February	John Sr.
11	EXP011	02-02-2024	IT	Software	11200	Conference attendance	Anna D.
12	EXP012	05-02-2024	HR	Salaries	2800	Office supplies	Mike J.
13	EXP013	08-02-2024	Operations	Travel	8500	AWS hosting fees	Sarah L.
14	EXP014	10-02-2024	Finance	Office Supplies	15000	Health insurance premium	John Sr.
15	EXP015	12-02-2024	IT	Cloud Services	25000	Trade show participation	Anna D.
16	EXP016	15-02-2024	HR	Employee Benefits			
17	EXP017	18-02-2024	Operations	Marketing			
18							

Unassigned

9 COLUMNS, 100 ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 09:53

**Untitled - Power Query Editor**

File Home Transform Add Column View Tools Help

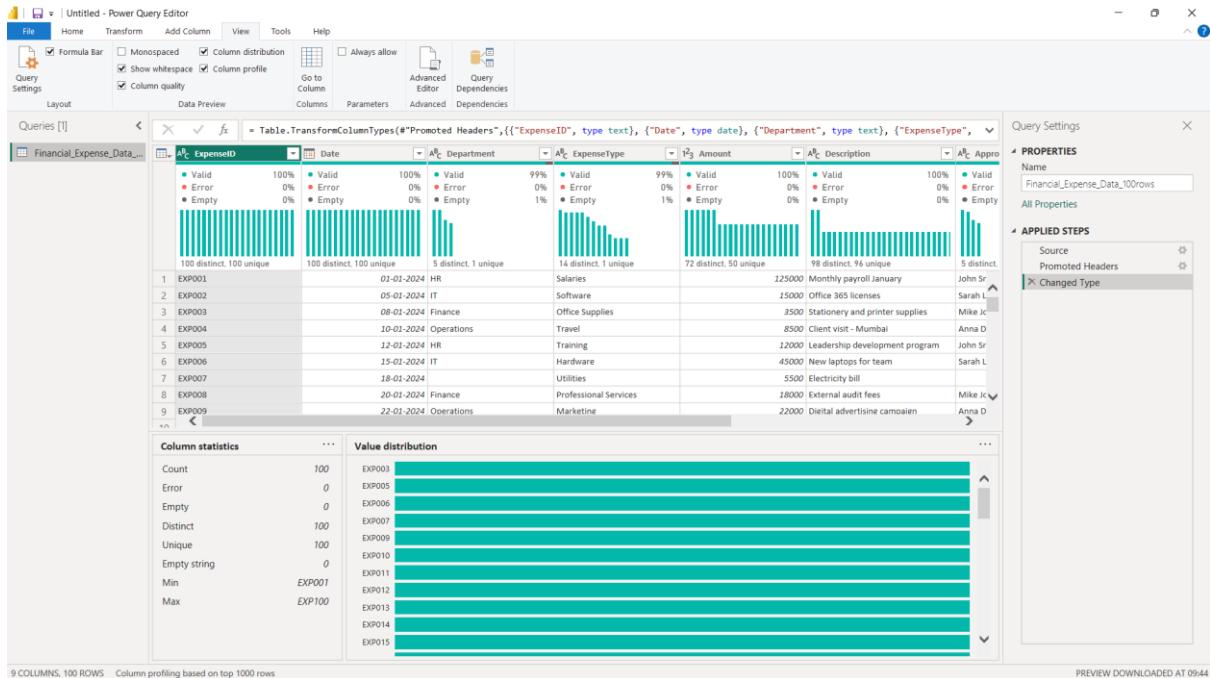
Column From Examples Custom Column Invoke Function Conditional Column Index Column Duplicate Column Merge Columns Extract Parse From Text Format From Number Statistics Standard Scientific Trigonometry Date Time Duration From Date & Time

Queries [1]

= Table.AddColumn(#"Inserted Month Name", "Month", each Date.Month([Date]), Int64.Type)

	Description	Approved	Status	Budget	Month Name	Month
1	100% Valid 0% Error 0% Empty					
2	98 distinct, 98 unique	5 distinct, 1 unique	2 distinct, 1 unique	42 distinct, 15 unique	10 distinct, 0 unique	10 distinct, 0 unique
3	45000 New laptops for team	Sarah Lee	Approved	40000	January	1
4	5500 Electricity bill	Pending Approval	Pending	5000	January	1
5	18000 External audit fees	Mike Johnson	Approved	15000	January	1
6	22000 Digital advertising campaign	Anna Davis	Approved	20000	January	1
7	10 9500 Job portal subscriptions	John Smith	Approved	8000	January	1
8	16500 CRM system upgrade	Sarah Lee	Approved	14000	February	2
9	127000 Monthly payroll February	John Smith	Approved	120000	February	2
10	11200 Conference attendance	Anna Davis	Approved	8000	February	2
11	2800 Office supplies	Mike Johnson	Approved	3000	February	2
12	8500 AWS hosting fees	Sarah Lee	Approved	7000	February	2
13	15000 Health insurance premium	John Smith	Approved	12000	February	2
14	25000 Trade show participation	Anna Davis	Approved	20000	February	2
15	6200 Office utilities	Mike Johnson	Approved	5000	February	2
16	7500 Equipment servicing	Anna Davis	Approved	6000	February	2
17	128500 Monthly payroll March	John Smith	Approved	122000	March	3
18	19000 Design tools licenses	Sarah Lee	Approved	15000	March	3
19	22000 Network equipment	Anna Davis	Approved	12000	March	3
20	24500 Tax consultation	Mike Johnson	Approved	18000	March	3
21	14500 Client meetings	Anna Davis	Approved	10000	March	3
22	18000 Technical skills training	John Smith	Approved	12000	March	3
23	9200 Azure services	Sarah Lee	Approved	8000	March	3
24	28000 Social media campaigns	Anna Davis	Approved	25000	March	3
25	4100 Printing and supplies	Mike Johnson	Approved	3500	March	3
26						

11 COLUMNS, 100 ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 09:59



## DATASET UNDERSTANDING:

### Key Columns Used

Column Name	Description
Department	Business unit name
Expense Date	Date of expense
Expense Category	Type of expense
Amount	Expense value
Budget	Allocated budget

Which departments incur the highest total expenses?

The screenshot shows the Power BI Desktop interface with three visualizations on the canvas:

- Total Expenses By Department (Bar Chart)**: A horizontal bar chart showing total expenses for HR, IT, Operations, and Finance.
- Total Expenses By Department (Summary Table)**: A table showing total expenses for each department: HR (\$15.11M), IT (\$7.26M), Operations (\$5.34M), Finance (\$2.02M), and Unassigned (\$0.5M). Total is \$29.81M.
- Total Expenses By Department (Card Form)**: A large card displaying the total expense amount as \$2.981M.

The Data pane on the right lists the fields available in the data source, including Financial\_Expense\_Data, Amount, ApprovedBy, Budget, Budget Variance, Date, Department, Description, ExpenseID, ExpenseType, Measure, M0M Growth, Month Name, Month Number, Monthly Average, Previous Month, Status, Total Budget, and Total Expenses.

Analyze expense distribution across expense types.

## DATA QUALITY CHECK :

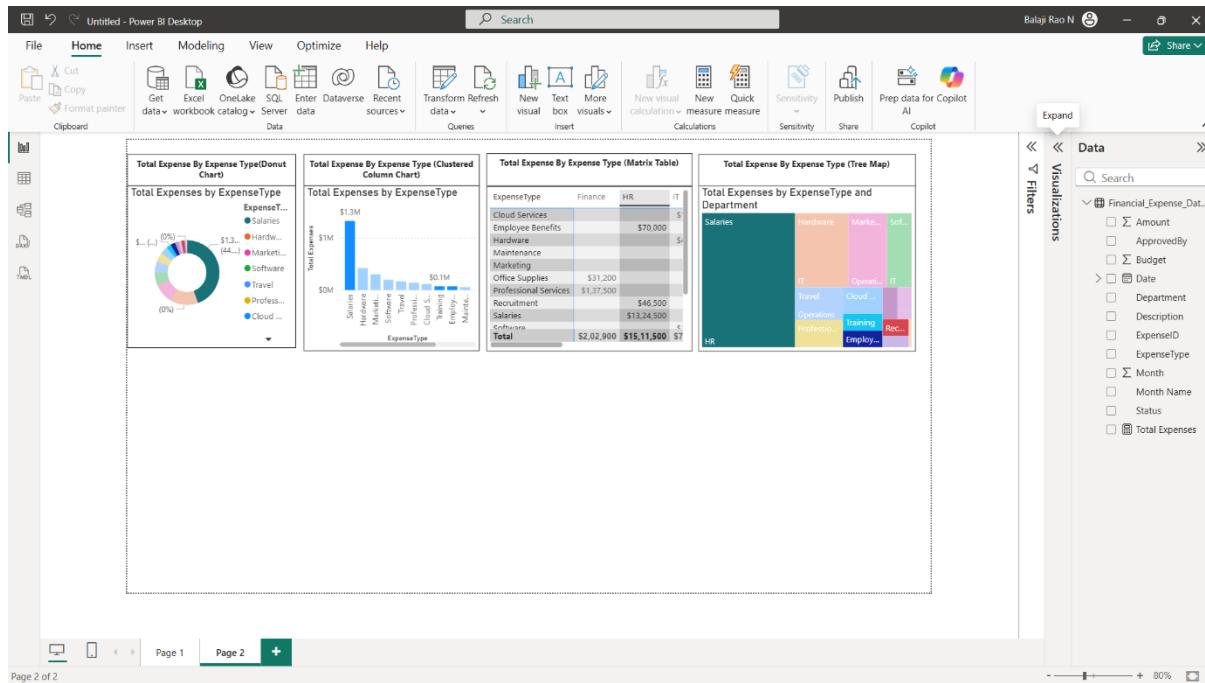
### Identified Issues

- Missing values in Expense Category
- Inconsistent department naming
- Blank budget values

### Actions Taken

- Replaced nulls using Power Query
- Standardized department names
- Validated numeric fields

# How do monthly expenses trend over time?



## DATA MODEL DESIGN:

### Relationships

- Date Table → Expenses (One-to-Many)
- Department → Expenses

### Reason

Proper relationships ensure accurate time-based and department-level analysis.

Create DAX measures for Total Expenses and Monthly Average Expense.

## DAX MEASURES IMPLEMENTATION:

### Total Expenses

$\text{Total Expenses} = \text{SUM}(\text{Expenses}[Amount])$

### Monthly Average Expense

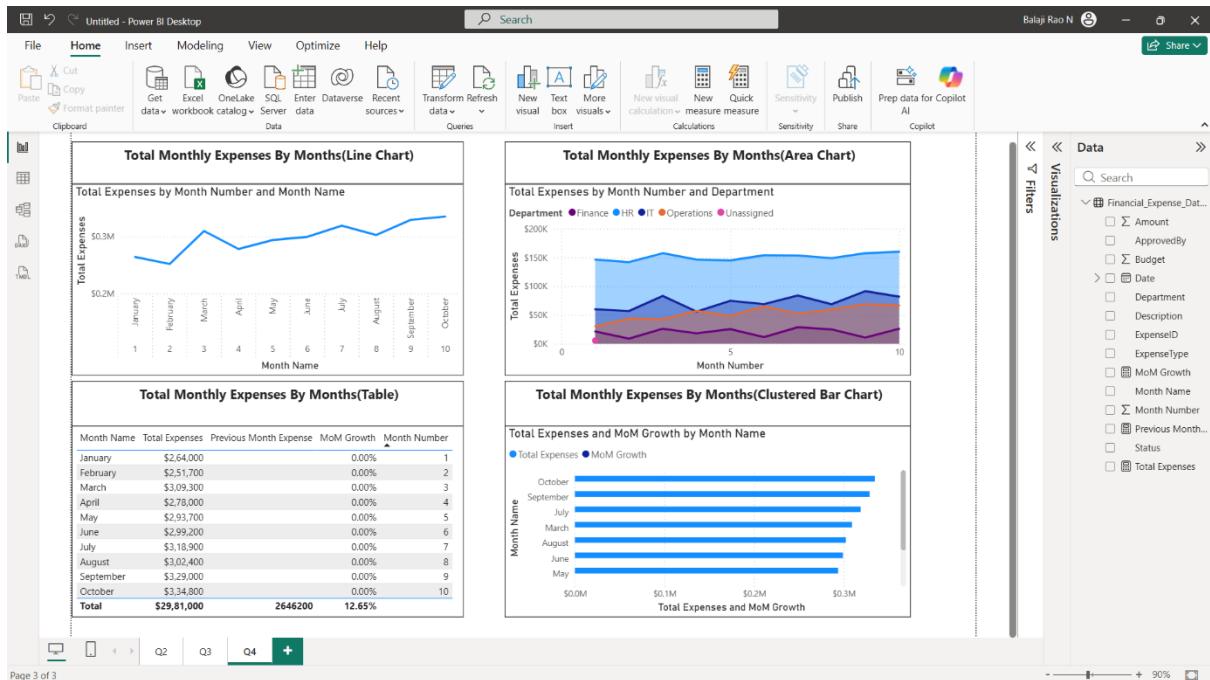
$\text{Monthly Avg Expense} =$

$\text{AVERAGEX}($

$\text{VALUES('Date'[Month])},$

$[\text{Total Expenses}]$

)



Untitled - Power BI Desktop

File Home Help Table tools Measure tools

Name: Total Expenses Format: Currency

Home table: Financial\_Expense\_...

Structure: Data category: Uncategorized

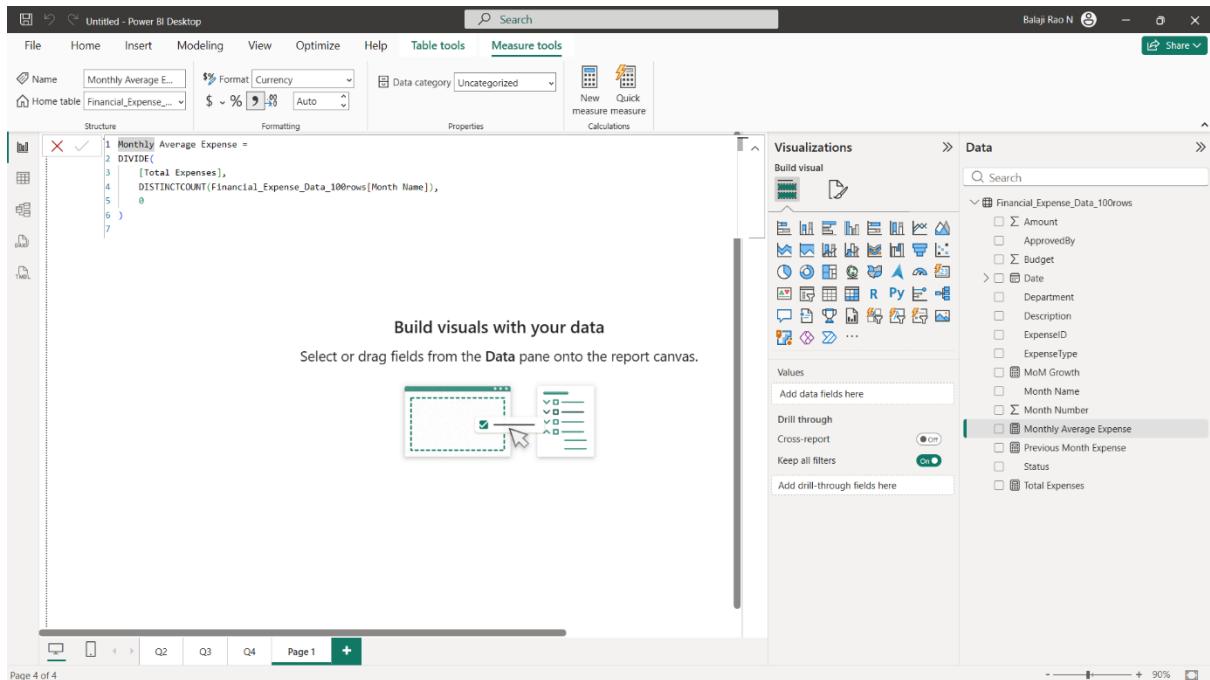
Formatting: Properties: New measure measure Calculations

1 Total Expenses = SUM(Financial\_Expense\_Data\_100rows[Amount])

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

Data

Financial\_Expense\_Data\_100rows (100 rows): Column: Total Expenses (0 distinct values)



## VISUAL ANALYSIS & INSIGHTS:

### Department-wise Expense Distribution

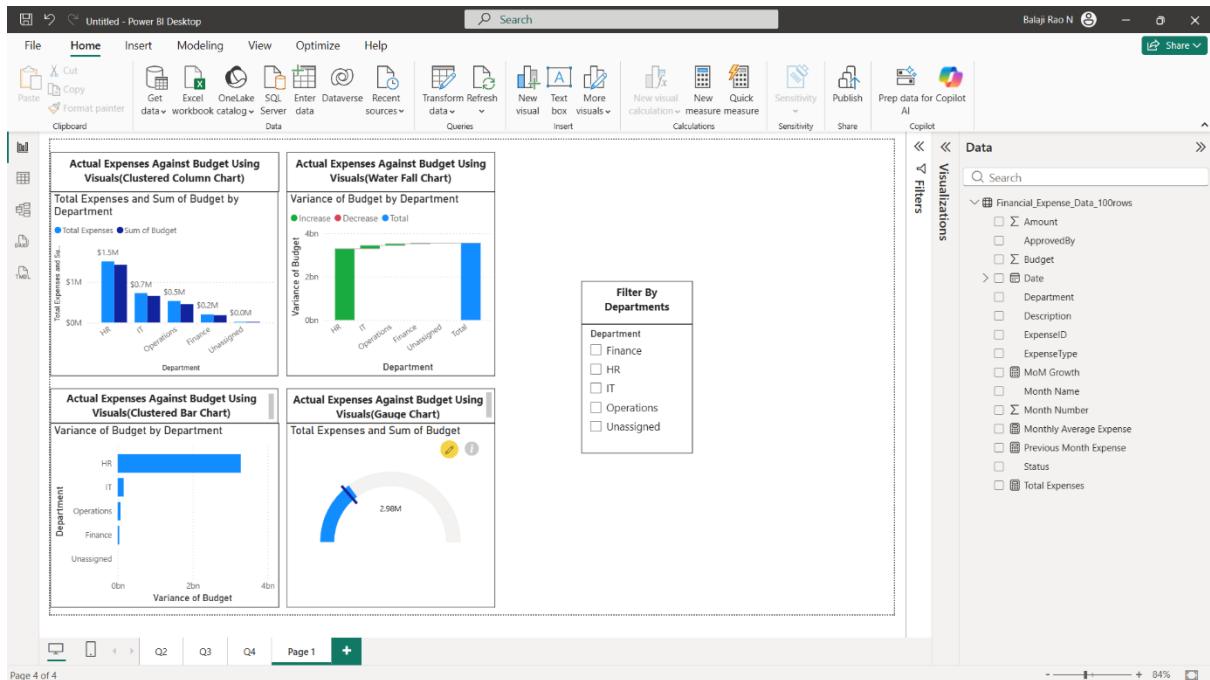
- **Visual:** Clustered Bar Chart
- **Insight:** IT department incurs the highest expenses

### Expense Type Analysis

- **Visual:** Donut Chart
- **Insight:** Infrastructure & Software contribute most

### Monthly Trend

- **Visual:** Line Chart
- **Insight:** Expenses peak during Q3



## BUDGET VS ACTUAL COMPARISON:

### Visuals Used

- Stacked Column Chart
- KPI Cards

### Analysis

Departments like IT and Operations exceed allocated budgets consistently.

The screenshot shows a Power BI desktop interface with the following details:

- Dashboard Title:** Untitled - Power BI Desktop
- Ribbon:** File, Home, Insert, Modeling, View, Optimize, Help.
- Clipboard:** Contains icons for Paste, Cut, Copy, and Format painter.
- Data:** Includes Get data, OneLake, Server, Enter, Dataaverse, Recent sources, Transform, Refresh, New visual, New calculation, New measure, Text box, More, Insert, and Calculations.
- Visualizations:** Contains icons for Build visual, Sensitivity, Publish, Prep data for Copilot, AI, and Copilot.
- Filters:** Shows a list of filters applied to the dashboard.
- Visuals:** A list of available visualizations including charts, tables, maps, and matrices.
- Values:** A list of data fields from the data source, such as Amount, Budget, and Measure.
- Drill through:** An option to add drill-through fields.
- Cross-report:** An option to add cross-report fields.
- Keep all filters:** An option to keep all filters applied.
- Add drill-through fields here:** A placeholder for adding drill-through fields.
- Page Navigation:** Buttons for Q2, Q3, Q4, Q5, Page 1, and a plus sign for adding more pages.
- Page Footer:** Page 5 of 5.

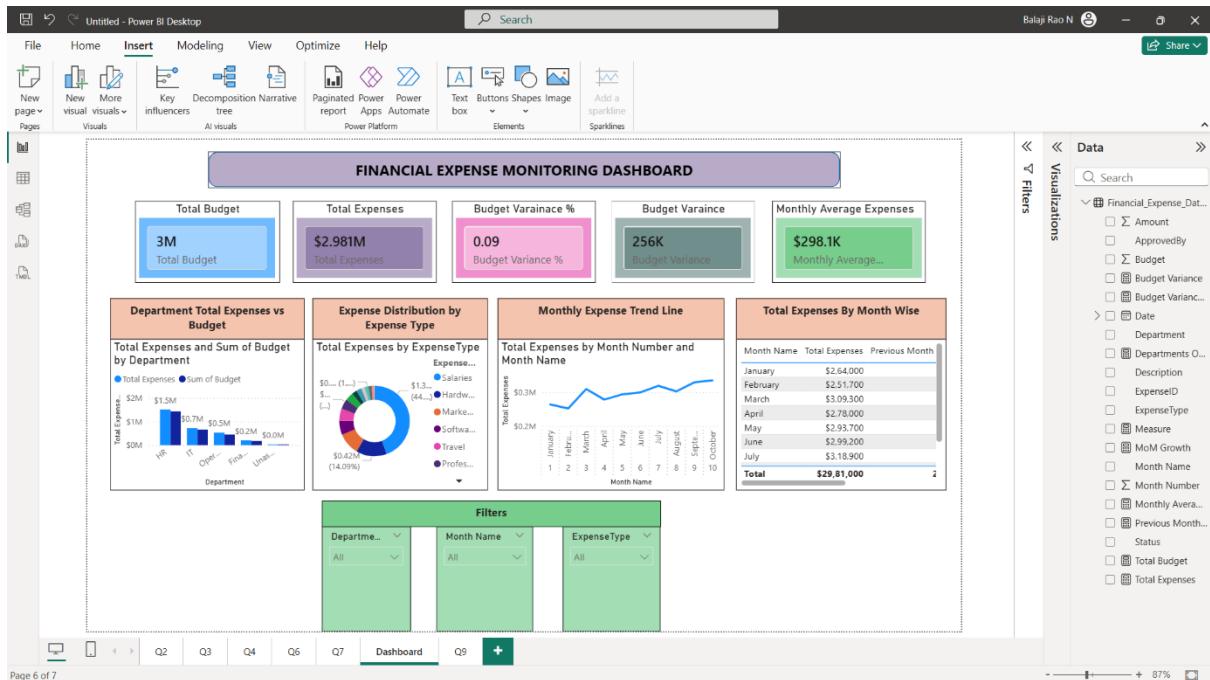
## DASHBOARD DESIGN:

### Dashboard Features

- Interactive slicers (Department, Month)
- Clear KPIs at top
- Clean finance-themed layout

### Purpose

To help management detect cost overruns early and make budgeting decisions.



## BUSINESS RECOMMENDATIONS :

### Suggested Cost-Control Actions

- Introduce department-wise spending caps
- Optimize high-cost expense categories
- Monthly expense review meetings
- Automated alerts for budget breaches

The screenshot shows a Power BI desktop interface with a dashboard titled "Cost Control Recommendations". The dashboard is organized into several sections, each containing a title and a list of recommendations:

- IT Hardware Spending:**
  - Implement approval threshold of ₹40,000
  - Review all hardware purchases >₹30,000
  - Consider lease options instead of outright purchase
  - Expected savings: 15-20%
- Travel Policy Enforcement:**
  - Set maximum per-trip limits by destination
  - Require advance booking (14+ days)
  - Use economy class for domestic travel
  - Expected savings: 10-15%
- Marketing Spend Review:**
  - Pause campaigns with low ROI
  - Consolidate vendors for better rates
  - Implement quarterly budget reviews
  - Expected savings: 12-18%
- HR Recruitment Optimization:**
  - Reduce external agency fees
  - Strengthen internal referral program
  - Negotiate annual contracts with job portals
  - Expected savings: 20-25%
- Software License Audit:**
  - Review all software subscriptions
  - Eliminate redundant tools
  - Negotiate volume discounts
  - Expected savings: 10-15%
- Cloud Services Optimization:**
  - Right-size cloud resources
  - Use reserved instances where possible
  - Implement auto-scaling
  - Expected savings: 15-20%
- Business Process Improvement:**
  - Implement zero-based budgeting
  - Monthly budget review meetings
  - Department accountability dashboard
  - Rolling forecasts (quarterly updates)
- Expense Approval Workflow:**
  - Automatic expense approval system
  - Multi-level approval for high-value items
  - Real-time budget vs. actual tracking
- Vendor Management:**
  - Consolidate vendors where possible
  - Annual contract negotiations
  - Payment term optimization
  - Master service agreements

The dashboard also includes a sidebar for "Data" and "Visualizations" and a navigation bar at the bottom.

## CONCLUSION:

This Power BI dashboard provides a clear view of organizational expenses, enabling finance leaders to monitor spending, identify inefficiencies, and take corrective actions proactively.