

# Financial Expense Optimization

## 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.

## Objective of the Project:

The primary objectives of this project are:

- To analyze department-wise and category-wise expenses
- To monitor monthly spending trends
- To compare actual expenses against budgeted values
- To identify departments exceeding budget limits
- To recommend cost-control measures using data-driven insights

## Dataset Description:

The dataset used in this project is a **Financial Management Dataset** containing more than **100 expense records**.

### Key Attributes:

- **Expense\_ID** – Unique identifier for each expense record
- **Date** – Expense transaction date
- **Month** – Month and year for trend analysis
- **Department** – HR, IT, Finance, Operations, Sales
- **Expense\_Type** – Salary, Travel, Software, Rent, Utilities, etc.
- **Actual\_Expense** – Actual amount spent
- **Budget\_Expense** – Planned budgeted amount
- **Payment\_Mode** – Cash, Card, or Bank
- **Approval\_Status** – Approved or Pending

Untitled - Power Query Editor

**File** Home Transform Add Column View Tools Help

**Layout**

**Data Preview**

**Columns**

**Parameters**

**Advanced**

**Query Dependencies**

**Queries [1]**

**dataset**

= Table.TransformColumnTypes(#"Promoted Headers",{{"Employee\_ID", Int64.Type}, {"Name", type text}, {"Department", type text}, {"Monthly\_Salary", Int64.Type}, {"Income\_Tax", Int64.Type}})

| Employee_ID | Name        | Department | Monthly_Salary | Income_Tax |
|-------------|-------------|------------|----------------|------------|
| 1           | Employee_1  | Marketing  | 113810         | 65         |
| 2           | Employee_2  | Marketing  | 85302          | 45         |
| 3           | Employee_3  | Sales      | 84987          | 61         |
| 4           | Employee_4  | Sales      | 50379          | 36         |
| 5           | Employee_5  | Tech       | 35695          | 43         |
| 6           | Employee_6  | Sales      | 39116          | 22         |
| 7           | Employee_7  | Tech       | 51319          | 44         |
| 8           | Employee_8  | Sales      | 51417          | 46         |
| 9           | Employee_9  | Tech       | 82581          | 65         |
| 10          | Employee_10 | Tech       | 62325          | 77         |
| 11          | Employee_11 | HR         | 96784          | 96         |
| 12          | Employee_12 | Marketing  | 80432          | 70         |
| 13          | Employee_13 | Tech       | 64973          | 82         |
| 14          | Employee_14 | Tech       | 96542          | 136        |
| 15          | Employee_15 | Sales      | 100697         | 146        |
| 16          | Employee_16 | Tech       | 61385          | 34         |
| 17          | Employee_17 | Tech       | 46828          | 54         |
| 18          | Employee_18 | Sales      | 70857          | 65         |
| 19          | Employee_19 | HR         | 32757          | 31         |
| 20          | Employee_20 | Finance    | 73309          | 41         |
| 21          | Employee_21 | HR         | 83354          | 51         |
| 22          | Employee_22 | Tech       | 97044          | 74         |

19 COLUMNS, 50 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 09:33

24° Search ENG IN 09:35 07-02-2026

Which departments incur the highest total expenses?

Untitled - Power BI Desktop

**File** Home Insert Modeling **View** Optimize Help

Themes

Page view Mobile layout Scale to fit

Visual\_Gridline\_Show Snap to grid Lock objects Page options

Filters Bookmarks Selection Performance analyzer Sync slicers

**Filters**

Search

Add data fields here

**Visualizations**

Build visual

**Data**

Search

dataset

- Class
- Department
- Σ Employee\_ID
- Σ Entertainment\_...
- Σ Grocery\_Expense
- Σ Income\_Tax
- Σ Insurance\_Ded...
- Σ Investments
- Σ Monthly\_Salary
- Name
- Σ Net\_Salary
- Σ Other\_Deductio...
- Σ Other\_Expenses
- Σ PF\_Contribution
- Σ Profit
- Σ Rent\_Expense
- Σ Savings\_Amount
- Σ Total\_Expenditu...

Total\_Expenditure by Department

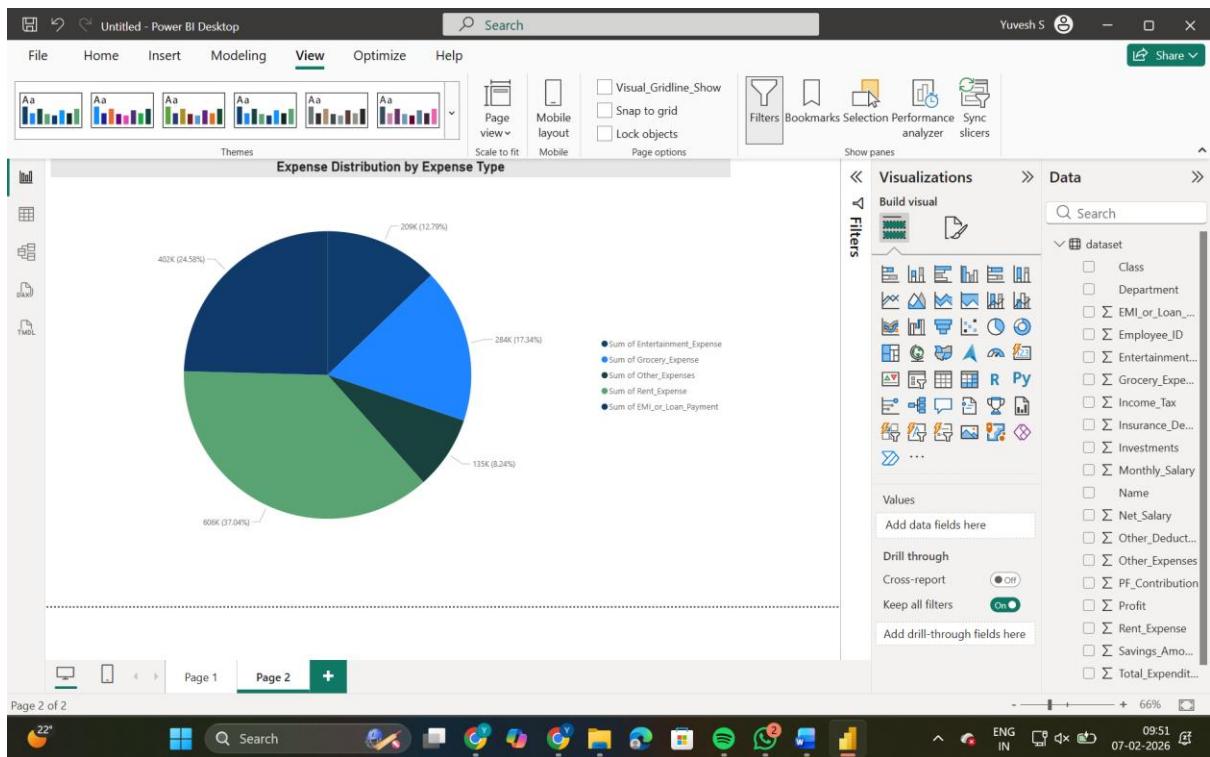
Sum of Total\_Expenditure

Department

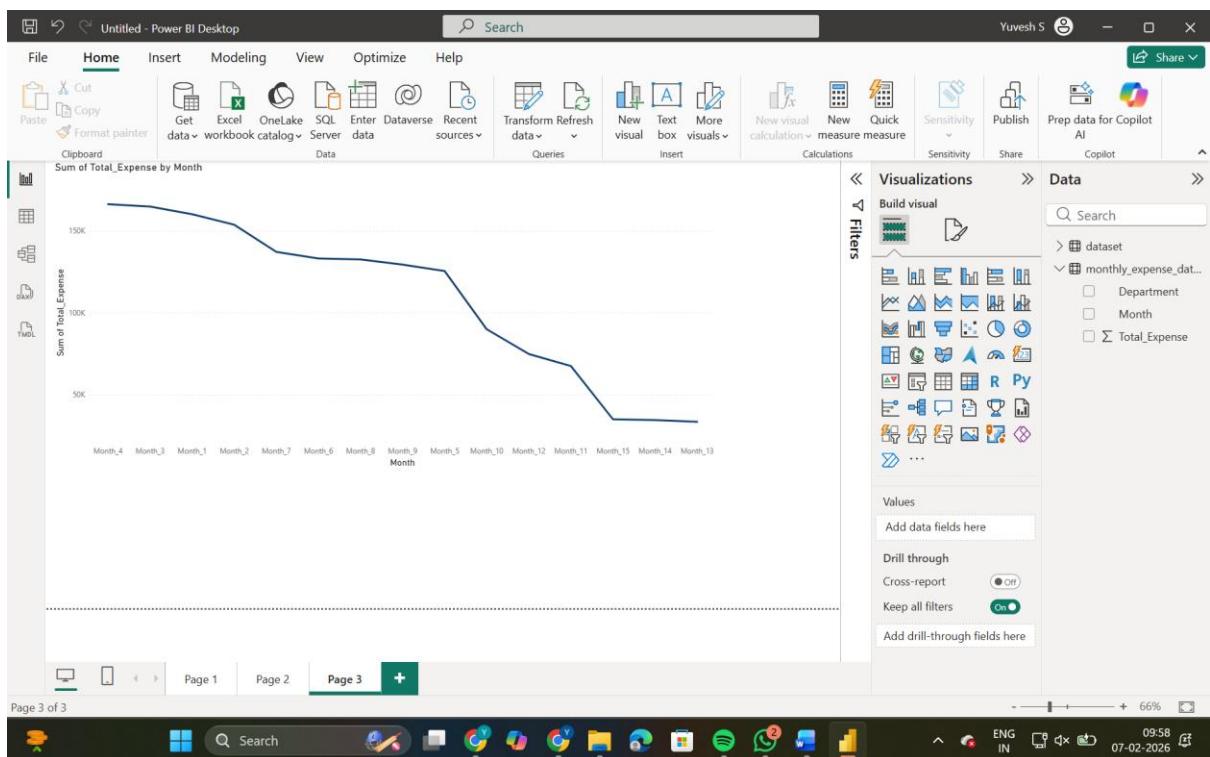
Tech, Sales, Marketing, HR, Finance

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## Analyze expense distribution across expense types



## How do monthly expenses trend over time?



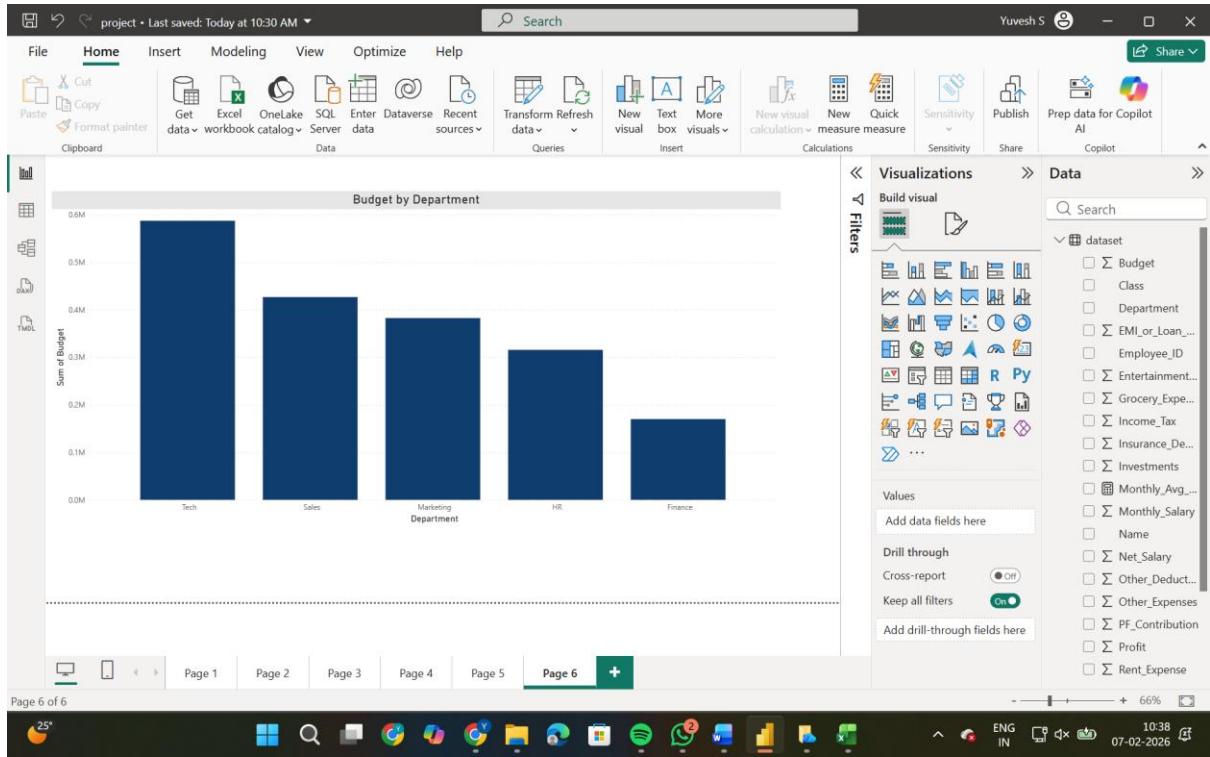
## Create DAX measures for Total Expenses and Monthly Average Expense.

The screenshot shows the Power BI Desktop interface. At the top, the ribbon has tabs like File, Home, Insert, Modeling, View, Optimize, and Help. The Home tab is selected. Below the ribbon, there's a toolbar with icons for Paste, Cut, Copy, Format painter, Get data, Excel, OneLake, SQL Server, Enter data, Dataverse, Recent sources, Transform data, Refresh data, New visual, Text box, More visuals, New visual calculation, Quick measure, Sensitivity, Publish, and Prep data for Copilot AI. The main area displays two cards: 'Sum of Total\_Expenditure' with a value of '2M' and 'Monthly\_Avg\_Expense' with a value of '32.73K'. To the right is the 'Data' pane, which lists various DAX measures such as EMI or Loan, Employee ID, Entertainment, Grocery\_Expenses, Income\_Tax, Insurance\_De..., Investments, Monthly\_Avg\_..., Monthly\_Salary, Name, Net\_Salary, Other\_Deduct..., Other\_Expenses, PF\_Contribution, Profit, Rent\_Expense, Savings\_Amo..., Total\_Expendit..., and Total\_Rent. The bottom of the screen shows the Windows taskbar with various pinned apps and the system tray.

Compare actual expenses against budget using visuals.

The screenshot shows the Power BI Desktop interface with a bar chart titled 'Average of Total\_Expenditure and Average of Budget'. The chart compares the average total expenditure (dark blue bar) and the average budget (light blue bar). The Y-axis ranges from 0K to 40K. The chart is located in the main workspace. To the right is the 'Data' pane, which shows the 'dataset' section with measures like Budget, Class, Department, EMI or Loan, Employee ID, Entertainment, Grocery\_Expenses, Income\_Tax, Insurance\_De..., Investments, Monthly\_Avg\_..., Monthly\_Salary, Name, Net\_Salary, Other\_Deduct..., Other\_Expenses, PF\_Contribution, Profit, and Rent\_Expense. The bottom of the screen shows the Windows taskbar with various pinned apps and the system tray.

## Identify departments exceeding budget limits.



## What cost-control actions can be recommended?

The organization should enforce department-wise budget limits with continuous expense monitoring to control overspending. High-cost expense categories need regular review to eliminate waste and optimize vendor contracts. Monthly expense trend analysis and budget-versus-actual comparisons can help detect cost overruns early. Dashboard-driven insights will support informed decision-making and promote financial discipline.

## Dashboard:

Screenshot of a Microsoft Power BI dashboard titled "Financial Expense Optimization".

The dashboard contains the following visualizations:

- Sum of Total\_Expense: 2M
- Monthly\_Avg\_Expense: 32.73K
- Average of Monthly\_Salary: 71.71K
- Average of Budget: 37.64K
- Sum of Total\_Expense by Month: Line chart showing a general downward trend from approximately 150K in Month 1 to about 50K in Month 12.
- Average of Total\_Expenditure and Average of Budget: Bar chart comparing Average of Total\_Expenditure (40K) and Average of Budget (37.64K).
- Budget by Department: Bar chart showing Budget by Department: Tech (~0.4M), Sales (~0.35M), Marketing (~0.3M), HR (~0.25M), Finance (~0.1M).
- Expense Distribution by Expense Type: Donut chart showing Expense Distribution by Expense Type: Enterpris... (~12.79%), Groceries (~17.34%), Other (~37.01%), Rent (~24.5%), and EMI or Loan (~1.2%).
- Total\_Expenditure by Department: Bar chart showing Total\_Expenditure by Department: Tech (~0.5M), Sales (~0.4M), Marketing (~0.35M), HR (~0.25M), and Finance (~0.1M).

Visualizations pane on the right shows:

- Build visual
- Filter pane with:

  - Legend: Department
  - Values: Sum of EMI\_or\_Loan...
  - Details: Add data fields here
  - Tooltips

Page navigation: Next pages, Dashboard, Page 1, Page 2, Page 3, Page 4, Page 5, Page 6, Page 7, +

System status bar at the bottom: 29°C Mostly clear, Search, Weather, Taskbar icons, ENG IN, 20:10, 07-02-2026, 64%.