**Budget vs Actuals Analysis Report**

**Title:** "Budget vs Actuals Analysis Report"

**Subtitle:** "Financial Performance Review"

**Date:** 15/02/2025

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**CONTENT**

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Title** | **Page No.** |
| 1. | Introduction | 3 |
| 2. | Basic Insights | 4 |
| 3. | Statistical Summary | 5 |
| 4. | Feature-wise Interpretation | 5 |
| 5. | Data Transformation | 6 |
| 6. | Insights and Patterns | 7 |
| **7.** | Recommendations | 12 |

**Introduction**

**Purpose of the Report:**  
The purpose of this report is to analyze the budgeted expenses versus actual expenses for each department over the selected period. This analysis helps identify any variances, understand their causes, and provide recommendations for future budget planning.

**Dataset Description:**  
The dataset used for this analysis contains the following columns:

* Department ID: Unique identifier for departments.
* Budgeted Expense: The allocated budget.
* Actual Expense: The amount actually spent.
* Expense Type: Category of expense.
* Month: Time period of the expense.
* Variance Explanation: Reasons for budget variances.

**Basic Insights**

* **Check Missing Values:**
  1. Select your entire dataset.
  2. Use Home > Conditional Formatting > Highlight Cells Rules > Blanks to highlight missing values.
  3. Alternatively, use =COUNTBLANK (range) to count blank cells in a column.
* **Find Duplicates:**
  1. Select your data.
  2. Go to Data > Remove Duplicates (to remove them) or Conditional Formatting > Highlight Cells Rules > Duplicate Values (to view them).
* **Count Instances and Features:**
  1. =COUNTA (range) counts the non-empty cells.
  2. =COLUMNS (range) give the number of features (columns).
* **Check Unique Values:**
  1. =COUNTIF (range, value) to manually count unique entries.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Missing Values** | **Duplicates** | **Number of Instances** | **Number of Features** | **Unique Values** | **SUM** |
| **Department ID** | 0 | 0 | 5000 | 6 | 100 |  |
| **Budgeted Expense** | 0 | 0 | 5000 | 6 | 4990 | 62367957 |
| **Actual Expense** | 0 | 0 | 5000 | 6 | 4995 | 62644037 |
| **Expense Type** | 0 | 0 | 5000 | 6 | 4 |  |
| **Month** | 0 | 0 | 5000 | 6 | 13 |  |
| **Variance Explanation** | 0 | 0 | 5000 | 6 | 5000 |  |

**Statistical Summary**

As provided data is categorical, so I calculate statistics manually:

|  |  |  |
| --- | --- | --- |
| **Statistic** | **Budgeted Expense** | **Actual Expense** |
| **Count** | 5000 | 5000 |
| **Sum** | 62,367,957.03 | 62,644,036.57 |
| **Mean** | 12,473.59 | 12,528.81 |
| **Median** | 12,481.88 | 12,615.72 |
| **Minimum** | 5,002.07 | 4,159.28 |
| **Maximum** | 19,996.79 | 20,923.48 |
| **Standard Deviation** | 4,335.48 | 4,388.13 |
| **Variance** | 18796425.91 | 19255642.76 |

**Feature-wise Interpretation**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Unique Values** | **Missing Values** | **Most Frequent Value**  **(MODE)** |
| **Department ID** | 100 | 0 | Dept-78 |
| **Budgeted Expense** | 4990 | 0 | 18153.34 |
| **Actual Expense** | 4995 | 0 | 16018.04 |
| **Expense Type** | 4 | 0 | Marketing |
| **Month** | 13 | 0 | 2024-10 |
| **Variance Explanation** | 5000 | 0 |  |

**Data Transformations**

**Step 1: Handling Missing Data**

1. **Find Missing Values**:
   * Insert a new column named **Missing Check**.
   * Use the formula:

=IF(ISBLANK(A2),"Missing”, “Filled")

1. **Fill Missing Numeric Data**:
   * For **Budgeted Expense** and **Actual Expense**, calculate:
     + **Mean**: =AVERAGE (B2:B100)
     + **Median**: =MEDIAN (B2:B100)
   * Replace missing values with either the mean or median.
2. **Fill Missing Categorical Data**:
   * Use the **most frequent value** (calculated using the steps I provided earlier).

There is no missing data in the dataset.

**Step 2: Remove Duplicates**

* Select your entire dataset.
* Go to **Data > Remove Duplicates**, select all columns, and press **OK**.

**Step 3: Clean Text Data**

* Use =TRIM(A2) to remove extra spaces.
* Use =PROPER(A2) for proper capitalization.

**Step 4: Create New Columns**

* Add a column **Variance**:

=C2 - B2

**Insights and Patterns**

1. **Quarterly Average of Actual Expenses**:

* The **average actual expenses per quarter** were:
  + - **Q1:** 12,538,027
    - **Q2:** 12,493,670
    - **Q3:** 12,366,308
    - **Q4:** 12,711,105
* **Q4 had the highest average actual expense**, indicating increased financial activity or higher spending towards the year-end

1. **Monthly Sum of Budgeted Expenses**:

* **August:** 5,520,482.57
* **October:** 6,008,929.65  
  These two months had the **highest budgeted expenses**, indicating significant planned expenditures during these periods.
* **February:** 4,471,617.81
* **September:** 4,914,777.87  
  These months had the **lowest budgeted expenses**, suggesting fewer planned activities or lower financial commitments.

1. **Expense Type-wise Average of Actual and Budgeted Expenses**:

* **HR**:
  + **Average of Actual Expense:** 12,417.22
  + **Average of Budgeted Expense:** 12,340.65
* **IT**:
  + **Average of Actual Expense:** 12,768.79
  + **Average of Budgeted Expense:** 12,637.43
* **Marketing**:
  + **Average of Actual Expense: 12,462.07**
  + **Average of Budgeted Expense: 12,483.66**
* **Operations**:
  + **Average of Actual Expense: 12,474.67**
  + **Average of Budgeted Expense:12,435.97**

**Observation**:

* + **IT had the highest average actual expense** at **12,768.79**, exceeding its budget by **131.36**.
  + **HR managed to stay closest to its budget**, with actual expenses just **76.57** above the budget.
  + **Marketing was slightly under budget**,while **Operations exceeded its budget** marginally**.**

1. **Quarterly Sum of Actual vs Budgeted Expenses:**

* **Q1:** 313,850.77 (Actual expenses exceeded budget)
* **Q2:** -50,473.08 (Actual expenses were under budget)
* **Q3:** -146,626.96 (Actual expenses were under budget)
* **Q4:** 159,328.81 (Actual expenses exceeded budget)
* **Q1 and Q4 had higher actual expenses than budgeted**, indicating increased financial activity or overspending at the beginning and end of the year.
* **Q2 and Q3 stayed under budget**, showing controlled spending during the middle quarters.
* The **overall variance for the year** was 276,079.54, highlighting areas for improved budget forecasting and financial management.

1. **Month-wise Count of Variance Explanation**:

|  |  |
| --- | --- |
| **Row Labels** | **Count of Variance Explanation** |
| Jan | 407 |
| Feb | 368 |
| Mar | 398 |
| Apr | 427 |
| May | 425 |
| Jun | 394 |
| Jul | 429 |
| Aug | 442 |
| Sep | 398 |
| Oct | 480 |
| Nov | 399 |
| Dec | 433 |
| **Grand Total** | **5000** |

* **October had the highest count of variance explanations (480)**, indicating the most frequent instances of budget deviations.
* **February had the lowest count (368)**, suggesting fewer variance cases in that month.
* Months like **August (442)** and **December (433)** also recorded high variance counts, pointing to periods with frequent budget adjustments or unforeseen costs.

1. **Day-wise Sum of Budgeted Expenses**:

* **Monday** had the highest budgeted expenses (10,770,831.79), indicating that major financial planning or budget allocations were set at the start of the workweek.
* **Tuesday** (6,008,929.65) and **Saturday** (6,801,974.08) had the lowest budgeted expenses, possibly reflecting reduced financial activity on these days.
* **Sunday**, **Wednesday**, and **Friday** also recorded high budgeted expenses, suggesting frequent financial transactions or planned expenditures mid-week and weekends.

1. **Yearly Average of Budgeted and Actual Expenses**:
   * **2024:**

**Average of Budgeted Expense:** 12,515.80

**Average of Actual Expense:** 12,551.65

* + **2025:**

**Average of Budgeted Expense:** 12,138.26

**Average of Actual Expense:** 12,347.32

* + **Grand Total:**

**Average of Budgeted Expense:** 12,473.59

**Average of Actual Expense:** 12,528.81

* + **2024 saw slightly higher actual expenses (12,551.65)** compared to the budget (12,515.80), indicating minor overspending.
  + **2025’s actual expenses (12,347.32)** were also higher than the budget (12,138.26), showing a similar trend of overspending.
  + The overall yearly averages show that **actual expenses exceeded budgeted expenses across both years**, indicating a need for more accurate budget forecasting and financial control.

1. **Quarterly Sum of Actual Expenses**:

* **Q1:** 14,707,106.23
* **Q2:** 15,567,113.69
* **Q3:** 15,692,845.61
* **Q4:** 16,676,971.04
* **Grand Total:** 62,644,036.57
* **Q4 had the highest actual expenses (16,676,971.04)**, indicating the most significant spending towards the end of the year.
* **Q1 recorded the lowest actual expenses (14,707,106.23)**, suggesting fewer financial activities at the beginning of the year.
* The data reveals that **quarterly expenses increased progressively**, with each quarter showing higher total expenses than the previous one, highlighting potential project ramp-ups or increased operations over time.

1. **Expense Type-wise Count of Actual vs Budgeted Expenses**

* **HR:** 95,787.53
* **IT:** 160,252.15
* **Marketing:** -27,866.51
* **Operations:** 47,906.37
* **Grand Total:** 276,079.54
* **IT had the highest positive variance (160,252.15)**, indicating that actual expenses exceeded budgeted amounts significantly.
* **Marketing showed a negative variance (-27,866.51)**, meaning actual spending was lower than the budget, possibly due to cost-saving measures or reduced activities.
* **HR and Operations** had moderate positive variances, suggesting minor overspending compared to budgeted amounts.
* The **overall variance of 276,079.54** indicates that actual expenses were higher than budgeted across most expense types, particularly in IT operations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Highest Variance** | **Lowest Variance** | **Departments Over Budget** | **Departments Under Budget** |
| 15226.96 | -15567.26 | 100 | 100 |

**Recommendations**

1. Investigate departments with the highest negative variance for cost overruns.
2. Implement stricter budget monitoring in departments consistently over budget.
3. Identify and reward departments that stay within budget or have positive variances.