Tax Receipts Data Analysis

Power BI Project Report

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Table of Contents

I) Objective

To achieve this, we've been developing this Power BI project as a Dashboard to analyze Tax Collection Receipts on multiple categories over a given period of time.

By allowing stakeholders to monitor tax revenue trends, calculate and compare variances of budgeted to actual collections, and assess contribution of various tax groups at major and minor levels, the dashboard provides for:

The main goal is to supply consistent, sensible insights to specialists and monetary planners, moderately than merely a plaything for statisticians, increasing accuracy of forecasting and enabling knowledge pushed choice making.

II) Dashboard Features

- Interactive slicers: Users can filter dynamic in various ways including: Start Year, End Year, Major Category, Minor Category, or Estimate Type (Actual, Budgeted, Revised) to customize the analysis.
- KPI Cards: The Summary visuals show a quick glimpse of the Total Receipts, Average Receipts and Variance Percentage visually.
- Comparative Variance Visualizations: Graphs are dedicated to explicitly show changes between the budgeted and actual tax receipts for better performance tracking.
- Multi-level Drill-down: It allows users to analyze tax data hierarchically from Major Categories to Minor and Sub Catters.
- Trend Analysis Visuals: Line charts help to picture the change in the collection over time and help you understand if it is increasing or decreasing as compared to past years.
- Organized Layout: A good cohesive color scheme and minimal design makes dashboard navigable.
- Real-time Data Interaction: It is responsive and real time analytical experience with visual dynamic updating as a function of user selections.

III) View-wise Analysis

A) Executive Overview

Description:

It offers the Executive Overview of the tax recept performance across Start Years in a summarized format. However, collections had piqued especially at the end of 2020 but the trend has since been declining, that could be attributed to wider economic factors. The biggest share of total receipts is accounted for by Major Categories of 'Taxes on Income' and 'Union Excise Duties', indicating heavy dependence of total receipts on a limited set of revenue routes. Further, Actual collections were always lower than Budgeted receipts across the years, suggesting that the financial forecasting must be improved. Users can filter and analyze data according to their described areas with Slicers for Start Year, Major Category and Estimate Type.

Key Visuals & Insights:

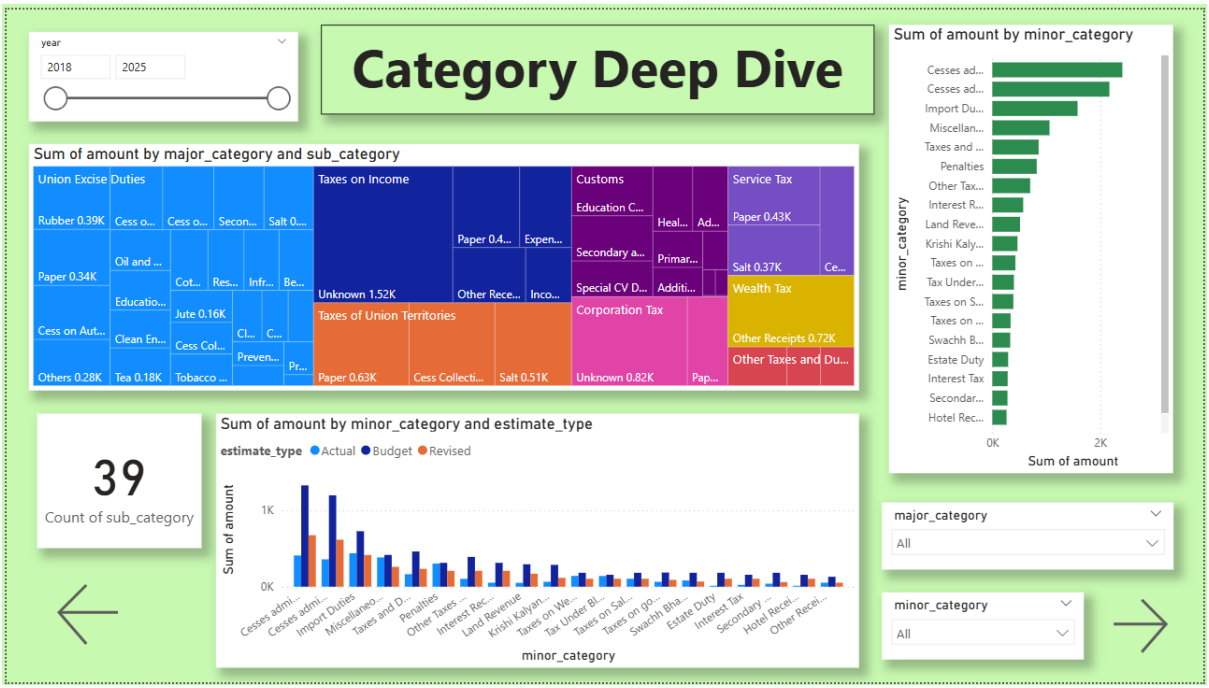
- **KPI Card for Sum of Amount by End Year:**
  - Total Sum of Receipts: 112.30
  - *Insight*: Total tax collections across the analyzed period remain strong but unevenly distributed across years.
- **KPI Card for Average Amount by End Year:**
  - Average Receipts Per Year: 28.08
  - *Insight*: Annual average collections suggest moderate revenue flow with occasional peaks and dips influenced by economic factors.
- **Card for Count of Minor Categories and Major Categories:**
  - Minor Categories: 20
  - Major Categories: 8
  - *Insight*: Broad range of tax types managed, but a few categories dominate total value
- **Line Chart for Sum of Amount by Start Year:**
  - Peak Receipts observed in 2020 at approximately 3.1K
  - Sharp decline in receipts post-2021 towards 2024.
  - *Insight*: External factors or policy changes likely impacted collections after 2020, leading to a downward trend.

- **Donut Chart for Sum of Amount by Major Category:**
    - Highest collections from "Taxes on Income" and "Union Excise Duties".
    - Lesser contributions from categories like "Wealth Tax" and "Corporation Tax".
    - *Insight*: Heavy dependence on a few major tax sources for overall receipts.
- **Stacked Column Chart for Amount by Start Year and Estimate Type:**
    - Budgeted amounts consistently higher than Actual across all Start Years.
    - Visible gap between Budgeted and Actual in each year
    - *Insight*: Budget forecasts systematically overestimated actual tax collections.
- **Slicers added for dynamic filtering:**
    - Start Year: Between slicer (Range selection)
    - Major Category: Dropdown slicer
    - Estimate Type: Tile slicer (Options: Actual, Budget, Revised)
    - *Purpose*: They grant the ability to filter the data on timeline, tax type and estimation status in a specific way for different users to perform dynamic high level analysis for their custom queries.
- ***Overall Insight*:** Revenues had their peak around 2020 but have fallen down and are primarily derived from the 'Taxes on Income' and 'Union Excise Duties.' Sense of forecasting gaps: Budgeted receipts are higher than Actual.

B) Category Deep Dive

Description:

On the Category Deep Dive page you can get more detailed breakdown of tax receipts to the Major, Minor, and Sub Categories. It turns out that while there's a very large number of such categories, a number of minor categories like those 'Cesses on Imported Goods', 'Import Duties' generate the bulk of the revenue. Several of the Sub Categories fail to underperform their budgeted expectations, which suggests micro level inefficiencies. End Year, Major Category and Minor Category interactive slicers allow customers to filter as they explore and find areas they can make improvements.



Key Visuals & Insights:

- **Treemap for Sum of Amount by Major Category and Sub-Category:**
  - Major shares from "Taxes on Income" and "Union Excise Duties".
  - Numerous small sub-categories contributing minor amounts.
  - *Insight*: A small number of tax types dominate while many subcategories remain financially insignificant.
- **Bar Chart for Top Minor Categories by Amount:**
  - Top contributors: "Cesses on Imported Goods" and "Import Duties".
  - Lower ranks dominated by minor taxes like "Service Tax" and "Estate Duty".
  - *Insight*: Revenue is concentrated in limited Minor Categories, suggesting focus areas for optimization.
- **Clustered Column Chart for Minor Categories by Estimate Type:**
  - Actual receipts trail Budgeted projections across most Minor Categories.
  - Minor taxes show wide variance.
  - *Insight*: Budgeting for Minor Categories often does not align with actual collections, suggesting need for better forecasting.
- **Card for Count of Subcategories:**
  - Subcategories Count: 39.

- *Insight*: Despite a large number of tax heads, revenue generation is centralized among very few.

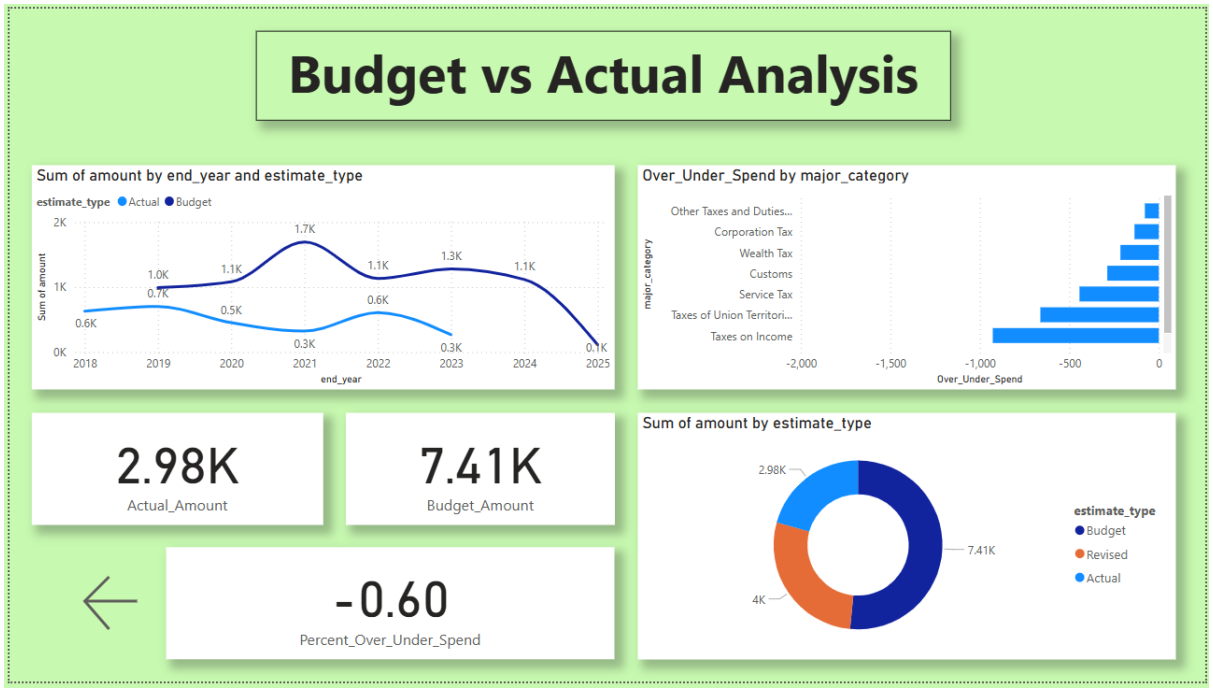
- **Slicers added for detailed category exploration:**
  - End Year: Between slicer (Range selection)
  - Major Category: Dropdown slicer
  - Minor Category: Dropdown slicer
  - *Purpose*: By allowing narrowed options of specific years, size categories (major categories and minor categories), you can achieve a more narrow slice of the tax receipt data to explore further.

- ***Overall Insight*:** Meanwhile, most subcategories underperform, while a few of the Minor Categories provide most of the revenue. Typically, cost estimates for minor taxes are higher than the actual collections.

C) Budget vs Actual Analysis

Description:

This page is the Budget vs Actual Analysis page that compares Planned (Budgeted) vs Realized (Actual) tax receipts across various End Years. I can notice that those visuals clearly indicate that Actual is invariably lower than Budgeted resulting an overall variance of -60 percent. Also stressed are systemic forecasting gaps that have caused key revenue categories also to underperform their targets. Finally, this page focuses on a requirement of the demand for dynamic revenue forecasting models, better budgeting practices and effectiveness in closing the collection gaps by carrying out real time mid year adjustments.



Key Visuals & Insights:

- **Line Chart for Sum of Amount by End Year and Estimate Type**:
    - Such that, over the years 2018-2025, Actual consistently underperforms versus Budgeted.
    - *Insight*: Persistent budgeting optimism without sustaining the actual collections
- **Over/Under Spend Bar Chart by Major Category:**:
    - It is observing maximum shortfall in "Taxes on Income".
    - Customs, Service Tax and other categories also under perform in other categories.
    - *Insight*: It helps to gain insight that core revenue streams failed to reach budget expected, which points to structural issues.
- **Cards for Actual Amount, Budget Amount, and Percent Over/Under Spend**:
    - Actual Collection: 2.98K
    - Budgeted Collection: 7.41K
    - Percent Variance: -0.60
    - *Insight*: The manifestation of large negative variance shows that actual tax receipts are tremendously lesser as compared to budgeted aims, and this sheds light on accounting for significant revenue forecasting and collection ineffectiveness.
- **Donut Chart for Sum of Amount by Estimate Type**:
    - Budgeted Receipts form largest portion, followed by Actual, then Revised.
    - *Insight*: The dynamic mid year adjustments to reflect changes in the working environment are essential to avoid heavy reliance on Budgeted figures.
- ***Overall Insight*:** Results of the past 7 years consistently fall short of actuals despite a -60% variance. This can very well indicate some major tax categories underperform when it comes to forecasting and dynamic adjustments.

IV) Decision Analysis

The decision analysis shows that an iteration of today's activity could extend incontinuation of forecasting inaccuracy and collection inefficiency.

With the help of appropriate strategies such as boosted forecasting models, focus collection efforts, performance tracking and monitor, improved predictability analytics, the capacity of tax revenue management can be made much more powerful.

These findings lead to the following prescriptive recommendations to address and move from improvement.

A) Decision Objective

The analysis above is designed to serve as a primary decision objective to optimize accuracy of tax receipt forecasting, enhance the efficiency of revenue collection on different tax categories and to reduce variance of budgeted vs. collected amount.

The dashboard allows decision makers to zero in on the revenue generators and provides a view to how their performance trends over time, and how to adjust collection strategies as they occur.

Two objectives are to enhance insights from the data as a basis for financial planning that should be more accurate, policy formulation that should be more accurate and support for benefits of a government revenue system that should be more sustainable.

B) Decision Criteria

Criteria	Description
Variance %	Bring the gap between what tax collections are backed by in the budget and what they actually are closer.
Top Contributor Analysis	Focus improvement on high-contributing categories
Growth Year-over-Year	Maintain growth trends in receipts that are sustainable.
Collection Efficiency	Improvise the realized tax revenue with respect to the expectation.

V) Prescriptive Recommendations

Decision Area	**Option A: Status Quo**	**Option B: Optimized Strategy (Recommended)**
Forecasting Accuracy	Continue with routine budgets of past averages (basics or manual)	It should be implemented with historical trend analysis and predictive forecast to achieve more realistic budgeting.
Focus on Revenue Sources	All categories, be treated equally, regardless of performance	Try to keep high-performing categories like 'Taxes on income' and as union ‘Excise Duties’ in front
Variance Monitoring	Only review the receipts vs budgeted receipts at the end of the year	Do quarterly analysis of variance for faster corrective actions

Tax Collection Efforts	Keep all categories on standard collection procedures.	Raise the compliance checks and targeted audits for sectors that are weak performing.
Planning for Minor Categories	Do not detail review of minor tax collections to overspend	Past minor category performance set the realistic budget targets.
Technology Adoption	Mute most of the dynamic reports and do manual reviews only	Power BI's predictive analytics and AI modeling provides a near real time way of making dynamic, real time decision.

VI) Conclusion

Using Power BI, the Tax Receipts Analysis Dashboard is developed as a one dimensional and rich platform for monitoring, analysis and optimization of tax revenue collection on a multiple categories and their multiple years basis.

The Dashbaord includes dynamic visuals, highlight drill down capability, and real time data interactions that allow policymakers, financial planners and decision makers see the trend, category level performance, and variances between budgeted and actual receipts. Overall there is a focus on highlighting major collection trends in the Executive Overview and major contributors in the Category Deep Dive. The Budget vs Actual Analysis page also reveals how poor inaccuracy in forecasting is the systemic problem that wants to be fixed continuously.

This analysis brings out the insights that such an analysis portends enhancing forecasting models, prioritizing top performing tax categories, performing frequent variance reviews and adopting technology driven solutions such as predictive analytics.

Generally, the project indicates how the power of interactive business intelligence tools such as Power BI can transform raw financial data into action activities, help with smart decision making, and generally sum up the efficiency and sustainability of tax revenue systems to improve the management and planning.