High-Level Design Report
Expenditure Data Analysis

Jaideep Jaiswal and Kushagra Taneja

October 31, 2024

1 Introduction

1.1 Purpose

The purpose of this project is to provide a detailed Profit and Loss (P&L) dashboard in Tableau for the financial department of Physics Wallah. This dashboard is intended to help the company's stakeholders analyze revenue, expenses, gross profit, EBITDA, operating profit, and net profit across multiple years, filtered by regions, countries, and quarters. The goal is to aid decision-making with clear, visual insights into the company's financial health and performance trends.

1.2 Scope

This dashboard focuses on visualizing financial metrics from a sample dataset. The main metrics include:

- Revenue
- Expenses (various categories)
- Gross Profit, EBITDA, Operating Profit, and Net Profit
- Profit margins and ratios
- Trends in profitability and expenses over time

1.3 Objectives

- Provide an easy-to-use interface for analyzing key financial metrics.
- Enable granular analysis by region, country, and quarter.
- Allow stakeholders to identify trends in profitability and expense management.
- Support data-driven decision-making based on insights drawn from financial performance.

2 System Architecture

2.1 Overview

The Profit and Loss Dashboard consists of several Tableau visualizations integrated into a single interactive interface. The architecture is designed to allow users to filter data, view trends, and drill down into specific financial metrics. The components of the system include:

- **Data Source:** A sample dataset containing financial data (income, expenses, profits) organized by regions, countries, and time periods.
- **ETL Process:** Extract-Transform-Load (ETL) processes to prepare and clean the data before feeding it into Tableau.
- **Tableau Dashboard:** The core of the project, where data is visualized and made interactive.
- **User Interface:** A simple, intuitive interface allowing users to interact with filters, graphs, and tables to derive insights.

2.2 Data Flow Diagram

Data Source → ETL Process → Cleaned Data → Tableau Dashboard.
User Input (Filters) → Tableau Interface → Filtered Results and Visualizations.

3 Functional Components

3.1 Region and Country Filters

- **Purpose:** Allows users to select specific regions and countries to analyze regional financial performance.
- **Functionality:** Filters data displayed in all visualizations, updating graphs and tables to reflect only the selected regions and countries.
- **User Benefit:** Enables region-specific and country-specific analysis for targeted decision-making.

3.2 Quarterly Filter

- **Purpose:** Allows users to view financial data for a specific quarter, supporting seasonal trend analysis.
- **Functionality:** Updates visualizations based on the selected quarter, isolating specific timeframes for deeper insights.
- **User Benefit:** Provides insights into quarterly performance, identifying high and low revenue periods.

3.3 Financial Metrics Summary

- **Purpose:** Displays a high-level summary of Gross Profit, EBITDA, Operating Profit, and Net Profit across multiple years.
- **Functionality:** Shows year-over-year changes in key financial metrics.
- **User Benefit:** Offers a quick overview of financial performance, allowing users to gauge overall profitability trends.

3.4 Profit & Loss Statement Table

- **Trading Account:** Summarizes sales, sales returns, cost of sales, and trading profit.
- **Operating Account:** Breaks down various expense categories, like administration, marketing, and professional services.
- **Non-Operating Income:** Displays non-operating financial activities, such as dividends and exchange gains or losses.
- **Purpose:** Provides a detailed view of revenue, expenses, and profits.
- **User Benefit:** Allows for detailed examination of income and expenses, showing areas of high cost and potential savings.

3.5 Graphical Representations

- **Sales — GP Margin — NP Margin Chart:** Line chart showing sales trends and profit margins over time.
- **Sales — Marketing Expense Chart:** Bar and line chart comparing sales with marketing expenses.
- **Gross Profit — EBITDA — Operating Profit Chart:** Stacked area chart showing trends in gross profit, EBITDA, and operating profit.
- **Purpose:** Provides graphical insights into profitability, sales effectiveness, and expense patterns.
- **User Benefit:** Allows users to easily interpret financial data and identify patterns in revenue and expenses.

4 Non-Functional Requirements

4.1 Performance

The dashboard must load data efficiently and allow seamless interactions with filters and visualizations. Data updates should be reflected instantly when filters are applied.

4.2 Usability

The dashboard should be intuitive and user-friendly, even for users with minimal experience in data analytics. Filters and navigation should be clear and accessible.

4.3 Reliability

The dashboard must provide consistent, accurate results. Data processing and loading should ensure no discrepancies in financial metrics across views.

4.4 Scalability

The system should be scalable to accommodate larger datasets or more granular data (e.g., daily transactions), if required in future versions.

4.5 Security

Access to financial data should be restricted to authorized users to maintain confidentiality. Authentication and data protection measures should be implemented if hosted on a shared server.

5 Assumptions

- The sample dataset accurately reflects the company's financial data, and any real-world implementation will use secure, verified data sources.
- All stakeholders are assumed to have a basic understanding of financial metrics and how to interpret them in a dashboard.
- The dashboard will be accessed from secure devices, ensuring data integrity and security.

6 Limitations

- **Data Granularity:** The dashboard currently supports quarterly granularity, which may limit detailed monthly or daily analysis.
- **Data Scope:** Since this is based on a sample dataset, real-time updates or live data integration are not supported in the current version.
- **Interactivity Constraints:** The level of interactivity in Tableau is limited to predefined filters and visualizations; fully customized analysis requires additional tools.

7 Future Enhancements

- **Real-Time Data Integration:** Implement mechanisms to pull live data for continuous analysis.

- **Expanded Interactivity:** Explore advanced features in Tableau for custom analytical capabilities.
- **Mobile Compatibility:** Ensure the dashboard is responsive and accessible on mobile devices for on-the-go analysis.

8 Conclusion

This High-Level Design document presents a structured view of the Profit and Loss Dashboard, developed to facilitate financial analysis at Physics Wallah. By offering an intuitive, interactive interface with multiple filtering options, the dashboard empowers stakeholders to make informed, data-driven decisions. Future enhancements may include real-time data integration and expanded interactivity.