

# Data Visualisation Project

Team 12





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# Introduction

In the complex world of finance, it's crucial to understand how different industries are doing. That's why our visualisation focuses on examining stocks from various categories. By closely studying how these industries rise and fall, we aim to find valuable information to help investors understand the stock market better. Through careful analysis of how companies perform in their specific industries, our visualisation becomes a useful tool for spotting trends, finding opportunities, and making smart investment choices.





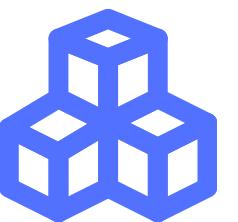
# Purpose of Visualisation

- 1. Comparative Analysis:** Visualising financial metrics across companies and sectors aids in trend identification and informs strategic decision-making.
- 2. Correlation Analysis:** Visualisation uncovers patterns between **profit** and **expenditure**, optimising budget allocation and enhancing profitability.
- 3. Trend Identification:** Visual analysis of **year-on-year growth** rates guides strategic planning and investment decisions for long-term sustainability.
- 4. Ratio Analysis:** Visualisation of valuation ratios like **P/E** and **P/S** provides insights into market sentiment, aiding informed investment decisions.
- 5. Sector Comparison:** Comparative analysis reveals sector-specific trends, informing industry strategies and investment opportunities.

# Users

## CFO/Financial Managers

Task: Budget Allocation



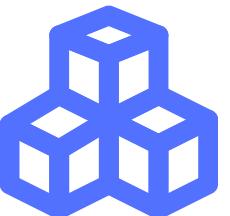
## Financial Analysts

Task: Profit Prediction based on Budget Allocation



## Executives and Management

Task: Strategic Planning and Resource Allocation



## Entrepreneurs

Task: Make Early Financial Decisions



## Financial Analysts and Investors

Task: Investment Analysis and Portfolio Management



# Phase I : Overview

- In phase 1, we explored different datasets and selected a stock market dataset known for its relevance and demand, allowing us to delve into company spending and profitability.
- The objective was to simplify complex financial data into easily understandable visualizations, highlighting aspects such as resource allocation, spending breakdowns, and overall profitability.
- Visualization helps the users understand complex relationships between multiple variables and the trends they follow.



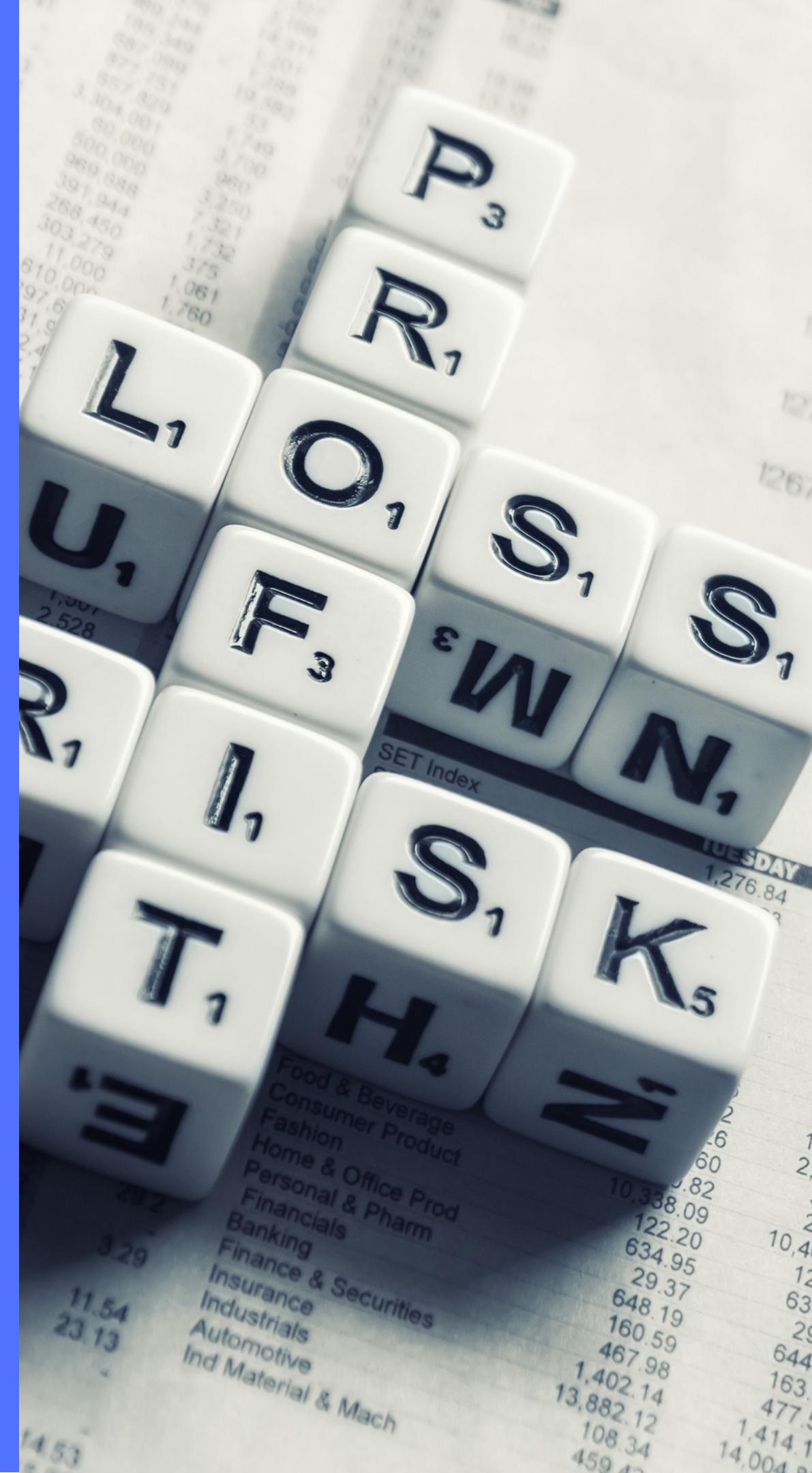
# Phase II: Overview

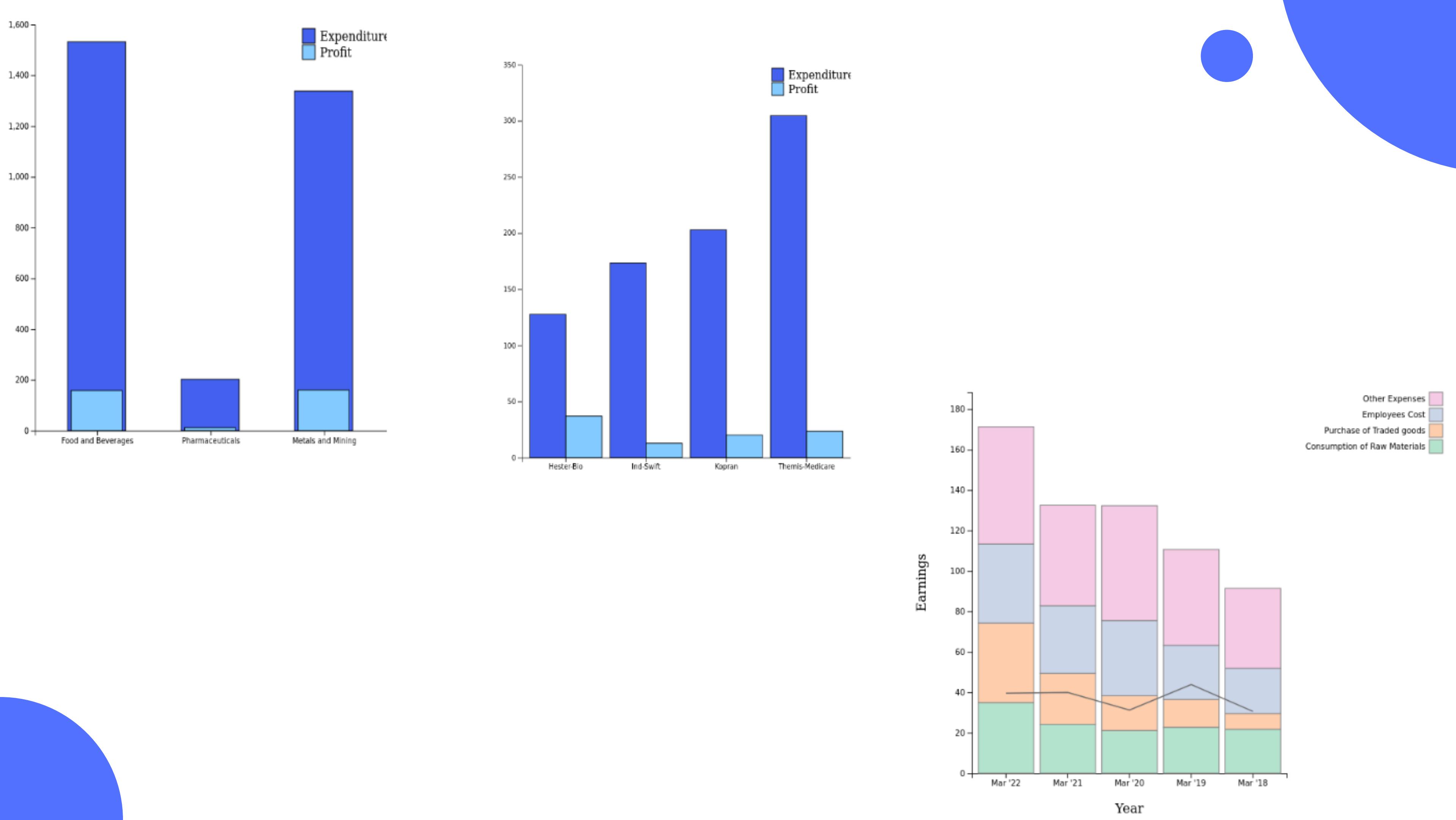
In phase - 2, we showed the expenditure and profit analysis for 3 categories each containing 4 companies each.

The goal of phase-2 was to visualise the correlation between the profits generated by certain categories of companies and their fund allocations in various domains.

We utilised a 3 tier visualisation:

1. Overlapping bar chart
  2. Grouped bar chart
  3. Stack bar chart







# Phase III Description

In Phase 3, we advanced our analysis by:

1. Exploring correlation between profit and expenditure across sectors
2. Examining YoY growth trends for each company
3. Analyzing P/E, P/S ratios and EPS annually for insights into market valuation

# Data Description

The dataset utilised for visualisation comprises the annual financial reports of companies spanning the years 2018 to 2022. This dataset encompasses three categories of companies. The annual financial reports, provided in CSV format, pertain to the following companies within their respective categories:

## Food and Beverages

- ADF Foods
- Harrisons Malayalam
- LT Foods
- KRBL

## Pharmaceuticals

- Hester Biosciences
- Ind-Swift
- Kopran
- Themis Medicare

## Metals and Mining

- Godawari Power
- Impex Ferro Tech
- Precision Wires
- Techno craft



The following rows of data from the annual financial reports of the companies have been selected for visualisation:

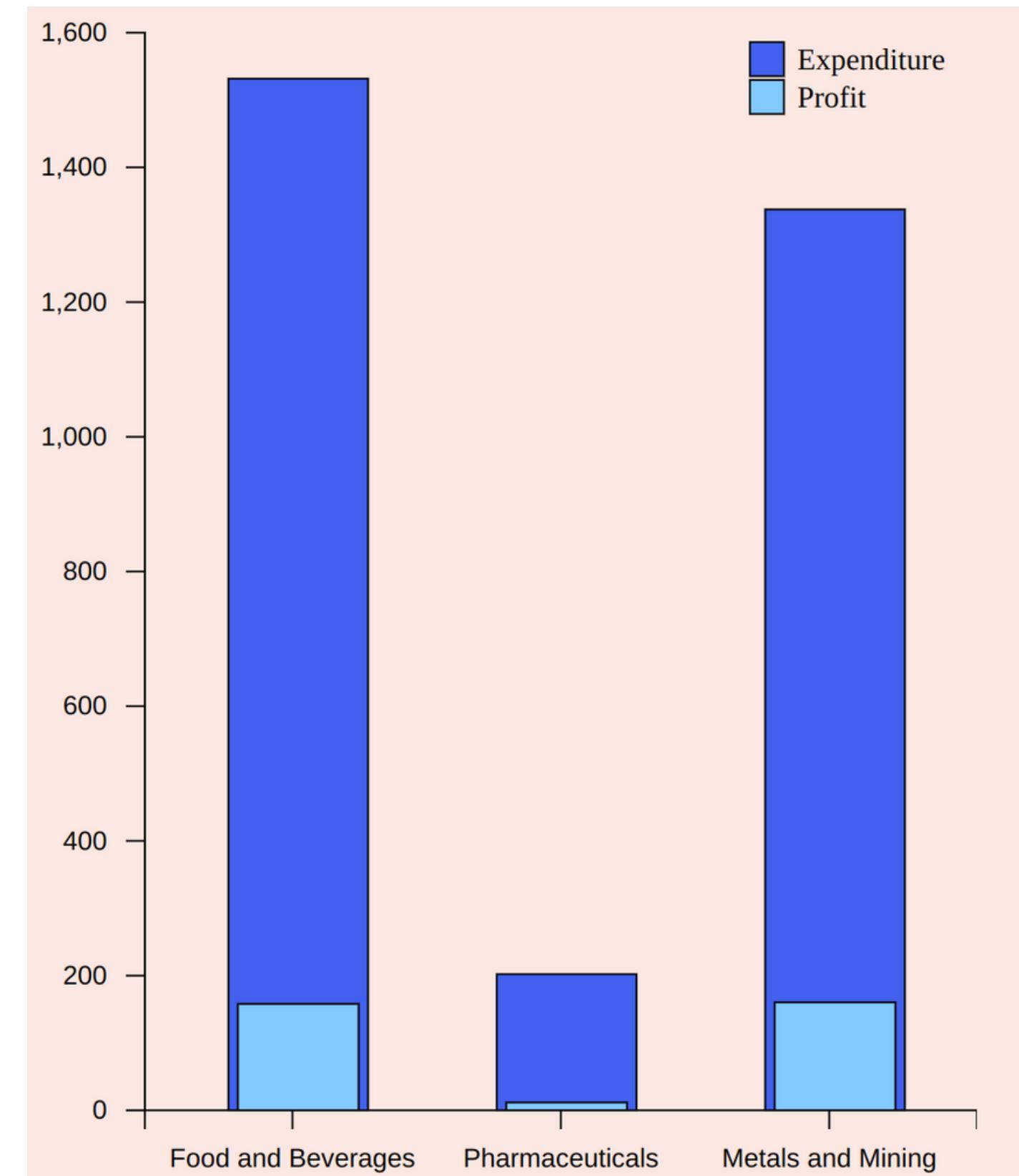
1. Net Profit/(Loss) For the Period
2. Consumption of Raw Materials
3. Purchase of Traded Goods
4. Employees Cost
5. Other Expenses
6. Basic EPS
7. Revenue operations per share
8. Price/Net Operating Revenue

Total expenditure is derived from the cumulative values of "Consumption of Raw Materials," "Purchase of Traded Goods," "Employees Cost," and "Other Expenses" rows

# Employed Visualisations

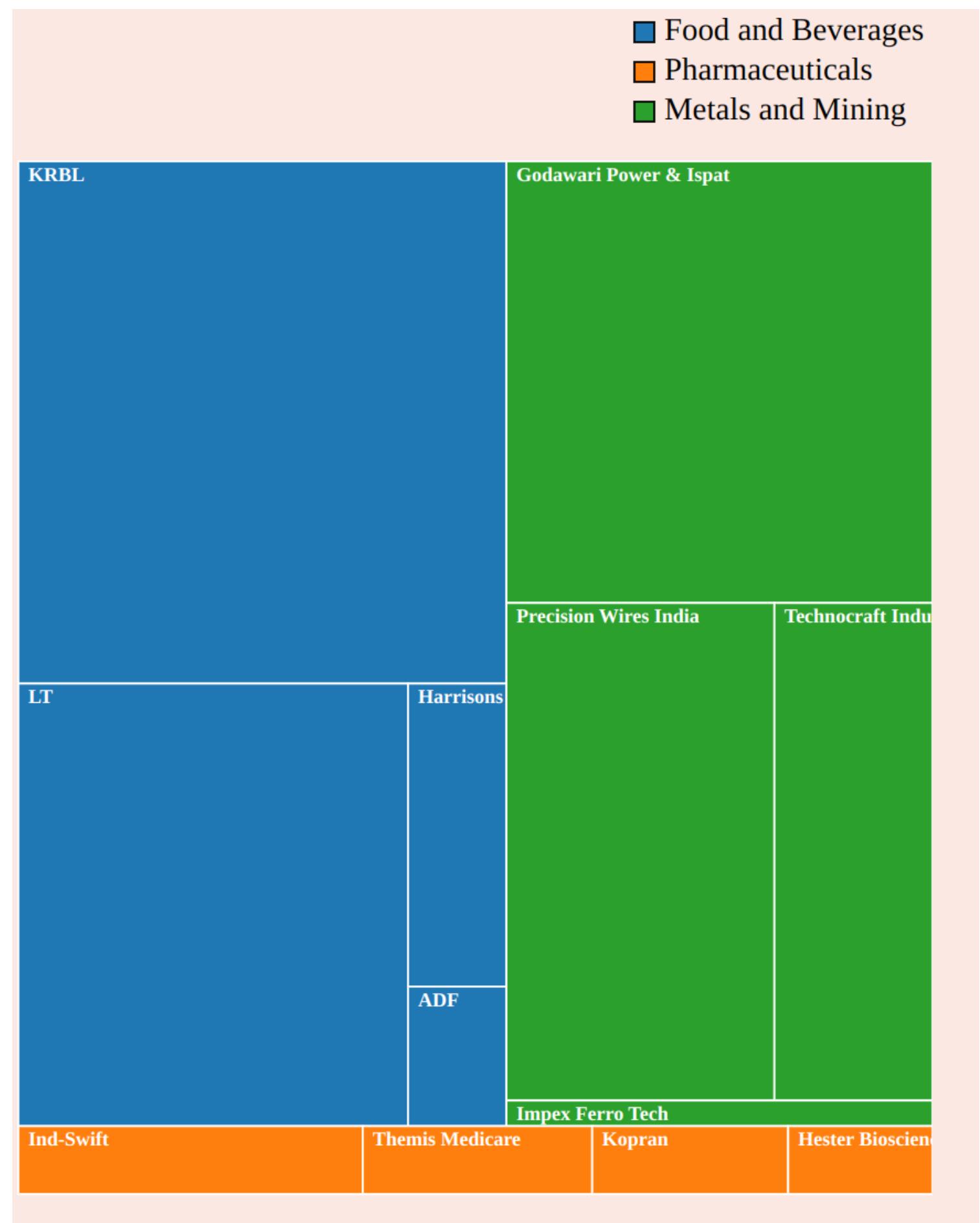
## Grouped Bar Chart

- **Visual Encoding:** Bar lengths represent average expenditure and profit for each category.
- **Navigation:** Users can navigate through different categories by observing the grouped bars representing each category's expenditure and profit.
- **Interaction:** On hovering over the expenditure bar, the average expenditure is displayed. Similarly, on hovering over the profit bar, the average profit is shown
- **Animation:** Transition animation is applied to the bars, causing them to smoothly move upwards to their final positions.
- **Colours:** Two different shades of blue are used to differentiate between profit and expenditure.
- **Purpose:** This visualisation is utilised to compare financial performance trends between different categories of companies.



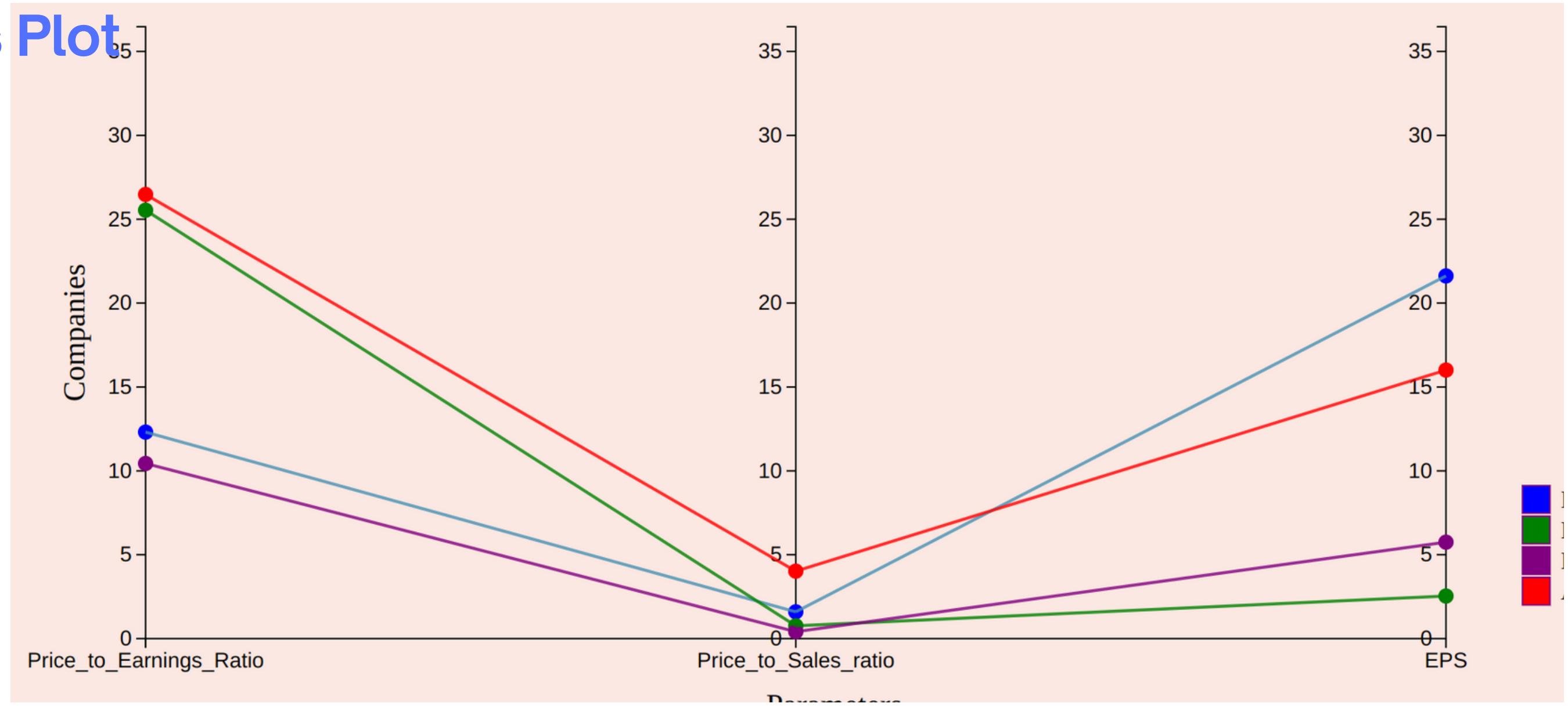
# Treemap

- **Visual Encoding:** Color-coded rectangles represent companies by category, sized by average expenditure.
- **Navigation:** Users can observe the treemap to navigate through different categories and visually compare the expenditure distribution across companies.
- **Interaction:** On hovering over a cell, the company name, average expenditure, and average profit are displayed.
- **Animation:** No animations are applied to the treemap.
- **Colours:** The Food and Beverages category is represented by blue, Pharmaceuticals by orange, and Metals and Mining by green.
- **Purpose:** This visualisation offers a visual representation of expenditure distribution across companies, facilitating comparative analysis. The colour-coded rectangles expenditure allow for easy differentiation and comparison between categories and individual companies.



# Parallel Coordinates Plot

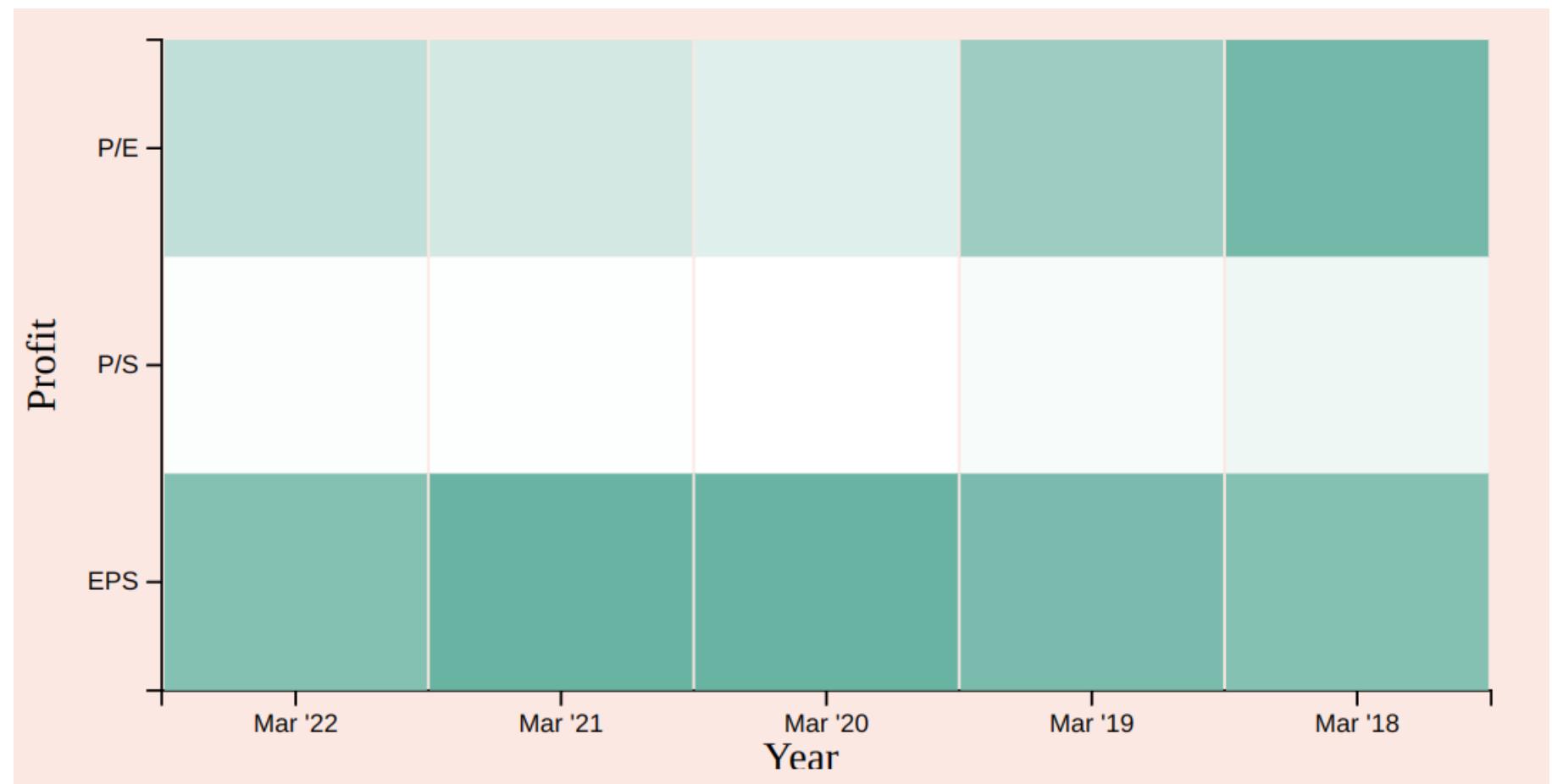
- **Visual Encoding:** Lines represent financial ratios (P/E ratio, P/S ratio, EPS) for each company within a category..
- **Navigation:** Users can observe the parallel plots to compare financial health and market valuation across companies within each category.
- **Interaction:** No interaction is applied to the parallel plots.



- **Animation :** No animation is there for this plot.
- **Colours:** Blue, green, purple, and red lines are used for the companies, providing differentiation and aiding in visual comparison.
- **Purpose:** This visualisation allows for a concise comparison of financial health and market valuation across companies within each category. By representing financial ratios for each company averaged over 5 years, users can evaluate investment opportunities and assess performance, aiding in investment decision-making and performance evaluation

## Heat Map

- **Visual Encoding:** Colour saturation represents the magnitude of P/E ratio, P/S ratio, and EPS for each company.
- **Navigation:** Users can observe the heatmap to analyse the valuation metrics for each company.
- **Interaction:** On hovering over a cell, the year, category, and value are shown.
- **Animation:** No animation is applied.
- **Colours:** Colours range from white to green to represent varying levels of the valuation metrics.
- **Purpose:** Aids in identifying undervalued or overvalued stocks and enhances understanding of companies' valuation dynamics and market positioning.





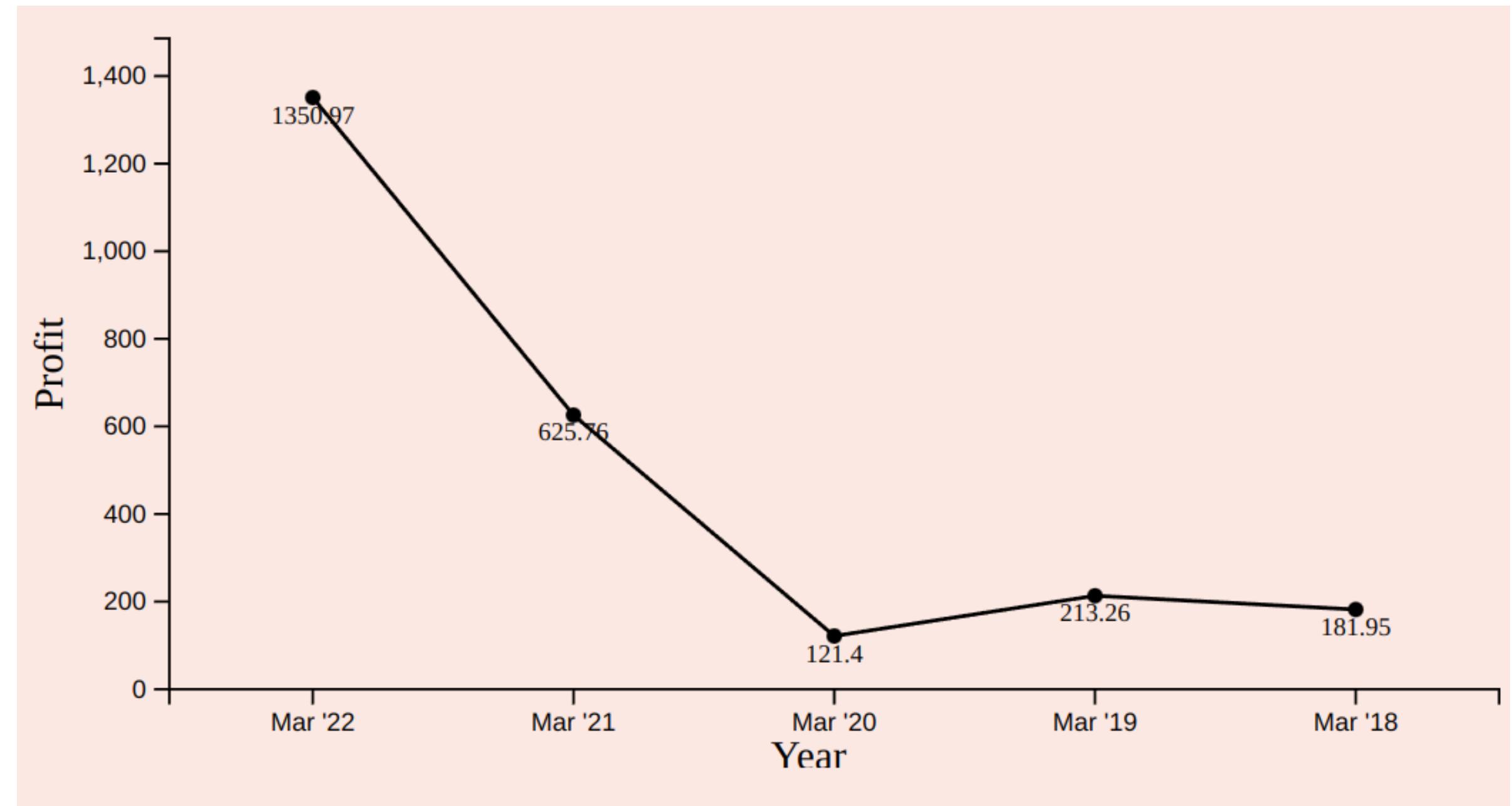
## Pie Chart

- **Visual Encoding:** Slices of the pie represent expenditure domains for each company, disaggregated by year.
- **Interaction:** On hover, the value of that arc and its category gets displayed.
- **Navigation:** Users can observe the pie chart to navigate through different expenditure domains and visually compare their distributions.

- **Animation:** No animation applied
- **Colours:** Consumption of Raw Materials represented in green, Employees Cost in orange, Other Expenses in blue, and Purchase of Traded goods in pink
- **Purpose:** Illustrates the distribution of expenditure across different domains, enabling tracking of expenditure trends and informing budget allocation strategies

## Line Plot

- **Visual Encoding:** Lines represent year-on-year growth for each company.
- **Navigation:** Users can observe the line plot to track the year-on-year growth of each company.
- **Interaction:** No interaction is applied to the line plot.
- **Animation:** No animation is applied.
- **Colour:** No specific colour scheme is used
- **Purpose:** Offers a longitudinal view of performance trends over time, aiding assessment of companies' vitality, competitiveness, and sustainability.



# Limitations of Visualisations



## Complexity

Some visualisations, such as parallel plots and heat maps, may be complex for users without a strong background in finance or data analysis to interpret



## Data Overload

The abundance of visualisations and the inclusion of multiple metrics may overwhelm users with too much information.



## Lack of Context

Visualisations may not provide sufficient context or explanation for users to fully understand the significance of the findings.



## Static Nature

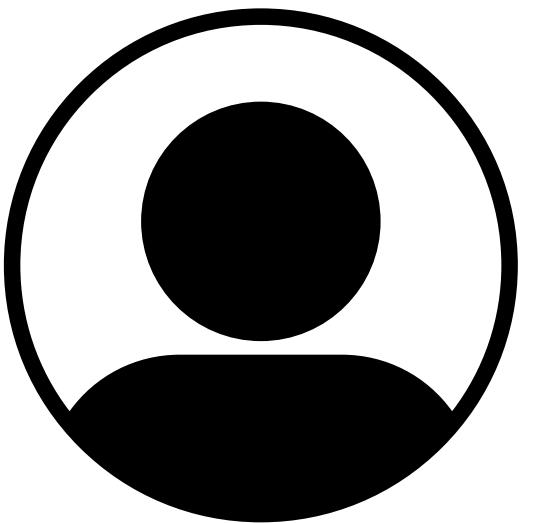
While the visualisations offer a snapshot of financial performance at a particular point in time, they may not capture the dynamic nature of markets and businesses



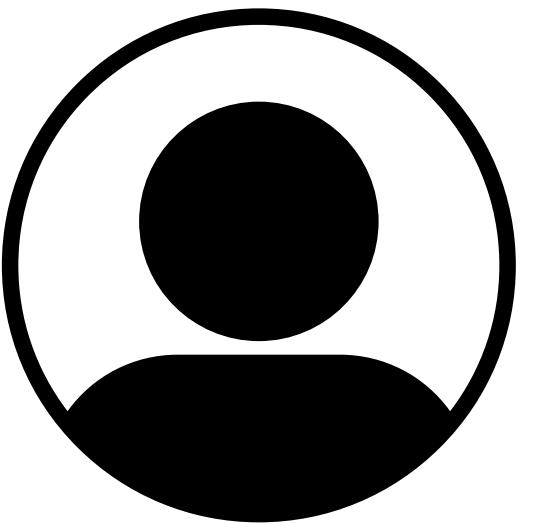
## Data Quality

The accuracy and completeness of the underlying data can significantly impact the reliability of the visualisations

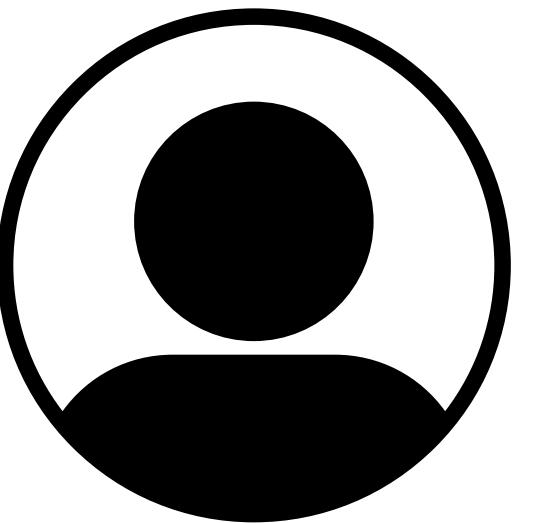
# Our Team



Isha Borade  
2022101024



Narahari Harshitha  
2022101053



Gadha R Warrier  
2022101107





THANK YOU