



**FIT5147**

**Data exploration and visualisation  
DVP: PART-2**

**COMPARATIVE STUDY OF BANKING INDUSTRY IN  
AUSTRALIA AND INDIA**

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## INTRODUCTION

The Banking Industry plays a crucial role in a country's economy, serving as a major pillar in financing and economic stability. Understanding the performance of banks is vital for investors, policymakers, and stakeholders to make well-informed decisions and formulate optimal investment strategies. This project aims to analyse the performance of the top 5 banking industry leaders in Australia and India over a five-year period from December 2018 to December 2023. The comparative analysis between these two major economies seeks to uncover insights on bank performance, volatility, and their relationship with national interest rates.

The primary objectives of this project include:

- ❑ **Analysing Bank Performance:** To understand how the top banks in both countries have performed over the specified period.
- ❑ **Computing Volatility:** To measure the fluctuations in bank returns and understand the associated risks.
- ❑ **Comparing Banks in Australia and India:** To draw a comparative analysis between the banking sectors of the two countries.
- ❑ **Exploring the Relationship Between Bank Performance and Interest Rates:** To determine if there is any significant correlation between bank performance and the interest rates in the respective countries.

I myself have two years of work experience in Banking as a former Finance student. This has motivated me to delve deeper into the comparative narrative of how banks are functioning in different economic contexts. The reason for choosing this topic is because I am attempting to use my prior knowledge and blend it with the new skills of using visualisation tools to better formulate and understand the situation.

By conducting a thorough analysis of historical stock data and integrating it with interest rate information, this project provides valuable insights that can aid stakeholders in decision-making processes, such as investment strategies, policy formulation, and risk management. The visualizations and analytical findings presented in this report aim to offer a clear understanding of the performance dynamics and volatility trends of major banks in Australia and India, thereby contributing to a more informed and strategic approach to banking sector investments.

## DESIGN PROCESS

The design process for this narrative visualization was carefully structured to ensure that the final product is both informative and engaging for the target audience, which includes potential investors, financial analysts, policymakers, and banking professionals. This section will describe and justify the design choices made throughout the process, referencing theoretical content from Weeks 1-12 of the unit, and will briefly refer to each of the five design sheets provided in the Appendix. The approach I took to the 5-design sheet was to use each sheet to answer each question.

### **SHEET-1: Brainstorming**

### *What?*

This sheet included numerous potential graphs and visualisations that I came across and considered before narrowing them down. This included even choropleths and waterfall charts which were eliminated due to insufficient data sources or unsuitable narrative.

### *Why?*

Most of the data I have is purely quantitative and I want to provide a comprehensive narrative for potential investors to intuitively understand financial performance and risks. The graphs are interactive and user engaging by asking them to make selections and engage with content accordingly.

### *How?*

I chose suitable colour palettes and simple interaction methods to scrutinize content based on user preference. The final graphs are simple and easy to understand and most of them allow the user to hover their mouse over the chart to show them the values as well.

## **SHEET-2: Banking Industry Snapshot**

### *What?*

1. Data Types:
  - ☐ Categorical Data: Bank names and countries (Australia and India).
  - ☐ Quantitative Data: Performance metrics such as market capitalization, profit after tax (PAT), return on assets (ROA), earnings per share (EPS), and volatility measures.
2. Data Attributes:
  - ☐ Country: To differentiate banks by country.
  - ☐ Bank Names: To distinguish individual banks within each country.
  - ☐ Performance Metrics: To visualize and compare the performance of banks.
3. Output: Donut Chart and Bar Graphs differentiated by colour. Here i have chosen an aesthetically appealing colour palette.

### *Why?*

Performance measures are the best way to understand a Banks Standing. this enables users to analyse and compare the financial performance of banks across different regions, facilitating data-driven decision-making.

### *How?*

Users select a country and a financial metric; the dashboard renders the data in graphical formats (like donut charts and bar graphs) which are interactive for detailed exploration.

## **SHEET 3: Performance Overview**

### *What?*

1. Data Types:
  - ☐ Categorical Data: Bank names and countries (Australia and India).
  - ☐ Quantitative Data: Time series of Bank stock performance
2. Data Attributes:
  - ☐ Country: To differentiate banks by country.
  - ☐ Bank Names: To distinguish individual banks within each country.

3. Output: Line graph differentiated by colour for ease of understanding

*Why?*

To help users understand the performance of banks over time and see how well it has been doing or how varied the performance consistency is and identify trends in the same to enable better decision making.

*How?*

Users will select the timeframe and country they wish to see and interact with the graph as it displays the performance.

## **SHEET 4: Volatility and Risk**

*What?*

1. Data Types:
  - ☐ Quantitative Data: Monthly and yearly performance data, volatility measures.
  - ☐ Categorical Data: Bank names and countries.
2. Data Attributes:
  - ☐ Country and Bank: To distinguish and compare different banks within and across countries.
  - ☐ Time Period: To analyse volatility trends over the specified period (2019-2023).
3. Output: Box Plots provide high level overview of distribution

*Why?*

1. Understand Risk and Stability:
  - ☐ Measure Volatility: Analyse the volatility of bank performances to understand the associated risks.
  - ☐ Comparative Risk Analysis: Compare the volatility of Australian and Indian banks to assess relative stability.
2. Data Insight:
  - ☐ Identify Patterns: Use volatility data to identify patterns and outliers that indicate periods of high risk or stability.
  - ☐ Inform Decision-Making: Provide insights that can inform investment and policy decisions.
3. User Engagement:
  - ☐ Interactive Analysis: Allow users to interact with the data to explore different aspects of volatility.

*How?*

1. Volatility Measures:
  - ☐ Standard Deviation and Variance: Calculate these metrics to quantify the volatility of bank performances.
2. Chart Selection:
  - ☐ Box Plots: To visualize the distribution and volatility of bank performances. Box plots highlight the spread and outliers in the data, making them ideal for volatility analysis.
3. Interaction Techniques:
  - ☐ Drop-down Menus: Allow users to select specific countries and banks to view volatility data.

## **SHEET 5: Dashboard**

### *What?*

1. Data Types:
  - ☐ Time Series Data: Monthly and yearly performance data of banks.
  - ☐ Categorical Data: Bank names, countries (Australia and India).
  - ☐ Quantitative Data: Financial metrics such as returns, volatility, market capitalization, profit after tax (PAT), return on assets (ROA), and earnings per share (EPS).
2. Data Attributes:
  - ☐ Country and Bank: To distinguish and compare different banks within and across countries.
  - ☐ Performance Metrics: Key indicators to be visualized for comprehensive analysis.

### *Why?*

1. Comprehensive Analysis:
  - ☐ Unified View: Provide a single, integrated dashboard that brings together all the different analyses, offering a holistic view of the banking industries in Australia and India.
  - ☐ Ease of Access: Ensure users can easily access and interpret a wide range of data insights from one central location.
2. User Engagement and Interaction:
  - ☐ Interactive Experience: Incorporate interactive elements that allow users to customize their view and delve deeper into specific aspects of the data.
  - ☐ Visual Appeal: Maintain a visually appealing and professional design to engage users and facilitate a positive user experience.

### *How?*

1. Dashboard Structure:
  - ☐ Header and Navigation: Include a header with the project title and a sidebar for navigation. Users can easily switch between sections such as performance overview, volatility analysis, country comparison, and interest rate relationships.
  - ☐ Interactive Tabs and Filters: Use tabs and filters to allow users to select specific countries, banks, and performance metrics. This ensures the dashboard is dynamic and user-friendly.
2. Visual Elements:
  - ☐ Consistent and Interactive Design: Ensure all charts and graphs follow a consistent design language, including colours, fonts, and styles. This maintains a cohesive and professional look.
  - ☐ Interactive Charts: Implement interactive charts such as line graphs for performance trends, box plots for volatility, and bar charts for comparative analysis.

## **IMPLEMENTATION**

### **Technical Implementation**

This Shiny application, designed to present an interactive dashboard for the banking industry, leverages multiple libraries within the R environment to handle data manipulation, user interface construction, and dynamic visualization. The libraries utilized include:

- ☐ Shiny and Shinydashboard: These libraries provide the framework for building interactive web applications.
- ☐ Readxl: Employed to read Excel files.
- ☐ Dplyr and Tidy: Packages are used for data manipulation
- ☐ Plotly: Interactive Plots
- ☐ Lubridate: This package simplifies the handling of dates and times.
- ☐ Plotly: Provides more user interactivity.

#### *Implementation Details:*

- ☐ Lots of Data collection and wrangling was required to consolidate into 2 sheets one named aus.xlsx and other ind.xlsx with multiple tabs containing different information. A lot of data wrangling was required.
  - ☐ Data Collection was done from sites like YahooFinance, BSE, MoneyControl and the banks official annual reports and press releases.
  - ☐ Currency rates had to be converted to AUD to standardise data to form comparisons.
  - ☐ Formula for estimated returns has to be applied to stock prices to calculate the returns as seen below-

$$R_i = \frac{(P_1 - P_0) + D}{P_0} \times 100$$

- ☐ Interactive Elements: Users can interact with the data through controls like dropdowns to select countries or banks, sliders to define date ranges, and radio buttons to choose specific financial measures. These inputs trigger updates in the visual displays.
- ☐ Visualization: Data visualization is handled via Plotly, providing a responsive and interactive experience. Users can explore different aspects of financial data through various types of charts, including pie charts, bar graphs, and line plots.

#### Challenges

The primary challenges in this project were related to data wrangling and integration from multiple sources. Specifically:

- ☐ Data Inconsistencies: Ensuring that data from different sources aligned correctly and were consistent as mentioned in the wrangling section.
- ☐ Missing Data: Handling missing values in a way that did not compromise the analysis.
- ☐ Calculation of Metrics: Applying accurate formulas to calculate returns and other financial metrics.
- ☐ Interactive Visualization: Ensuring that the visualizations were not only informative but also interactive and user-friendly.



## Design Justifications:

- **User-Centered Design:** The application layout and functionalities were crafted with the end-user in mind—potential investors and financial analysts. By providing a clear, concise, and interactive means to explore complex financial data, the application aims to facilitate informed decision-making.
- **Modular Design:** Each tab in the dashboard focuses on a specific aspect of banking data, which not only organizes the information logically but also speeds up the user interaction by loading data contextually rather than all at once.

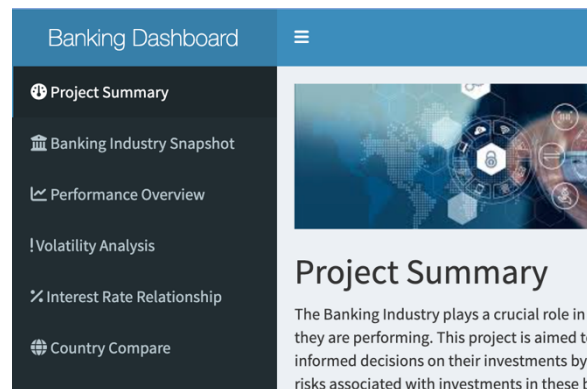


Figure 1:Dashboard

## **Interactive Narrative Display**

### *Main Dashboard*

As we can see above, the main Dashboard has been formatted such that it makes it easy for the user to navigate. Each section has an icon with an appropriate depiction.

### *Project Summary*

The project summary tab is used to provide the users with a preamble of what the project is about, what it aims to achieve as well as define its target audience of potential investors, financial analysts and policy makers. This tab gives us a summary of the entire project as well as state the objectives and aims of the same. I have also referenced the image ribbon source within the code as the image was merely placed for aesthetic purposes

### *Banking Industry Snapshot*

Figure 2:User Interaction

The above panel shows us the parts the user interacts with. Below are the resulting graphs by country:

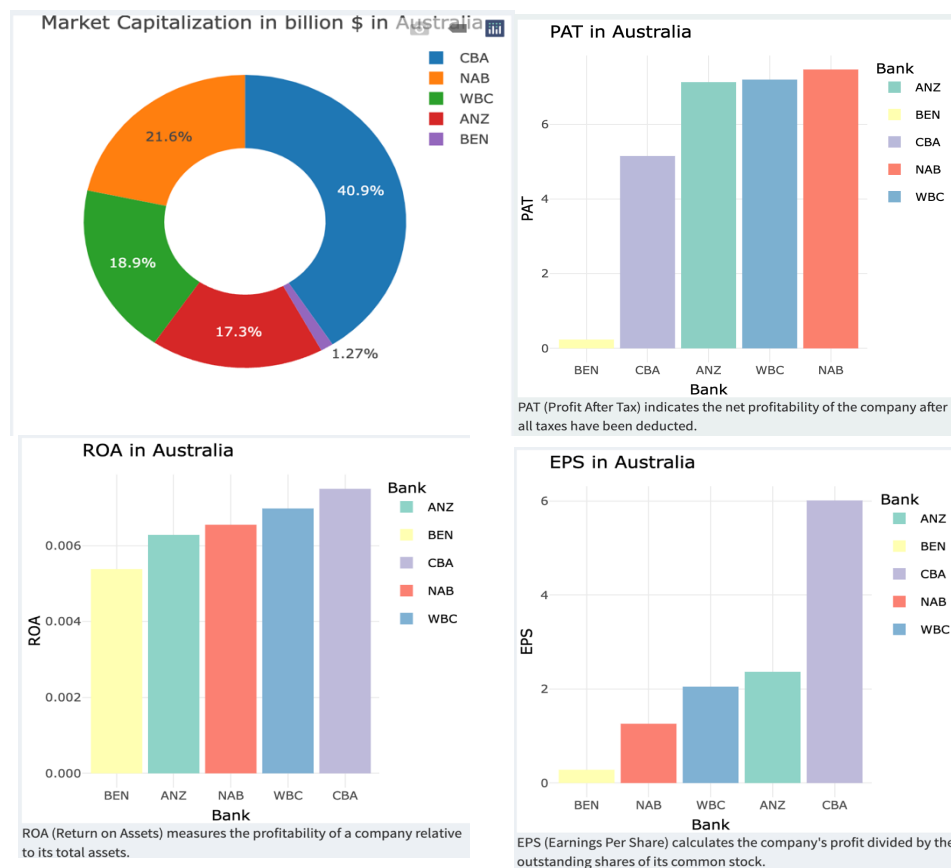


Figure 3: Australian Banking Snapshot

The visualization offers a comprehensive financial overview of major Australian banks: Commonwealth Bank of Australia (CBA), National Australia Bank (NAB), Westpac Banking Corporation (WBC), Australia and New Zealand Banking Group (ANZ), and Bendigo and Adelaide Bank (BEN). It depicts Market Capitalization, showing a dominant share by CBA. Profit After Tax (PAT) data suggests close competition among CBA, NAB, and ANZ. The Return on Assets (ROA) graph compares each bank's profitability relative to their total assets, and the Earnings Per Share (EPS) chart illustrates how profit per share varies, with CBA and ANZ showing higher values, indicating potentially better returns for investors.

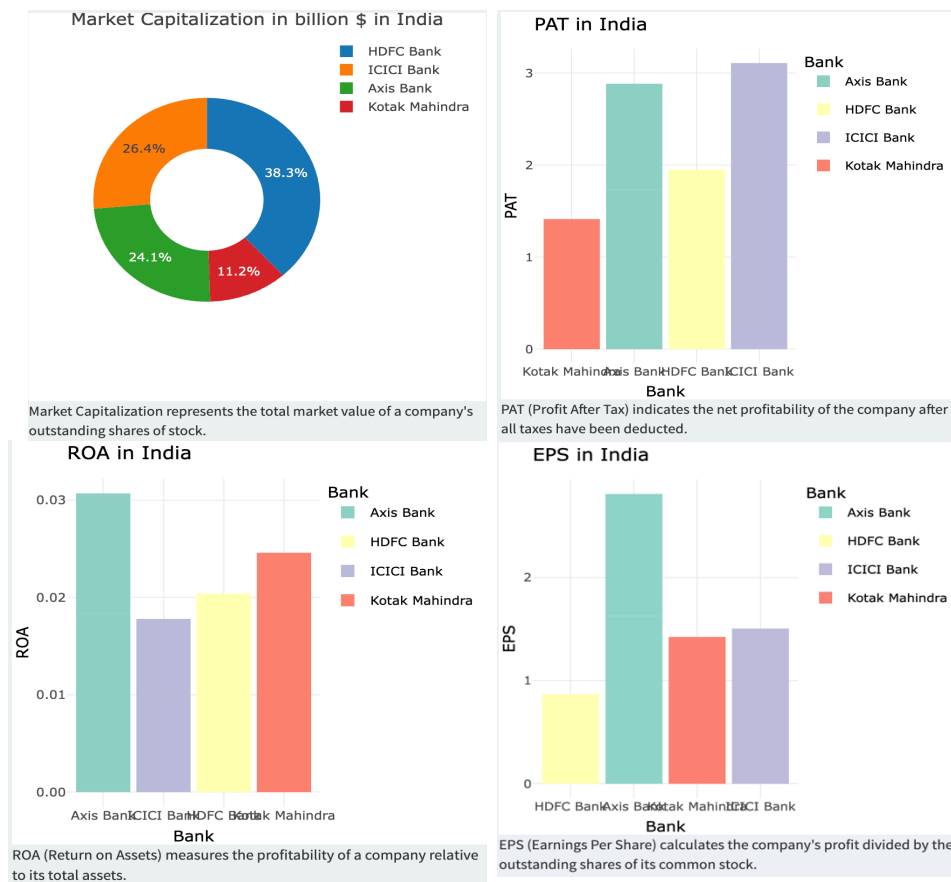


Figure 4: Indian Banking snapshot

This comprehensive financial snapshot presents key metrics for major Indian banks: HDFC Bank, ICICI Bank, Axis Bank, and Kotak Mahindra Bank. It showcases Market Capitalization, with HDFC Bank leading significantly. Profit After Tax (PAT) reflects each bank's profitability, with Axis Bank and HDFC Bank showing the highest values. Return on Assets (ROA) indicates how effectively assets are utilized, with HDFC and ICICI showing robust performance. Earnings Per Share (EPS) highlight profitability per share, where HDFC and Kotak Mahindra lead, suggesting better returns for shareholders. The data provides a detailed perspective for investors assessing the financial health of these institutions.

### Performance Overview

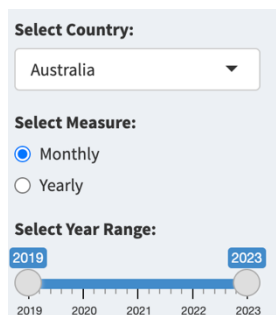


Figure 5: User selections

The above shows us that the user can select the country and time frame.

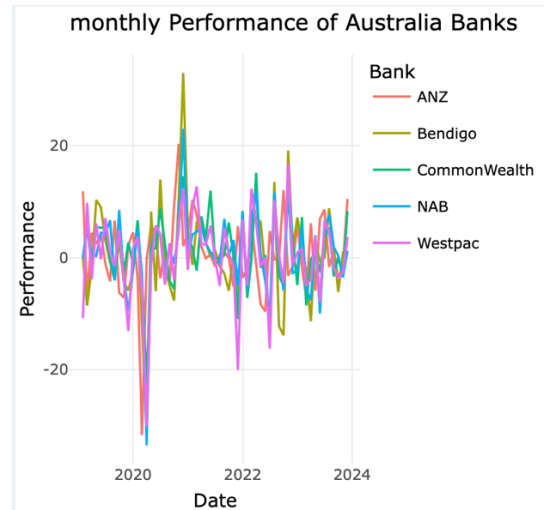


Figure 6: Australian Banks Performance

The graph displays the monthly performance of five Australian banks from 2020 to 2024. The banks included are ANZ, Bendigo, Commonwealth, NAB, and Westpac. The performance fluctuates significantly over time, with all banks showing similar trends and volatility, indicating no consistent leader or laggard among them.

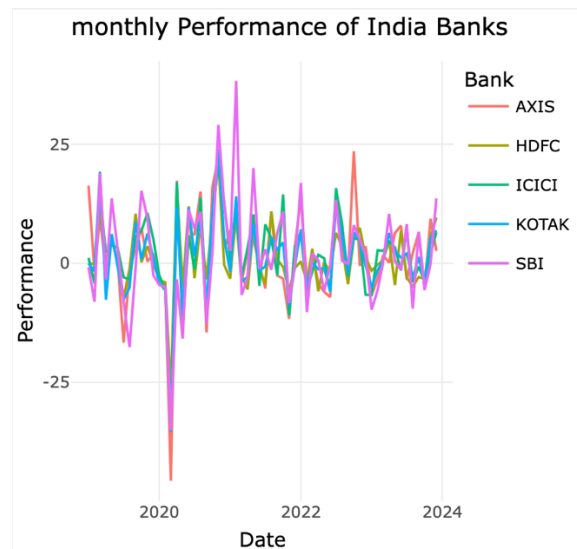


Figure 7: Indian Banks Performance

Similarly, This chart illustrates the monthly performance trends of five major Indian banks—AXIS, HDFC, ICICI, KOTAK, and SBI—from 2020 to 2024. Similar to their Australian counterparts, these banks exhibit significant fluctuations and parallel movements, with no single bank consistently outperforming or underperforming across the observed period.

### Volatility

Similar to previous sections, this section contains only a drop-down menu for the user to select the country, Below are the outputs-

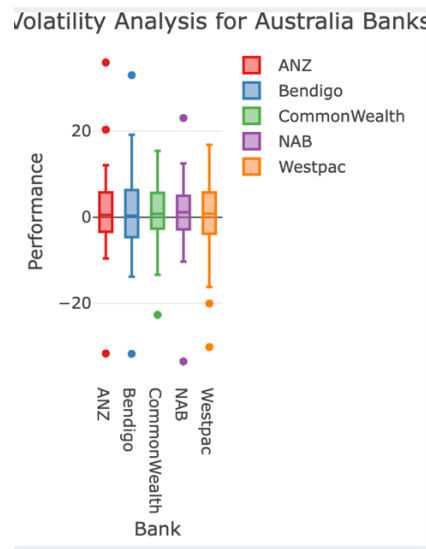


Figure 8: Australian Banks Volatility

This chart depicts the variability in performance of five Australian banks: ANZ, Bendigo, Commonwealth, NAB, and Westpac. The box plot shows the range and median of performance scores from -20 to 20, highlighting differences in volatility and central tendency among these banks.

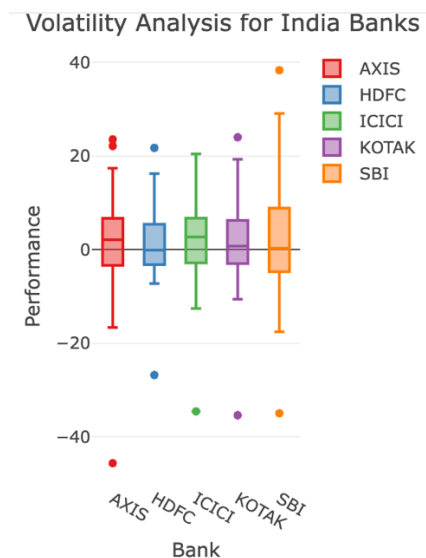


Figure 9: Indian Banks Volatility

The above displays the performance volatility of five major Indian banks: AXIS, HDFC, ICICI, KOTAK, and SBI. The box plot illustrates the distribution of their performance metrics, ranging from -40 to 40 which is higher than that of Australian Banks. It highlights the spread and median of performance values, revealing significant variability and trends in financial performance across these institutions.

### Interest Rate Relationship

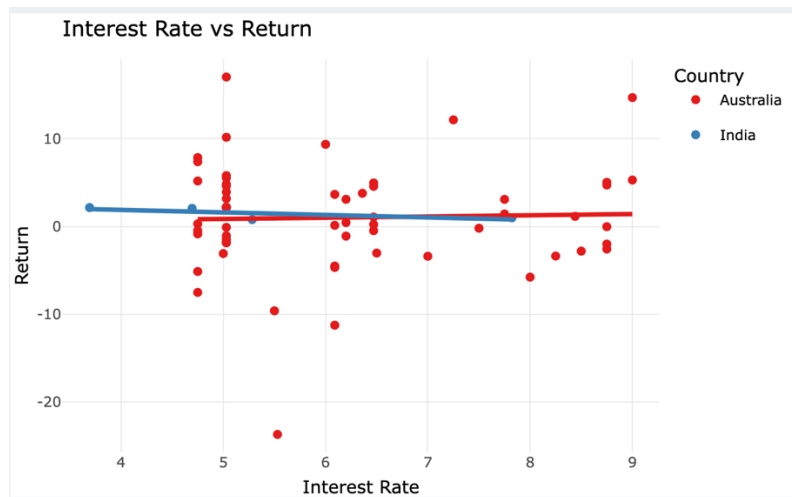


Figure 10: Relationship between Interest Rates and Returns

The above graph explains to us the relationship between the variables under consideration- Interest rates and returns. Red here depicts Australia and Blue, India. Linear trend lines are included for both countries, suggesting the direction and strength of the relationship. The plot indicates that for both countries, as interest rates increase, the returns do not show a consistent increase or decrease, suggesting a weak or no correlation between these two variables.

### Country Compare

This section is mainly to bring about a more comparative insight of both countries' performances and volatility of stock returns. We have a single drop-down menu asking the user to select from Performance and Volatility-

**Choose Aspect to Compare:**

Performance ▼

Figure 11: User Selection

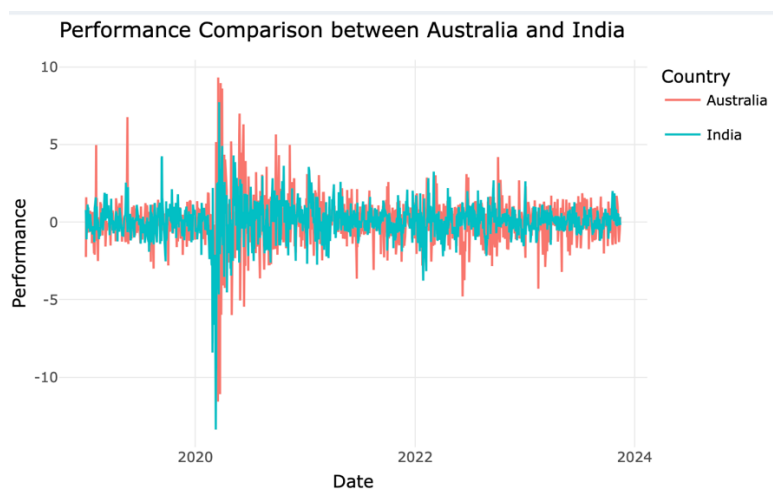


Figure 12: Comparison between Australian and Indian Banks' Performances

The line graph displays a performance comparison between Australia and India from 2020 to 2024. Red lines represent Australia's performance fluctuations, while blue lines denote India's. Both countries show similar trends with many ups and downs, reflecting volatile bank performance over the period. The graph highlights that neither country consistently outperforms the other, indicating relatively parallel market behaviours despite occasional peaks and dips. The close proximity of the lines throughout suggests that external global or regional economic factors may similarly influence both markets.

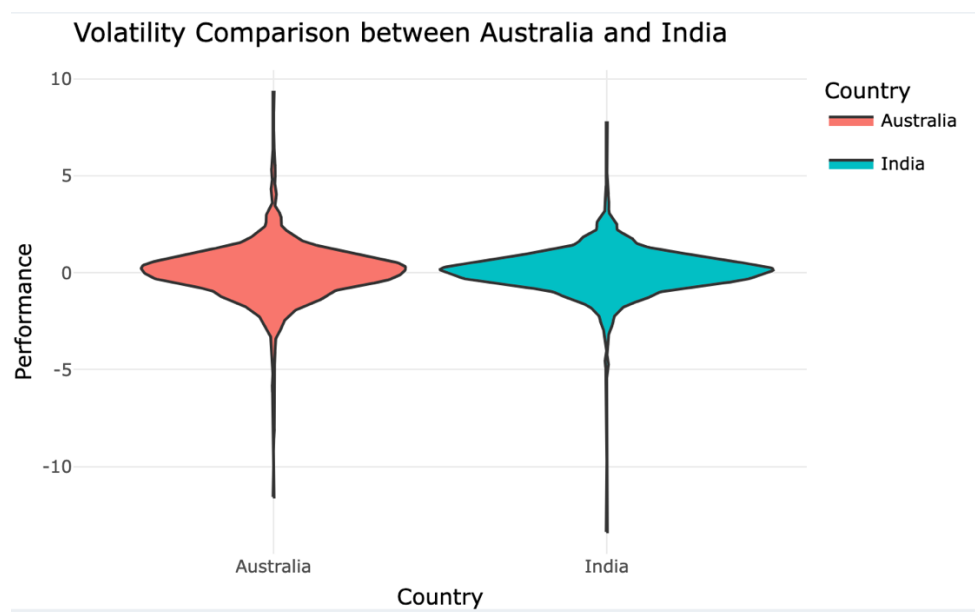


Figure 13: Volatility amongst both countries

This violin plot illustrates the performance volatility comparison between banks in Australia and India. The plot shows the distribution and density of performance metrics, where Australia is represented in red and India in teal. Both countries exhibit a broad range of performance from -10 to +10, but with varying density concentrations around the median. The shapes of the violins indicate the frequency of performance scores within that range, with both countries showing a concentration of outcomes near zero, suggesting common central tendencies in bank performances despite the wide spread.

## Conclusion

The comprehensive analysis conducted in this project provides valuable insights into the performance and volatility of the top banking industry leaders in Australia and India from December 2018 to December 2023. Through various visualizations, including line graphs, scatter plots, violin plots, and box plots, we have uncovered key trends and comparative dynamics between the two countries.

### Key Findings:

#### 1. Performance Trends:

- Both Australian and Indian banks exhibit significant fluctuations in their monthly and yearly performances, with notable peaks and troughs.

- ☐ Indian banks tend to show more pronounced spikes, particularly around mid-2021, indicating higher volatility compared to Australian banks.
- 2. Volatility Analysis:
  - ☐ Violin plots and box plots reveal that Australian banks have a wider spread in performance, indicating higher overall volatility.
  - ☐ Indian banks, while also volatile, show more consistent performance metrics, with fewer extreme outliers.
- 3. Interest Rate Relationship:
  - ☐ The scatter plot analysis indicates no clear linear relationship between interest rates and returns for banks in either country.
- 4. Statistical Analysis:
  - ☐ The regression model used to predict returns based on interest rates and country has a very low R-squared value, indicating that it explains only a tiny fraction of the variability in returns.

The findings from this project highlight the complex and dynamic nature of bank performance in Australia and India. The lack of a significant relationship between interest rates and returns suggests that other factors may play a more critical role in influencing bank performance. The higher volatility observed in Australian banks compared to Indian banks provides insights into the relative stability and risk associated with these financial institutions. These insights can aid investors, policymakers, and stakeholders in making informed decisions, developing investment strategies, and managing risks effectively.

By leveraging R and Shiny for data visualization and analysis, this project demonstrates the power of interactive dashboards in presenting complex financial data in an accessible and engaging manner.

## Reflection

This project gave me great insight into the forethought and planning required to execute a data visualisation project while also considering and comprehensively detailing the goals and objectives of the same and how it should be viewed by the target audience. It has also helped me gain more experience with using R Shiny and handling debugging as well as troubleshooting.

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## **APPENDIX**

For this Appendix i will begin by placing my previous 5- design sheet and then the new updated one taking into consideration the feedback provided to me by my tutors which included making more diagrams and focusing more on visual aspects than writing in plain text.I have only updated the brainstorming sheet to include more visual elements rather than plain text.

## IDEAS

- Country Maps
- Donut Chart
- Pie Chart
- Line graph
- Histogram
- Box Plots
- Scatter Plots
- Stacked Bar Chart
- Box Plot
- Violin Plot
- Waterfall Chart

Title: Comparative Study of  
Banking Industries of Australia  
and India

Author: Bhavna Balakrishnan

Date: 11/05/24

Sheet 1

## FILTER

- Donut Chart
- Scatter Plots
- Stacked Bar Graphs
- Line Graphs
- Box Plots
- Violin Plot

## CATEGORIZE

### Comparisons

- ↳ Pie Chart
- ↳ Donut Chart
- ↳ Stacked Bar Graph

### Trends

- ↳ Line graphs
- ↳ Histogram

### Distribution

- ↳ Box Plot
- ↳ Violin graph

### Relationships

- ↳ Scatter plot

## Question

? Do these visualisations  
capture the performance  
of banks and depict  
the same accurately  
to the user?

## INTRODUCTION

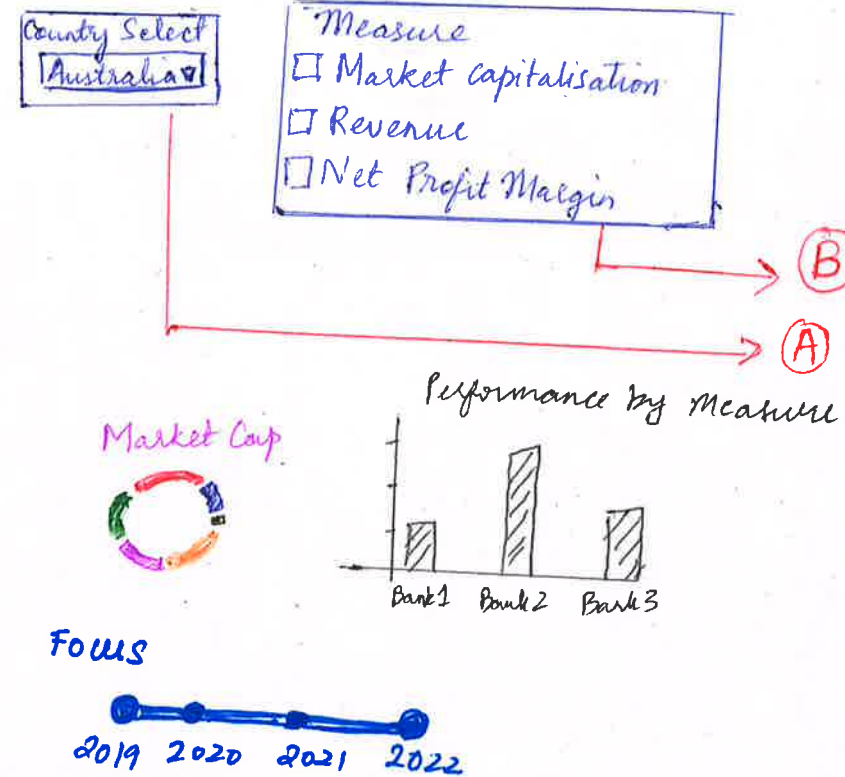
This project aims to provide users an interactive and easy understanding of the  
stock performances of top banks in Australia and India.

## COMBINE AND REFINE

- ▶ Figure 1: Biggest Banks by Market Capitalisation
  - ▶ Australian Banks
  - ▶ Indian Banks
- ▶ Figure 2: Bank Performance by financial measure
  - ↳ User to select revenue, profit etc.
  - ▶ Australian Banks
  - ▶ Indian Banks
- ▶ Figure 3: Stock Performance by country
  - ▶ Monthly
  - ▶ Yearly
- ▶ Figure 4: Distribution of returns by country
  - ▶ Monthly
  - ▶ Yearly
- ▶ Figure 5: Relationship between Interest rate
  - ▶ Australia
  - ▶ India



## Layout.



- User slides to year required to understand performance in that particular year.

The interface is fairly user-friendly and intuitive consisting of the following -

### ↳ Drop down menu

The user can select which country to see top banks of.

### ↳ Check boxes

User can select from options to measure success factors of various banks

### ↳ Slides

User can slide to year they want to see

This will give the user a snapshot of Top Banks performances in the desired year range.

Possible Graphs: Pie chart, Donut Chart, line graphs, Scatter Plot, Histogram

Title: Snapshot of Banking Industry by Country  
Author: Blavna Babakrishnan  
Sheet - 2

## Operations

- A User chooses country
- B User chooses the measure to depict performance

Slider for user to choose desired year overview

## PROs

- > User interactive
- > Comprehensive overview of Banking Industry.
- > Shows the overall market capitalisation and other measurables for banks by country

## CONS

- More visualisations like country map for location of branches would be appealing but no data source of same found.

## OUTPUT:

- Donut Chart / Pie Chart
- Bar chart
- Stacked bar chart
- Histogram

## Question

- ↳ What is the general picture of the Banking Industry in each country?



Select Country

Australia ▾

India

Ⓐ Allows user to select country

Ⓑ Allows user to select which frequency of time they would like to see performance.

Select Time Period

☐ yearly
 ☐ monthly

This section depicts bank performances by calculating returns using below formula:

$$R = \frac{P_1 - P_0}{P_0}$$

It will then give the user an output of a line graph based on the user inputs.

Graph will also include details where the user hovers the cursor over the graph -

- ↳ Bank name
- ↳ Returns

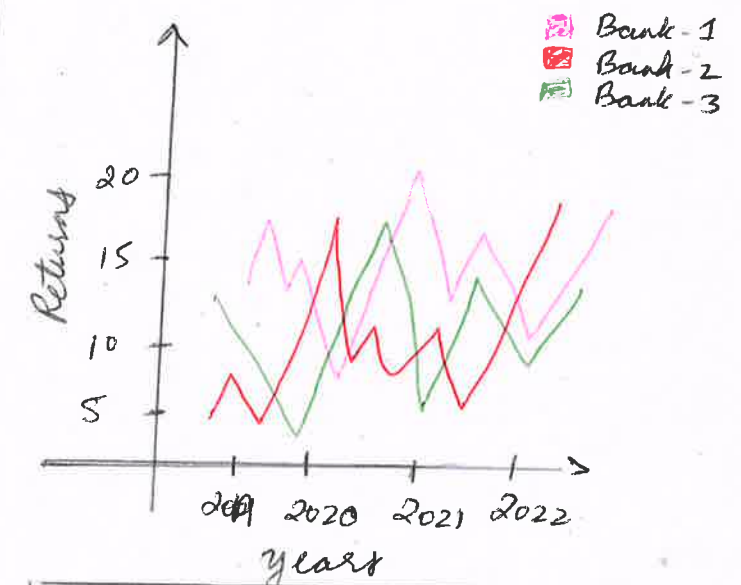
#### Possible Graphs

- Histogram, Bar graph
- Scatter Plot
- Bubble Chart
- Line Chart

#### Questions

- \* Does This Section capture the overview of the banking sector in each country properly? in terms of performance?

Title: Stock Performances of Banks  
 Author: Bhama Balakrishnan  
 Date: 12/05/2024  
 Sheet - 3  
 Task: Overview of Banking Performance



#### OUTPUT

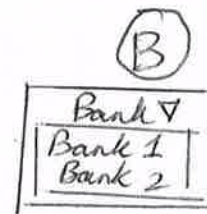
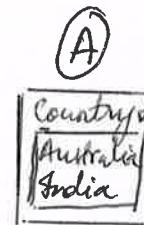
Line chart depicting bank performance differentiated by colour.

#### PROs

Visually Intuitive diagram allowing ease of understanding by graphing performance side by side.

#### CONs

User would require little financial knowledge to draw best conclusion



### Operation

- (A) Drop Down Menu for user to select Country
- (B) Drop down menu for user to select Bank

This section focuses on providing the user with an understanding of how volatile the stocks of the selected bank is performing. Volatility is important to understand the price fluctuations and therefore the risk of holding that particular stock.

### Formula

$$\sigma^2 = \frac{\sum (R_t - \bar{R})^2}{n-1}$$

### Possible Graphs

- Violin graph
- Box Plot
- Scatter Plot
- Histogram

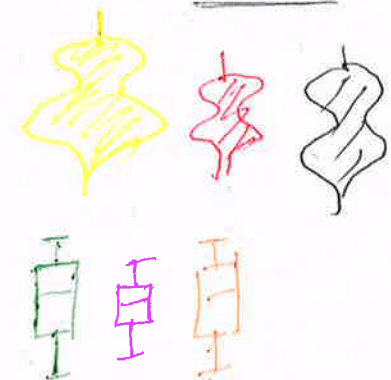
### PROs

- ↳ Apt diagrams to explain Performance distribution

### CONs

- ↳ Have to define current/ appropriate time periods within which to draw the diagram.

### OUTPUT

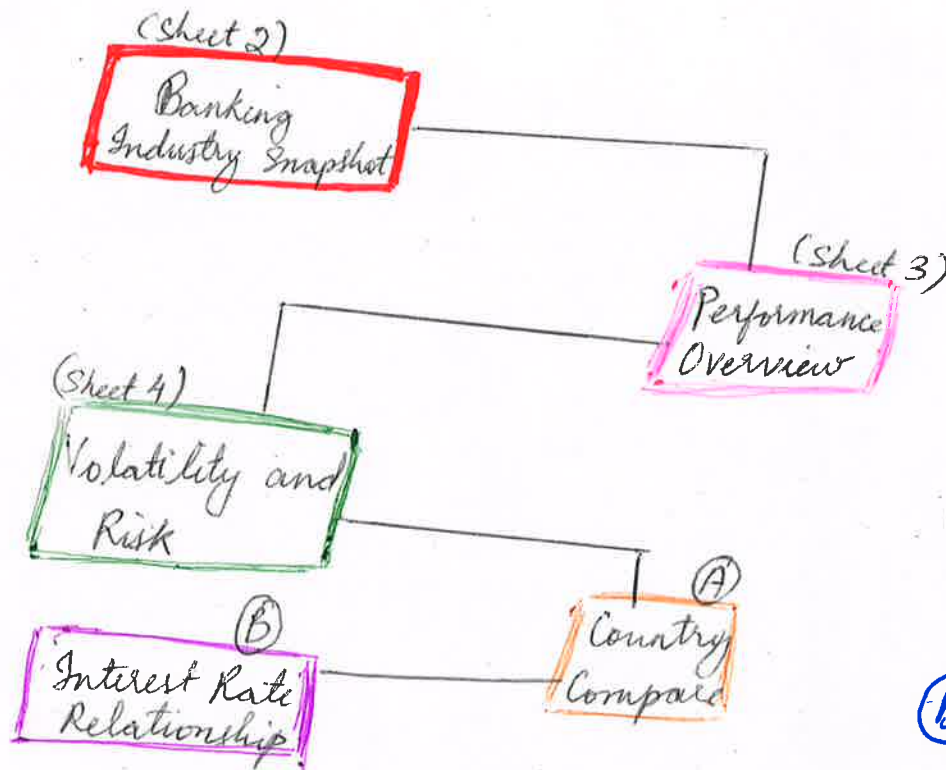


Violin graph and box plots both are good visualisations to depict the distribution of stock performance.

- Interactive user input to get the diagram for chosen bank.



## DASHBOARD LAYOUT



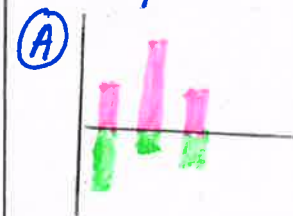
Title : Dashboard Overview  
Author : Bhavna Balakrishna  
Date : 12/05/2024  
Sheet - 5  
Task : Final Dashboard

Operations : User selects option in which they will explore selected section more in depth.

- (A) Country compare will show the user the final conclusion of the comparative study
- (B) Interest Rate Relationship : Will depict the relationship between performance and rates.

### Output

(A) Stacked Bar Graph



(B) Scatterplot



### Questions

- A. How do the banking industries of both countries compare?
- B. Is there a relationship between interest rates and bank performance?
- \* Does the dashboard make information more accessible?

### PROs

- Intuitive diagram easy for users to understand.
- Interactive user dashboard.

### Discussion

- Stacked bar graph to show comparison between countries banking sector performance.
- Scatter Plot depicts relationship better after a regression analysis to determine the existence of a significant relationship.

### MOTIVATION

The major motivation behind this project is to help people understand the stock performance.

Of the banking sector in India and Australia. I have a vested interest, having been a Finance student with experience in Banking.

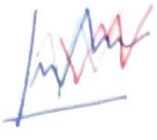
## IDEAS

Choropleth

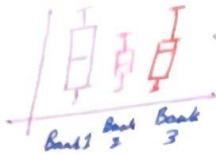


Donut Chart

Line Graph



Box Plots

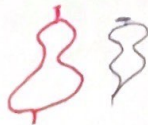


Histogram

Waterfall Chart



Violin Plot



Scatter Plot



Stacked Bar graph



Pie Chart

Title: Comparative Study of Banking Industries  
in Australia and India  
Author: Bhavna Balakrishnan  
Date: 04/06/2024  
SHEET - 1

## FILTER

↳ Donut Chart

↳ Scatter Plot

↳ Line graph

↳ Box Plots

↳ Violin Plots

## Categorize

### Comparisons

- Pie Chart
- Donut Chart
- Stacked Bar Graph

### Trends

- Line Graphs
- Histogram

### Distributions

- Box Plot
- Violin graph

### Relationship

- Scatterplot

## Combine & Refine

↳ Banking Snapshot

Fig 1: Market Caps

Fig 2: EPS

Fig 3: PAT

Fig 4: ROA

↳ Performance Overview

Fig 1: Indian Banks

Fig 2: Australian Banks

↳ Volatility

Fig 1: Indian Banks

Fig 2: Australian Banks

↳ Interest Rate

↳ Country Compare

Fig 1: Performance

Fig 2: Volatility

## Introduction

This project's aim is to provide users with an interactive dashboard that enables them to intuitively understand banking performances, standing and volatility. This project is mainly targeted towards potential investors and financial analyst as well as policy makers.

## Question

- Do these graphs capture the intent of their visualisation accurately?
- Do these graphs help the user understand easily?