**Project First Showcase**

**Target Variable and Audience:**

**Target Variable:**  Our project's main aim variable is the **Expected Returns** of the chosen stocks. This is calculated using historical stock prices, regarding the “**Adj Close**” price, which provides the most accurate representation of the genuine return on investment over time and considers stock splits and dividends.

**Target Audience:** **Retail investors**, **financial analysts**, and **portfolio managers** looking to make well-informed investment decisions may find the analysis most useful. They will be able to choose stocks that fit their individual risk profiles and investing plans by using the insights to find stocks with a decent return and reasonable risk balance.

So, we are going to consider Adjusted closing price variable as our target variable and by using our analysis Retails investors, portfolio managers and financial analysts would be beneficial.

**Key Charts 1:**

The below key shows a time series visualizing of the adjusted closing prices for all companies which we selected in phase1. Each plot is clearly colored to represent a particular company. Because stock prices vary greatly throughout companies, the y-axes are scaled differently for each facet to ensure that each trend is visible and comparable in its own context. The time series shows how prices have changed over several years, highlighting rises, crashes and stable periods. This graphic makes it easier to compare these stocks' volatility and historical performance over the same period.

A graph of stock market prices

Description automatically generated with medium confidence

Additionally, the stock prices of some companies show a clear expanding trend when the stock prices of other companies display more variability with obvious peaks and troughs. These variations in price represent the market performances and possible investor mood over the provided period.

**Key Chart 2:**

This boxplot illustrates the distribution of daily returns for a range of companies, highlighting the central tendency as well as the dispersion of returns. It was created using R packages from the “**tidyverse”** suite, includes “**ggplot2”**. The interquartile range, outliers, and median return for each firm are easily observable, allowing a comparison of volatility and possible risk. While certain companies have smaller boxes, indicating a more consistent performance, others have broader interquartile ranges, showing higher unpredictability in their daily returns. Outliers show days with unusual market fluctuations, especially those that indicate large daily gains or losses.

A chart with different colored lines and dots

Description automatically generated

**Key Chart 3:**

In the below Heatmap, We used the ggplot2 module from R's tidyverse collection, the correlation heatmap shows the Pearson correlation coefficients between the daily returns of different corporations. While blue hues show a negative correlation and inverse movements, red hues indicate a positive correlation and signal that the returns of the pairs of firms likely to move in the same direction. The degree of association is shown by the color's intensity. Investors may use the chart to see how the movements of the stocks relate to one another, which can help with diversification plans. For example, equities that exhibit strong positive correlations may be grouped, whereas stocks that exhibit low or negative correlations may provide portfolio balance.

A screenshot of a graph

Description automatically generated

**Lead Statement:**

Our detailed data visualization shows that TATA ELXSI's adjusted closing price has shown an impressive rising tendency over the past several years, exceeding other IT giants in growth consistency, and this is the result of our examination of historical stock data.