APPLE STOCKS PRICE PREDICTION.

NON-TECHNICAL PRESENTATION.

BUSINESS UNDERSTANDING.

**1.1 Overview**

Britam Asset Managers is a leading asset management firm in Kenya, offering a range of investment solutions, including portfolio management, equity investments, and financial advisory services. As they manage various investment portfolios with the goal of optimizing client returns, they are seeking to enhance their investment strategies by incorporating accurate forecasts of Apple Inc.’s stock prices. By integrating these forecasts into their portfolio management processes, Britam aims to optimize asset allocation, make more informed trading decisions, and provide improved financial advisory services to their clients.

There are, however, several challenges that need to be addressed in this endeavor. Firstly, ensuring the accuracy of the forecasting model is crucial for providing reliable predictions of Apple stock prices. Additionally, the model must be adaptable to varying market conditions and economic events that influence stock prices. To tackle these issues, a time series forecasting model will be developed using historical Apple stock price data from the Alpha Vantage API. This model will provide Britam Asset Managers with valuable insights into future stock prices, thereby facilitating more informed investment decisions and improved portfolio management. The project's success will be evaluated based on the accuracy of its predictions.

In conclusion, by incorporating accurate forecasts of Apple Inc.’s stock prices into Britam Asset Managers' investment strategies represents a significant opportunity for enhancing portfolio management and financial advisory services. By addressing these challenges and focusing on the accuracy of predictions, Britam aims to optimize asset allocation, improve investment decisions, and ultimately enhance client satisfaction.

**Metrics of Success:**

* RMSE
* Accuracy

**1.2 Problem Statement**

Britam Asset Managers requires a reliable time series forecasting model to accurately predict Apple Inc. stock prices. Such a model is essential for enhancing the firm's investment strategies by enabling more precise decision-making, optimizing portfolio performance, and delivering valuable insights to clients. By achieving accurate forecasts, Britam aims to not only improve investment outcomes but also strengthen its competitive edge in the asset management industry, ensuring better alignment with market trends and client expectations.

**1.3 Objectives**

The **MAIN** objective is to develop a Time Series forecasting model to predict Apple stocks prices using historical data.

The specific objectives are:

1. To analyze stock price trends on a weekly, monthly, and yearly basis to identify patterns and seasonal effects that influence Apple stock prices.
2. To investigate how significant events, such as earnings reports, product launches, or macroeconomic changes, affect Apple stock prices and incorporate these insights into the forecasting model.

DATA UNDERSTANDING.

This project analysis uses the Historical stock price data for Apple Inc., which contains information on Apple products and their Stocks and Interest rates.

The dataset is a folder with csv files (apple\_stock\_and\_interest\_rates.csv and competition.csv) and excel files(apple\_products\_2009\_to\_2024.xslx) from Alpha Vantage API.

The major dataset(apple\_stock\_and\_interest\_rates.csv) was created between January 02, 2009 and August 02, 2024.

1. apple\_products\_2009\_to\_2024.xslx

Products information is contained in this file. Each line of this file after the header row represents release date entries, and the corresponding apple products.

It contains 26 rows and 2 columns.

1. apple\_stock\_and\_interest\_rates.csv

Stocks and Interest Rates information is contained in this file. Each line of this file after the header row represents date entries, and has the following format: 'Open', 'High', 'Low', 'Close', 'Adj Close', 'Volume', 'Interest\_Rate'

It contains 3921 rows and 8 columns.

Each column represents:

* Open - the daily opening prices
* High - the daily highest points
* Low - the daily lowest points
* Close - the daily closing prices
* Adj Close - the daily adjusted closing prices
* Volume - the total number of shares traded in daily
* Interest\_Rate - the daily interest rates

1. competition.csv

Competitions (other companies) information is contained in this file. Each line of this file after the header row represents release date entries, and the corresponding products from other companies.

It contains 26 rows and 2 columns.

DATA PREPARATION.

For the “apple\_stock\_and\_interest\_rates.csv”:

The shape; 3922 rows and 8 columns.

The info; Date has 3922 non-null integers (typically strings).

Open, High, Low, Close, Adj Close, Interest\_Rate have 3922 non-null floats.

Volume has 3922 non-null integers.

This dataset contains no duplicates and no missing values.

For each of the datasets, we converted the date columns to index using the function **DateIndexConverter.**

EXPLORATORY DATA ANALYSIS.