**Tech Stock Analysis and Forecasting Report**

**1.Introduction**

The purpose of this analysis is to evaluate the stock performance of major technology companies, including Apple, Microsoft, Netflix, and Google, using statistical and machine learning techniques. The ARIMA (Autoregressive Integrated Moving Average) model was employed to analyse past stock trends and forecast future prices.

The advantage of using ARIMA over other forecasting techniques such as Naïve Bayes, Seasonal Naïve, Trend Naïve, and Moving Average is its ability to predict stock values over an extended period rather than just the next day.

**2. Data Analysis and Visualization**

**2.1 Stock Performance Analysis**

The stock analysis was conducted to observe the price fluctuation trends over a period. The results were visualized in a dashboard showing the daily delta (change in stock value) for each company.

* **Apple (AAPL):** Stock values showed moderate fluctuations, maintaining an overall stable trend.
* **Microsoft (MSFT):** Consistent performance with minor fluctuations; occasional sharp increases.
* **Netflix (NFLX):** High volatility with notable dips, reflecting a fluctuating market trend.
* **Google (GOOGL):** Steady growth with slight variations over time.

**3. Forecasting using ARIMA Model**

The ARIMA model was applied to predict stock values for the upcoming period. The forecasted trends were visualized, indicating the expected performance of each stock.

* **Apple:** The stock is projected to grow steadily.
* **Microsoft**: Expected to experience an upward trend with potential growth.
* **Netflix:** A downward trend is forecasted, indicating possible market instability.
* **Google**: Moderate upward trend, reflecting potential growth.

**4. Key Findings and Insights**

1. Apple and Microsoft are expected to maintain steady growth, making them relatively safer investment options.
2. Netflix exhibits high volatility and is expected to decline, indicating a need for cautious investment.
3. Google shows a positive growth trend, making it a potentially good investment opportunity.
4. The ARIMA model effectively predicts trends over a longer period compared to other traditional forecasting models.

**5. Conclusion and Recommendations**

Based on the analysis and forecasting results:

* Investors looking for stable and growing stocks should consider Apple and Microsoft.
* Caution is advised when investing in Netflix, as it shows a declining trend.
* Google presents a promising investment with moderate expected growth.
* The ARIMA model has proven to be a useful tool for time-series forecasting and can be further refined with additional external factors such as market news, economic indicators, and investor sentiment.

This report provides a detailed evaluation of stock trends and future predictions, aiding investors in making informed decisions based on data-driven insights.