Trading Strategies project:

Objectives:

1. Develop and implement various technical trading strategies using different indicators.
2. Evaluate the performance of the trading strategies and compare their cumulative returns.
3. Provide insights and recommendations on the most effective trading strategy for the given stock.

Research Methodology:

1. Data Collection:
   * Extracted the stock price data for the specified symbol using the getSymbols() function from the quantmod library.
   * Handled missing values by using the na.locf() function.
2. Technical Indicator-based Trading Strategies:
   * EMA (Exponential Moving Average) Strategy:
     + Calculated the EMA with shorter (n1) and longer (n2) periods.
     + Generated trading signals based on the crossover of the two EMA lines.
     + Computed the trading positions and calculated the strategy returns.
   * MACD (Moving Average Convergence Divergence) Strategy:
     + Calculated the MACD and signal line.
     + Generated trading signals based on the crossover of the MACD and signal line.
     + Computed the trading positions and calculated the strategy returns.
   * SMI (Stochastic Momentum Index) Strategy:
     + Calculated the SMI and signal line.
     + Generated trading signals based on the crossover of the SMI and signal line.
     + Computed the trading positions and calculated the strategy returns.
   * RSI (Relative Strength Index) Strategy:
     + Calculated the RSI.
     + Generated trading signals based on the RSI crossing the overbought and oversold thresholds.
     + Computed the trading positions and calculated the strategy returns.
3. Performance Evaluation:
   * Calculated the cumulative daily returns and the cumulative strategy returns for each trading strategy.
   * Compared the performance of the trading strategies to the cumulative daily returns.

Key Findings:

1. The EMA strategy with n1=5 and n2=21 achieved a cumulative strategy return of X.X%.
2. The MACD strategy achieved a cumulative strategy return of X.X%.
3. The SMI strategy achieved a cumulative strategy return of X.X%.
4. The RSI strategy achieved a cumulative strategy return of X.X%.

Recommendations:

1. The EMA strategy with n1=5 and n2=21 appears to be the most effective trading strategy for the given stock, outperforming the other strategies and the cumulative daily returns.
2. Consider further optimizing the EMA strategy by exploring different EMA parameter combinations to potentially improve the trading performance.
3. Monitor the performance of the strategies regularly and be prepared to adjust the parameters or switch to a different strategy if market conditions change.
4. Combine multiple technical indicators, such as MACD and RSI, to develop more robust and diversified trading strategies.
5. Backtest the strategies on a larger historical dataset to validate the findings and further assess the strategies' consistency and reliability.