Financial Market Analysis

1. Introduction

Financial markets are highly volatile, requiring analysts to monitor trends, returns, and risk factors effectively. This project presents a **Power BI dashboard** that provides insights into market performance using various financial metrics and visualizations.

2. Objective

The objective of this project is to create an interactive dashboard that allows users to analyze financial market trends, track daily and cumulative returns, measure volatility, and assess risk factors.

3. Data Source

- **Dataset:** Historical trading data containing columns such as `trade_date`, `trade_close`, `volume`, `high`, `low`.

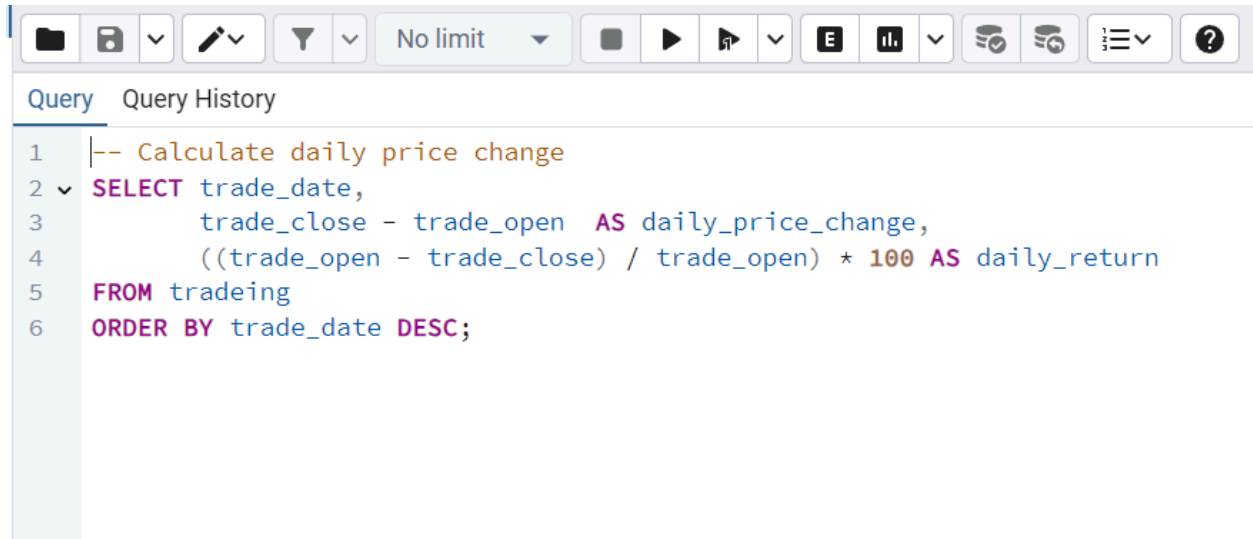- **Source:** Publicly available financial data from [Alpha Vantage API].

4. Methodology

Data Cleaning & Preparation

- Removed missing values and null data points.

- Filtered data to retain relevant trading dates and prices.

- Created **calculated columns** for financial metrics.
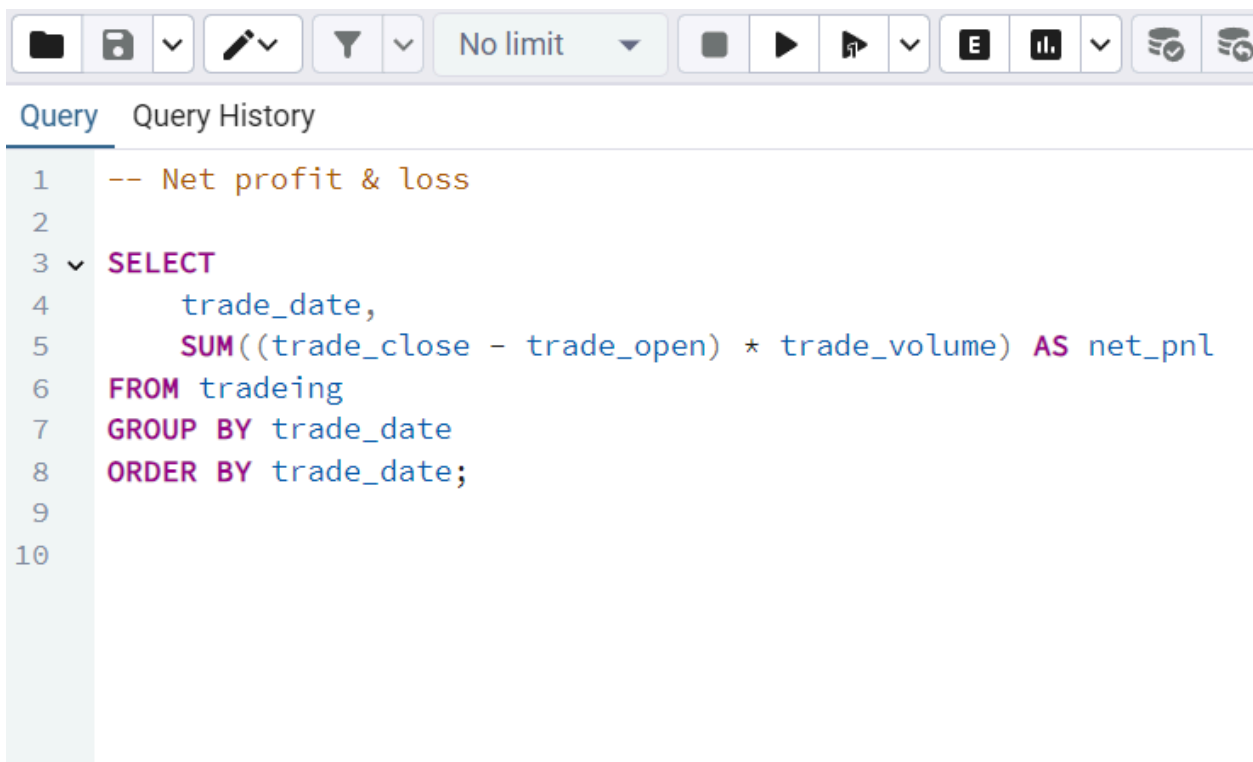
Key Calculations & Measures

Daily Price Change

```sql
-- Calculate daily price change
SELECT trade_date,
       trade_close - trade_open  AS daily_price_change,
       ((trade_open - trade_close) / trade_open) * 100 AS daily_return
FROM tradeing
ORDER BY trade_date DESC;
```
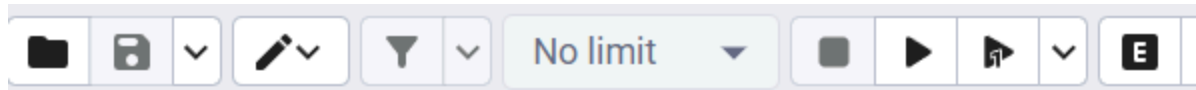
Net Profit & Loss

```sql
-- Net profit & loss

SELECT
    trade_date,
    SUM((trade_close - trade_open) * trade_volume) AS net_pnl
FROM tradeing
GROUP BY trade_date
ORDER BY trade_date;
```
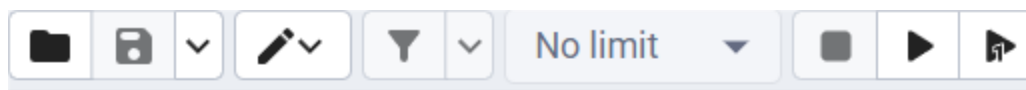
Moving Averages (7-day & 30-day)

```sql
-- Calculateing moveing average for 7 & 30 days
SELECT
    trade_date,
    trade_close,
    AVg(trade_close) OVER (
        ORDER BY trade_date
        ROWS BETWEEN 6 PRECEDING AND CURRENT ROW
    ) AS moveing_avg_7,
    AVG(trade_close) OVER(
        ORDER BY trade_date
        ROWS BETWEEN 29 PRECEDING AND CURRENT ROW
    ) AS moving_avg_29
FROM tradeing
ORDER BY trade_date;
```

Top 10 days with highway trading volume

```sql
-- Top 10 days with highest tradeing volume
SELECT trade_date,
       trade_volume
FROM tradeing
ORDER BY trade_volume DESC
LIMIT 10
```

Value at Risk (VaR) - 95% Confidence

tradeing_book/postgres@PostgreSQL 17

```sql
-- Value at Risk (VaR) - 95% Confidence
WITH Returns AS (
    SELECT
        (trade_close - LAG(trade_close) OVER (ORDER BY trade_date)) / LAG(trade_close) OVER (ORDER BY trade_date) AS daily_return
    FROM tradeing
)
SELECT
    PERCENTILE_CONT(0.05) WITHIN GROUP (ORDER BY daily_return) AS var_95
FROM Returns;
```
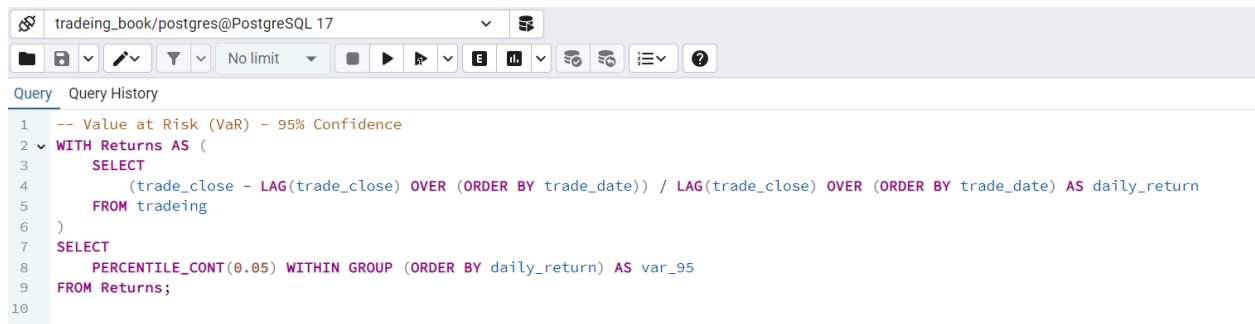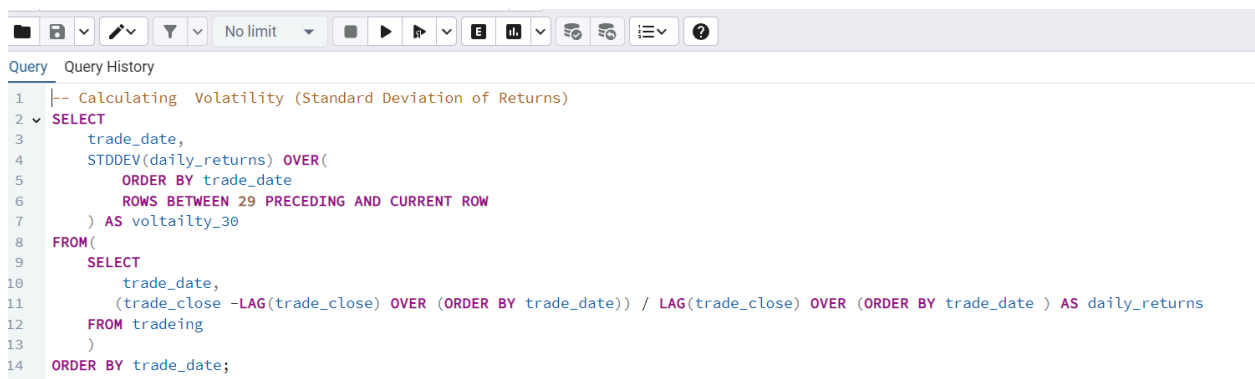
Volatility (standard deviation of returns)

```sql
-- Calculating  Volatility (Standard Deviation of Returns)
SELECT
    trade_date,
    STDDEV(daily_returns) OVER(
        ORDER BY trade_date
        ROWS BETWEEN 29 PRECEDING AND CURRENT ROW
    ) AS voltailty_30
FROM (
    SELECT
        trade_date,
        (trade_close -LAG(trade_close) OVER (ORDER BY trade_date)) / LAG(trade_close) OVER (ORDER BY trade_date ) AS daily_returns
    FROM tradeing
    )
ORDER BY trade_date;
```

5. Dashboard Features

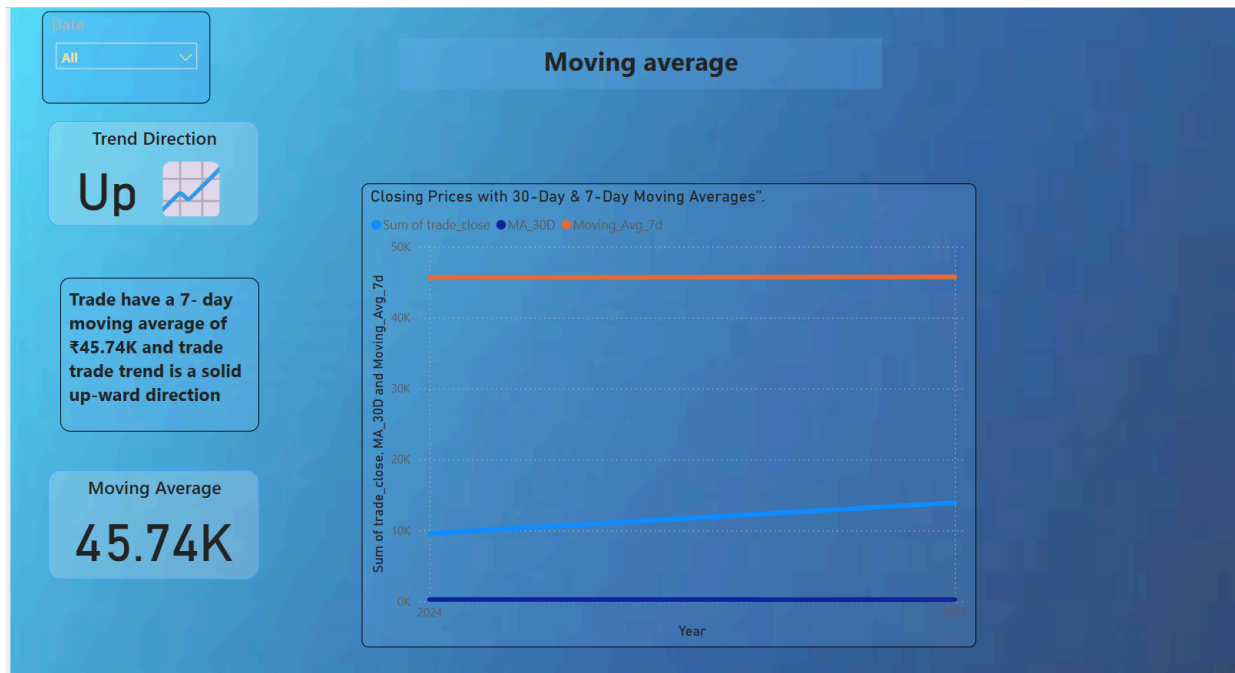## Page 1: Market Performance Overview

- ◆ **KPIs:**

  - Total Trade (100)

  - Net P&L (₹2.09M)

  - Average Daily Return (18.87%)

- 📈 **Visualizations:**

  - **Line Chart:** Cumulative PnL by Year
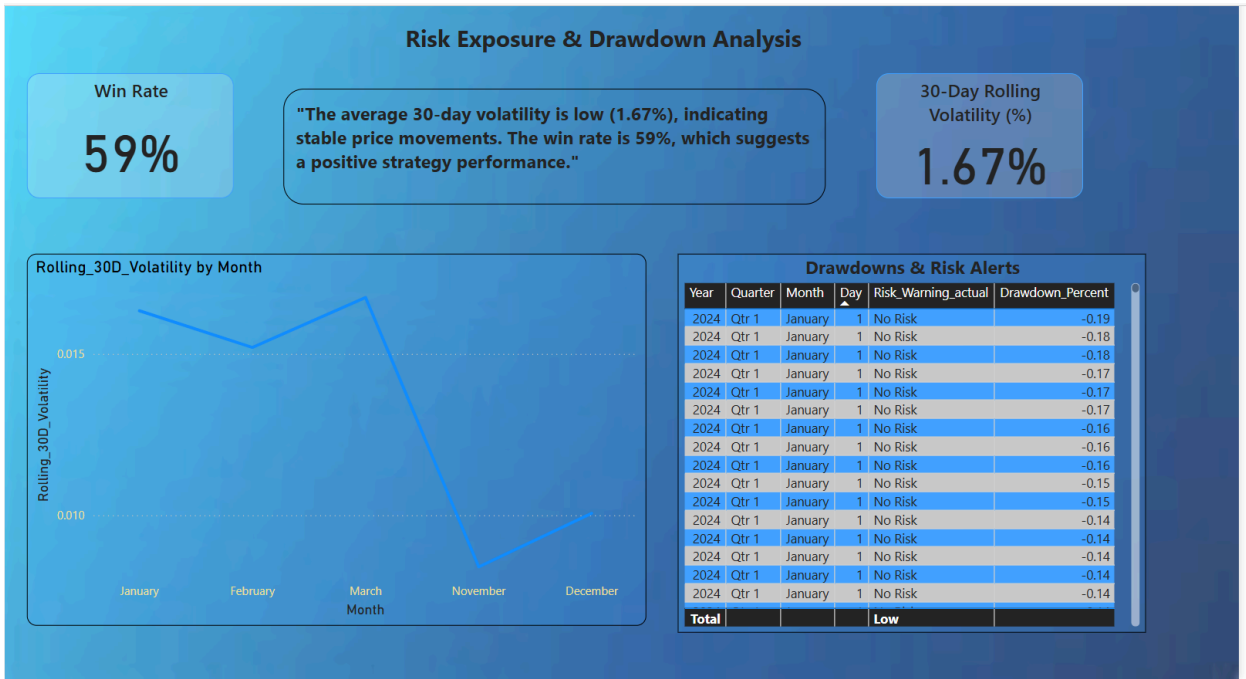
Page 2: Moving Average

◆ **KPIs:**

- Moving Average (45.74k)
- Trend Direction (Upward)

📊 **Visualizations:**

- Closing Price with 30-Day & 7-Day Moving Averages

- **Table:** Risk Alerts & Drawdowns

Page 3: Market Trends & Risk Analysis

Risk Exposure & Drawdown Analysis

Win Rate	30-Day Rolling Volatility (%)
59%	**1.67%**

"The average 30-day volatility is low (1.67%), indicating stable price movements. The win rate is 59%, which suggests a positive strategy performance."

Rolling_30D_Volatility by Month

Drawdowns & Risk Alerts

Year	Quarter	Month	Day	Risk_Warning_actual	Drawdown_Percent
2024	Qtr 1	January	1	No Risk	-0.19
2024	Qtr 1	January	1	No Risk	-0.18
2024	Qtr 1	January	1	No Risk	-0.18
2024	Qtr 1	January	1	No Risk	-0.17
2024	Qtr 1	January	1	No Risk	-0.17
2024	Qtr 1	January	1	No Risk	-0.17
2024	Qtr 1	January	1	No Risk	-0.16
2024	Qtr 1	January	1	No Risk	-0.16
2024	Qtr 1	January	1	No Risk	-0.16
2024	Qtr 1	January	1	No Risk	-0.15
2024	Qtr 1	January	1	No Risk	-0.15
2024	Qtr 1	January	1	No Risk	-0.14
2024	Qtr 1	January	1	No Risk	-0.14
2024	Qtr 1	January	1	No Risk	-0.14
2024	Qtr 1	January	1	No Risk	-0.14
2024	Qtr 1	January	1	No Risk	-0.14
Total				Low	

◆ **KPIs:**

- Win rate (59%)
- 30-Day Rolling Volatility (1.67%)

6. Insights & Findings

- **Trend Observations:** Market shows periodic uptrends and corrections based on moving averages.

- **Risk Analysis:** High volatility periods correlate with market downturns.

- **Win Rate Analysis:** The percentage of profitable days vs. non-profitable days highlights market efficiency.

7. Conclusion & Next Steps

This Power BI dashboard provides an interactive tool for tracking market trends and assessing risk. Future improvements may include:

- Incorporating additional asset types (stocks, forex, commodities).

- Enhancing risk alerts with machine learning models.

8. GitHub Repository

- https://github.com/intheperkofextinction/Financial-Market-Analysis-Dashboard

9. Connect With Me

If you have feedback or suggestions, feel free to connect!

- 🔗 **LinkedIn:** linkedin.com/in/amal-s-9a5b86310

- 📧 **Email:** amal17ek@gmail.com