

STOCK MARKET DATA INTERPRETATION

A MINI PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report "**Stock Market Data Interpretation**" is the bonafide work of "**Gaurav Kumar**" who carried out the project work under my/our supervision.

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Submitted for the project viva-voce examination held on

INTERNAL EXAMINER

EXTERNAL EXAMINER



ABSTRACT

This mini project titled “**Stock Market Data Interpretation – Analyze Stock Price and Volatility**” focuses on analyzing the behavior of stock prices over a period of time using Microsoft Excel.

The main objective of this project is to study price trends, calculate daily returns, and understand the volatility of a selected stock using statistical functions and graphical tools available in Excel.

The project uses three months of sample historical stock data, including fields such as Date, Open, High, Low, Close, and Volume.

Based on this data, key financial metrics were calculated including **daily returns** and **7-day moving averages** to observe price trends.

In addition, **rolling standard deviation** was computed to measure volatility and assess risk associated with price fluctuations over a time period.

Various Excel tools such as formulas (AVERAGE, STDEV.S, MAX, MIN), charts (line, bar), and conditional formatting were applied to visualize data and draw meaningful conclusions.

The project also summarizes the most volatile days, highest and lowest prices, and provides an interpretation of market behavior during the period analyzed.

Through this project, we demonstrate how spreadsheet tools can be effectively used for basic financial analysis and decision-making, even for beginners.

This approach not only strengthens analytical skills but also enhances understanding of realworld stock market dynamics.

INTRODUCTION

The stock market plays a crucial role in the global economy by facilitating the exchange of financial securities such as stocks, bonds, and derivatives.



For investors, traders, and analysts, understanding stock price behavior is essential for making informed financial decisions.

One of the most effective ways to analyze stock performance is through the interpretation of historical data, which helps in identifying trends, measuring returns, and assessing market volatility.

This mini project aims to explore stock market data using Microsoft Excel to perform fundamental analysis on the price movement and volatility of a selected stock over a specific period.

By using basic statistical functions and visualization tools, this project provides insights into how stock prices behave on a day-to-day basis and how much they fluctuate, which is a key indicator of market risk.

The project includes downloading stock data, calculating daily returns, plotting price trends, and determining volatility using rolling standard deviation.

Through charts, graphs, and summaries, the project highlights patterns and fluctuations in stock prices, helping users understand the dynamics of the stock market in a simplified and practical manner.

This hands-on project not only builds proficiency in Excel but also introduces students and beginners to the fundamentals of financial data analysis, bridging the gap between theoretical knowledge and practical application.

Methodology

The methodology of this project involves a systematic process of collecting, preparing, analyzing, and interpreting stock market data using Microsoft Excel.

The goal is to study the price movements and evaluate the volatility of a selected stock over a period of three months. Below are the detailed steps followed:

1. Data Collection



- Historical stock data was obtained for a three-month period.
- The dataset includes the following fields: **Date, Open, High, Low, Close, and Volume**.
- The data was either taken from publicly available stock data sources or generated for analysis purposes.

2. Data Preparation in Excel

- The data was imported into Microsoft Excel and organized in a structured format.
- A new column named "**Return**" was created to calculate the daily return percentage:

excel

$$= (\text{Today's Close} - \text{Yesterday's Close}) / \text{Yesterday's Close}$$

3. Price Trend Analysis

- A **7-day moving average** was calculated using the **AVERAGE** function:

=AVERAGE(Previous 7 Days of Close Price)

- Line charts were created to visualize both the **actual closing price** and the **7-day average**, helping to identify trends and patterns.

4. Volatility Analysis

- Volatility was analyzed using the **rolling standard deviation** of the daily returns, calculated with:

excel

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=STDEV.S(Returns for the Last 7 Days)

- This measures how much the return fluctuates over a 7-day window, indicating periods of high or low volatility.
- Graphs were used to visually represent changes in volatility over time.

5. Summary & Interpretation



- Key metrics such as:
 - **Highest and Lowest Price** ◦ **Maximum and Minimum Volatility**
 - **Most Volatile Day** were identified using Excel formulas like MAX(), MIN(), and INDEX-MATCH() combinations.
- Conditional formatting was applied to highlight significant values.

6. Visualization Tools

- Excel chart types used include:
 - **Line Chart** for price trends ◦ **Bar Chart** for daily returns ◦ **Line + Area Chart** for volatility comparison
-

Steps to Be Followed

Project Title: Stock Market Data Interpretation – Analyze Stock Price and Volatility

1. Collect Stock Data

Download 3 months of historical stock data from reliable sources like Yahoo Finance or NSE India. Ensure the dataset includes: Date, Open, High, Low, Close, and Volume.

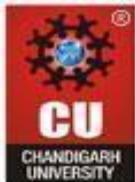
2. Import Data into Excel

Open Excel and paste the data into a sheet named “Raw Data”. Arrange the columns properly and format the date column.

3. Calculate Daily Returns

Create a new column named “Return” to calculate daily returns using the formula:
$$=(\text{Current Day Close} - \text{Previous Day Close})/\text{Previous Day Close}$$

4. Price Trend Analysis



Copy Date and Close columns into a new sheet. Create a “7-Day Moving Average” column using:

=AVERAGE(Close prices of last 7 days)

Insert a line chart to display both Closing Price and Moving Average.

5. Volatility Analysis

In another sheet, calculate the “Rolling Standard Deviation” of daily returns using:

=STDEV.S(Returns of last 7 days)

Use a chart to show changes in volatility over time.

6. Summary and Insights

Use formulas like MAX(), MIN(), and INDEX-MATCH() to find:

o Highest and Lowest Price o

Most Volatile Day o Maximum

and Minimum Volatility

7. Apply Conditional Formatting

Highlight significant values and trends using Excel’s conditional formatting (color scales, data bars, etc.).

8. Visualize and Interpret Data

Review the graphs to identify price trends, volatility spikes, and overall stock performance.



CODE AND DATASETS

mini project data interpretation - Excel

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Cut Copy Paste Format Painter

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B I U Alignment Merge & Center Number

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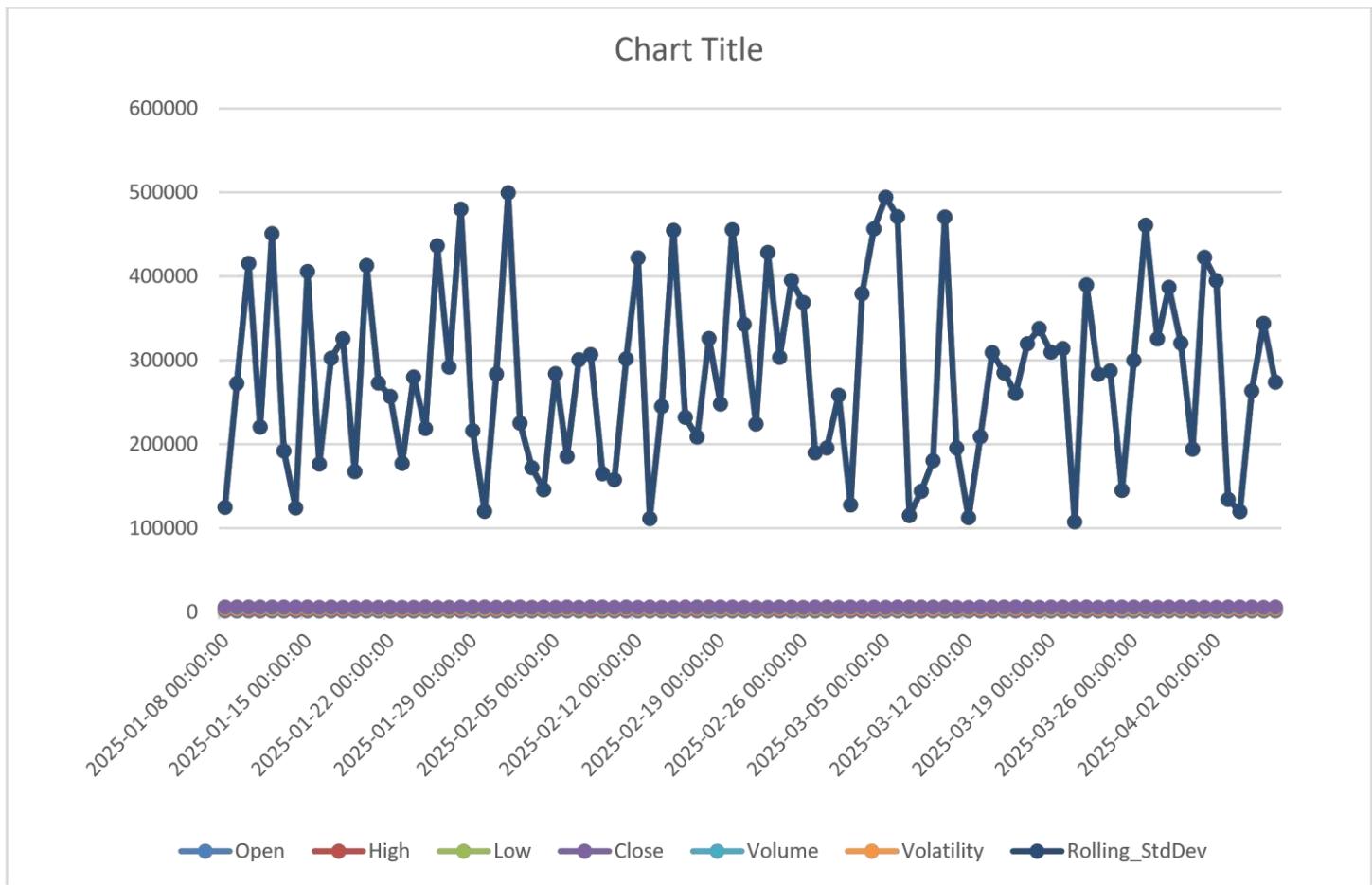
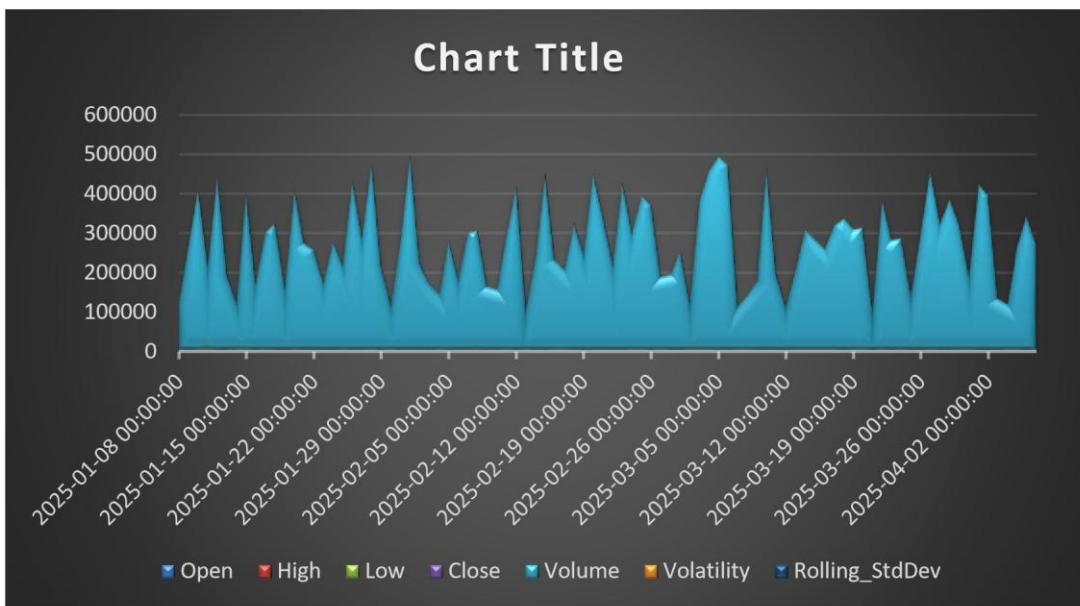
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	A	B	C	D	E	F	G	H
1	Date	Open	High	Low	Close	Volume	Volatility	Rolling_StdDev
2	2025-01-08 19:23:31	1512.392093	1523.859873	1504.883667	1509.934283	118888		
3	2025-01-09 19:23:31	1488.941663	1507.628136	1490.626633	1497.234714	266807	-0.008410677	
4	2025-01-10 19:23:31	1503.987405	1526.028172	1502.466433	1512.953771	409439	0.010498726	
5	2025-01-11 19:23:31	1531.08769	1544.42151	1518.541645	1530.460597	214352	0.01157129	
6	2025-01-12 19:23:31	1496.129635	1503.496967	1483.79732	1495.316933	445186	-0.022962803	
7	2025-01-13 19:23:31	1498.065859	1501.41778	1488.074568	1495.317261	185999	2.19589E-07	
8	2025-01-14 19:23:31	1536.106083	1538.863608	1519.462464	1531.584256	117955	0.024253713	
9	2025-01-15 19:23:31	1524.865736	1524.619772	1507.976204	1515.348695	399985	-0.010600502	0.016021121
10	2025-01-16 19:23:31	1490.936519	1503.79066	1482.356515	1490.610512	170640	-0.016325076	0.017013302
11	2025-01-17 19:23:31	1507.31033	1524.458507	1498.386287	1510.851201	296582	0.013578791	0.017381295
12	2025-01-18 19:23:31	1496.63537	1495.801167	1479.235317	1490.731646	319798	-0.013316702	0.017147228
13	2025-01-19 19:23:31	1486.10205	1500.792878	1477.193171	1490.685405	161476	-3.10191E-05	0.014877217
14	2025-01-20 19:23:31	1503.618674	1514.013355	1493.263117	1504.839245	406955	0.009494854	0.015339948
15	2025-01-21 19:23:31	1453.303523	1468.955473	1451.051309	1461.734395	267280	-0.028644156	0.015005562
16	2025-01-22 19:23:31	1456.008658	1471.700297	1459.564896	1465.501643	251222	0.002577245	0.015237402
17	2025-01-23 19:23:31	1498.007218	1497.130401	1480.077091	1488.754249	171180	0.015866653	0.015972475
18	2025-01-24 19:23:31	1486.46298	1494.172475	1472.091354	1479.743378	274358	-0.006052625	0.014861886
19	2025-01-25 19:23:31	1510.204431	1514.516976	1498.84505	1506.284947	212856	0.017936603	0.015862099
20	2025-01-26 19:23:31	1480.018577	1492.027425	1467.109413	1481.839518	430594	-0.016228953	0.017258447
21	2025-01-27 19:23:31	1465.219812	1483.784116	1462.822949	1471.753926	286141	-0.00680613	0.016742227
22	2025-01-28 19:23:31	1522.441716	1537.949271	1515.39251	1529.312975	474032	0.039109153	0.018922586
23	2025-01-29 19:23:31	1490.489332	1510.202295	1484.173088	1495.484474	210448	-0.022120064	0.021875913
24	2025-01-30 19:23:31	1502.335097	1515.975037	1488.402451	1501.350564	114397	0.003922535	0.021168601
25	2025-01-31 19:23:31	1475.796955	1479.022859	1461.478665	1471.505036	278031	-0.01987912	0.022577463
26	2025-02-01 19:23:31	1492.316293	1499.084831	1478.343307	1489.112346	493944	0.011965511	0.021862726
27	2025-02-02 19:23:31	1497.81713	1510.227235	1492.293275	1502.218452	219180	0.008801288	0.021072236
28	2025-02-03 19:23:31	1486.077434	1484.828533	1470.027699	1476.980128	166234	-0.016800701	0.022093434
29	2025-02-04 19:23:31	1512.271899	1512.88283	1495.289439	1507.51396	139954	0.02067315	0.01734141



30	2025-02-05 19:23:31	1489.074307	1499.08287	1480.179503	1487.987226	278352	-0.012952938	0.015843074
31	2025-02-06 19:23:31	1496.40054	1504.192915	1488.922965	1494.166125	179459	0.004152521	0.015854275
32	2025-02-07 19:23:31	1486.357869	1493.480655	1476.511145	1487.965868	295004	-0.004149644	0.013619843
33	2025-02-08 19:23:31	1532.000183	1544.832028	1530.274457	1537.045564	300968	0.032984423	0.017909437
34	2025-02-09 19:23:31	1496.849509	1513.812714	1485.32547	1499.730056	159163	-0.024277425	0.020773501
35	2025-02-10 19:23:31	1484.002704	1486.2414	1464.306496	1478.845781	151934	-0.013925355	0.020412437
36	2025-02-11 19:23:31	1506.738768	1522.899847	1502.302254	1516.450898	295967	0.025428694	0.021262686
37	2025-02-12 19:23:31	1467.90458	1485.477655	1466.88154	1475.583127	416242	-0.026949617	0.02335295
38	2025-02-13 19:23:31	1495.097325	1519.033776	1499.022706	1504.177272	105486	0.0193782	0.024585294
39	2025-02-14 19:23:31	1451.621174	1468.22715	1446.523412	1460.806598	239407	-0.028833486	0.027121946
40	2025-02-15 19:23:31	1480.545491	1485.157634	1464.154438	1473.436279	449044	0.00864569	0.02310532
41	2025-02-16 19:23:31	1508.010382	1516.553421	1489.270677	1503.937225	226020	0.020700553	0.023360005
42	2025-02-17 19:23:31	1514.252808	1522.145707	1500.133132	1514.769332	202795	0.007202499	0.022514809
43	2025-02-18 19:23:31	1495.384049	1515.709529	1489.897271	1503.427366	320184	-0.007487586	0.020561545
44	2025-02-19 19:23:31	1497.519352	1506.364866	1489.742545	1497.687034	242202	-0.003818163	0.01730634
45	2025-02-20 19:23:31	1493.447362	1505.300984	1485.126949	1493.977926	449652	-0.002476558	0.015588585
46	2025-02-21 19:23:31	1463.893598	1481.764857	1456.918193	1470.42956	337027	-0.015762191	0.012064761
47	2025-02-22 19:23:31	1484.280149	1495.960863	1477.433896	1485.603116	218324	0.010319131	0.012256551
48	2025-02-23 19:23:31	1488.757319	1496.690122	1484.092297	1490.787225	422710	0.003489565	0.008994048
49	2025-02-24 19:23:31	1523.459446	1534.495469	1510.574432	1521.142445	297775	0.020361873	0.011940355
50	2025-02-25 19:23:31	1509.574239	1515.080166	1492.510818	1506.872366	389336	-0.009381159	0.012174874
51	2025-02-26 19:23:31	1455.645277	1471.604382	1452.778899	1464.739197	363206	-0.027960675	0.016289919
52	2025-02-27 19:23:31	1503.973932	1511.889431	1495.781068	1506.481679	184076	0.028498235	0.020209732
53	2025-02-28 19:23:31	1494.815553	1503.207284	1486.326589	1492.298354	189780	-0.009414867	0.019440899
54	2025-03-01 19:23:31	1486.524285	1498.237204	1475.311488	1486.46156	252617	-0.003911278	0.019201873
55	2025-03-02 19:23:31	1519.363323	1517.399404	1497.332987	1512.233526	121689	0.017337795	0.020275781
56	2025-03-03 19:23:31	1523.793863	1530.740921	1514.21915	1520.61999	373318	0.005545747	0.018784632
57	2025-03-04 19:23:31	1511.884291	1525.89056	1508.442306	1518.625602	450605	-0.001311562	0.018348207
58	2025-03-05 19:23:31	1474.627024	1494.667377	1469.441919	1483.21565	488318	-0.023317105	0.017161461

CHARTS AND REPORTS





1. Daily Return Calculation

To calculate the percentage change in closing price from the previous day: excel

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= $(C2 - C1)/C1$

(Assuming column C contains the "Close" prices and row 2 is the current day) You can format the result as a percentage.

2. 7-Day Moving Average of Closing Price

To smooth out short-term fluctuations and show price trends: excel

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=AVERAGE(C2:C8)

(Change the range as per your data – this shows average of 7 previous days of closing prices)

3. Rolling Volatility (Standard Deviation of Returns)

To measure how much the returns are deviating over a 7-day period:

excel

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=STDEV.S(D2:D8)

(Assuming column D has the daily return values – this calculates 7-day rolling standard deviation)

4. Maximum & Minimum Closing Price

To find the highest and lowest prices during the selected period: excel

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=MAX(C2:C90)

=MIN(C2:C90)



5. Maximum & Minimum Volatility

To identify days with highest and lowest fluctuations: excel

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=MAX(E2:E90)

=MIN(E2:E90)

(Assuming column E has volatility values)

6. Identify the Most Volatile Day

To get the date of maximum volatility using INDEX and MATCH:

excel

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=INDEX(A2:A90, MATCH(MAX(E2:E90), E2:E90, 0))

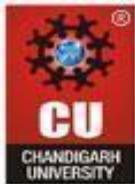
(Assuming column A has dates and column E has volatility)

Conclusion

This mini project on “Stock Market Data Interpretation – Analyze Stock Price and Volatility” provided valuable insights into how stock prices fluctuate over time and how volatility plays a key role in assessing market risk.

Using Microsoft Excel, we successfully analyzed three months of historical stock data to calculate important indicators such as daily returns, moving averages, and rolling standard deviation.

Through trend analysis and graphical representation, we observed periods of price growth, decline, and sharp volatility spikes.



This helped us understand not only the stock's performance but also the impact of market conditions on its stability.

The use of Excel formulas such as AVERAGE(), STDEV.S(), MAX(), and MIN(), along with data visualization tools, allowed for easy interpretation of complex numerical data.

The project enhanced our understanding of real-world financial analysis and demonstrated how even basic tools can be used for meaningful data-driven decision-making. It also improved our skills in Excel, data interpretation, and chart creation, which are essential for anyone pursuing a career in finance, business analytics, or data science.

In conclusion, this project was a practical and informative experience that bridged theoretical knowledge with hands-on analysis, giving us a clear view of how the stock market behaves and how to analyze such data efficiently.