Retail Stock Trading & PnL Analysis

1. Project Overview

This project analyzes retail stock trading performance using historical market data from multiple publicly listed Indian companies across different industry sectors. The analysis focuses on understanding portfolio profitability, stock-level performance, sector contribution, and investment risk over time.

By leveraging daily stock prices, trading volumes, and derived performance metrics such as daily returns and profit-and-loss (PnL), the project aims to provide actionable insights into how different stocks and sectors contribute to overall portfolio outcomes. The findings are presented through an interactive dashboard designed to support informed investment analysis and performance monitoring.

2. Business Objectives

The key objectives of this project are:

- Evaluate overall portfolio profitability over time
- Identify top-performing and underperforming stocks
- Analyze sector-wise contribution to total PnL
- Assess risk and volatility associated with individual stocks
- Enable interactive analysis through filters such as year, sector, and stock

3. Dataset Summary

Source: Yahoo Finance

- Records: ~7,000 daily trading observations
- Stocks Covered: 15 publicly listed Indian stocks
- Sectors: Banking, Energy, FMCG, IT, Manufacturing

Key Features

- Stock details: Stock symbol, sector
- Price data: Open, high, low, close prices
- Trading activity: Daily trading volume
- Performance metrics: Daily return, profit and loss (PnL)
- Time information: Trading date

Missing Data

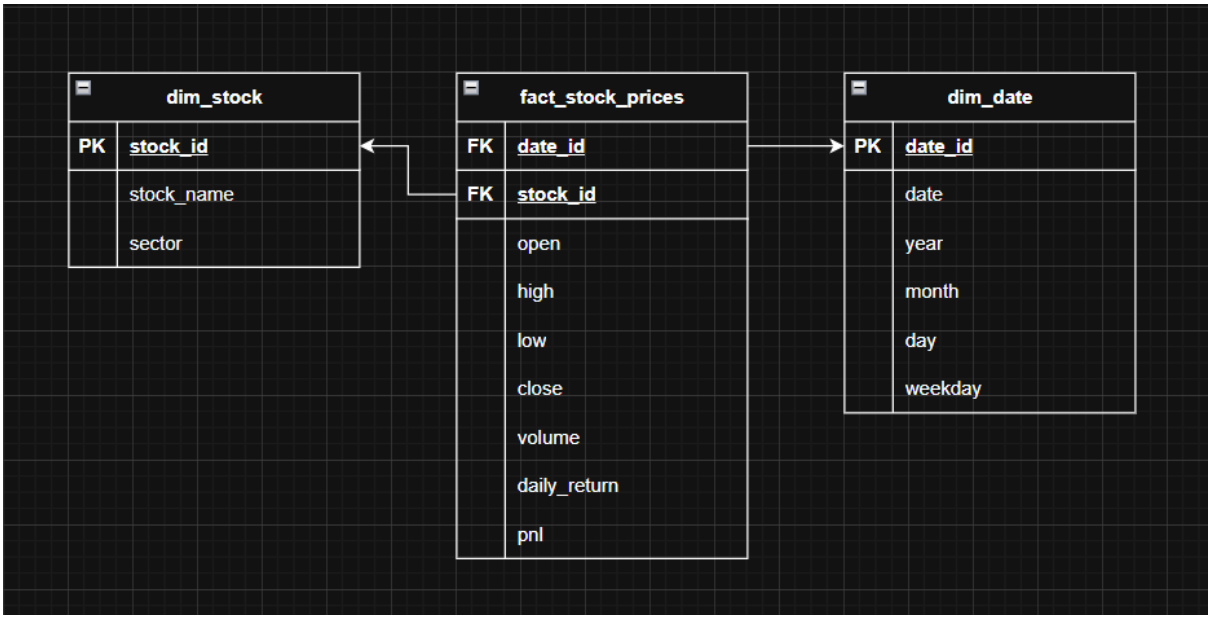
- Daily return and PnL values are missing for the first trading day of each stock, as prior-day prices are required to compute these metrics
- No missing values in price or volume fields

4. Data Preparation & Transformation

The raw dataset was cleaned and transformed to ensure accuracy and consistency:

- Removed duplicate records and invalid entries
- Standardized stock symbols and sector names
- Calculated daily returns based on closing prices
- Computed PnL values assuming a consistent trade quantity for comparability
- Created structured tables following a star schema:
    - Date dimension
    - Stock dimension
    - Stock price fact table

This structure enables efficient querying and scalable analytics.



5. Data Analysis using SQL

Performed structured analysis in MySQL to answer key business questions:

1. List of the top 5 stocks by average daily return

stock_name	avg_daily_return
TMCV.NS	0.006863
BPCL.NS	0.001434
ONGC.NS	0.000703
ICICIBANK.NS	0.000699
RELIANCE.NS	0.000494

2. Sector that generated the highest total PnL overall

sector	total_pnl
Manufacturing	2151.10

3. For each stock, the best trading day (highest daily return).

stock_name	date	daily_return
AXISBANK.NS	2024-04-25	0.0600
BPCL.NS	2024-02-02	0.0981
HDFCBANK.NS	2024-06-05	0.0463
HINDUNILVR.NS	2024-06-04	0.0596
ICICIBANK.NS	2024-04-29	0.0472
INFY.NS	2024-01-12	0.0793
ITC.NS	2024-07-23	0.0550
LT.NS	2024-10-31	0.0628
NESTLEIND.NS	2025-08-18	0.0502
ONGC.NS	2024-01-29	0.0788
RELIANCE.NS	2024-01-29	0.0702
TCS.NS	2024-07-12	0.0663
TMCV.NS	2025-11-27	0.0613
ULTRACEMCO.NS	2025-01-23	0.0680
WIPRO.NS	2025-01-20	0.0649

4. Stocks rank within each sector by total PnL

sector	stock_name	total_pnl	rank_in_sector
Banking	ICICIBANK.NS	359.57	1
Banking	AXISBANK.NS	173.59	2
Banking	HDFCBANK.NS	164.78	3
Energy	RELIANCE.NS	284.76	1
Energy	BPCL.NS	176.70	2
Energy	ONGC.NS	53.75	3
FMCG	ITC.NS	-18.44	1
FMCG	NESTLEIND.NS	-56.52	2
FMCG	HINDUNILVR.NS	-235.83	3
IT	INFY.NS	154.86	1
IT	WIPRO.NS	34.48	2
IT	TCS.NS	-400.35	3
Manufacturing	ULTRACEMCO.NS	1447.22	1
Manufacturing	LT.NS	617.83	2
Manufacturing	TMCV.NS	86.05	3

5. Stocks that had positive PnL on more than 60% of trading days.

stock_name	positive_days	total_days	positive_ratio
TMCV.NS	22	36	0.61

6. For each stock, maximum daily loss (worst PnL day).

stock_name	date	worst_pnl
AXISBANK.NS	2024-06-04	-92.50
BPCL.NS	2024-06-04	-39.41
HDFCBANK.NS	2024-01-17	-68.94
HINDUNILVR.NS	2024-01-23	-182.49
ICICIBANK.NS	2024-06-04	-87.12
INFY.NS	2025-01-17	-109.75
ITC.NS	2025-01-06	-20.39
LT.NS	2024-06-04	-485.57
NESTLEIND.NS	2025-07-24	-65.20
ONGC.NS	2024-06-04	-44.08
RELIANCE.NS	2024-06-04	-112.22
TCS.NS	2024-03-19	-164.30
TMCV.NS	2025-12-24	-17.35
ULTRACEMCO.NS	2024-06-04	-545.04
WIPRO.NS	2024-07-22	-24.71

6. Dashboard & Visual Insights

An interactive single-page Power BI dashboard was developed to present insights clearly and intuitively.

Key Dashboard Components

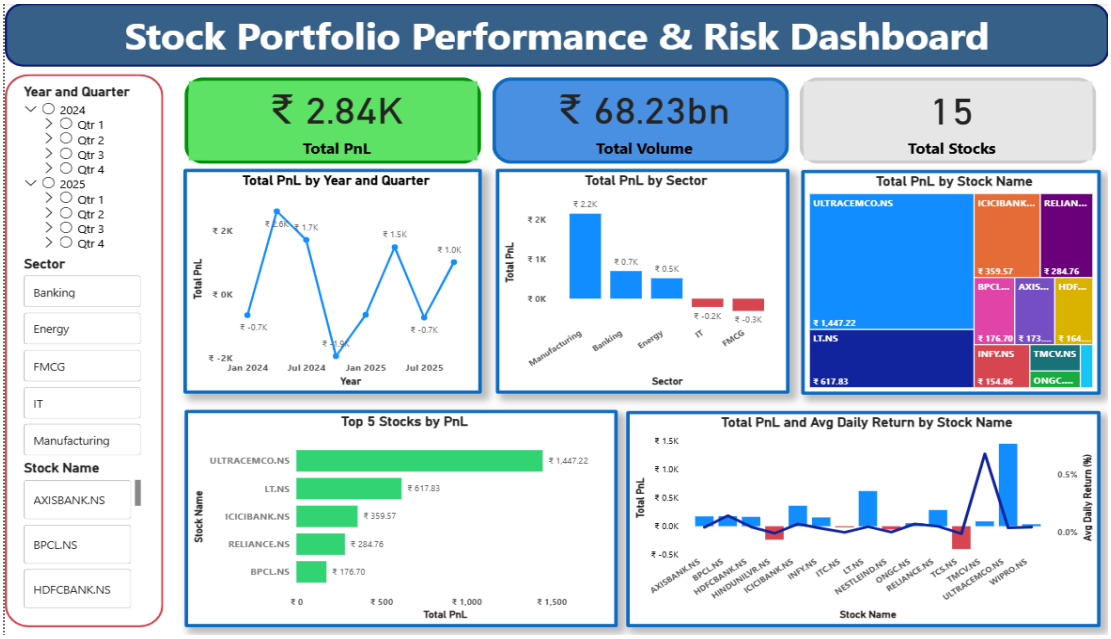
- KPI cards: Total PnL, total trading volume, number of stocks
- Trend analysis: Portfolio PnL over time
- Sector analysis: Sector-wise contribution to profitability
- Stock comparison: Top 5 stocks by total PnL
- Performance comparison: Combined view of PnL and average daily return

Interactivity

Users can filter the analysis using:

- Year and quarter
- Sector
- Stock name

This allows focused exploration without overwhelming the dashboard.



7. Key Insights

- A small number of stocks contribute a disproportionately high share of total portfolio profit
- Certain sectors consistently outperform others in terms of cumulative PnL
- High returns do not always imply low risk; some stocks show high volatility despite strong gains
- Portfolio performance varies significantly across time periods, highlighting the importance of temporal analysis

8. Business Value

This project demonstrates how historical stock trading data can be transformed into meaningful insights that help:

- Monitor portfolio performance effectively
- Identify profitable and risky investment areas
- Support data-driven evaluation of stocks and sectors
- Communicate financial performance clearly to stakeholders

9. Conclusion

The Retail Stock Trading & PnL Analysis project provides a comprehensive view of portfolio performance by combining financial metrics, risk analysis, and interactive visualization. By structuring the data effectively and presenting insights through a clean, executive-level dashboard, the project bridges the gap between raw market data and informed investment analysis.