

# STOCK MARKET DATA ANALYSIS DASHBOARD

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## 1. Problem Statement

Financial analysts and investors often struggle to interpret NIFTY50 stock data due to:

- Inconsistent data formats across sources
- Lack of adjustments for corporate actions like splits and dividends
- Difficulty in comparing sector and company performance
- Limited tools for dynamic filtering and visualization

## 2. Project Objective

To address these challenges, this project aims to:

- Build an interactive Power BI dashboard for NIFTY50 stock analysis
- Clean and model data from multiple sources (prices, events, company info)
- Adjust historical prices for splits and calculate dividend yields
- Visualize market capitalization, sector trends, and top gainers/losers

- Provide KPI cards for PE ratio, volume, price extremes, and market sentiment
- Enable dynamic filtering by period, sector, and company
- Support analysts and investors with fast, reliable, and insightful decision tools

### 3. Data Sources

- **NIFTY50\_Master\_Price.csv** → Daily stock prices (Open, High, Low, Close, Volume).
- **NIFTY50\_Master\_Events.csv** → Corporate events (Dividends, Splits).
- **NIFTY50\_Master\_Info\_Events.xlsx.csv** → Company metadata (Name, Sector, Industry, MarketCap, PE Ratio, Business Summary).

### 4. Data Preparation (ETL in Power Query)

- **Cleaning**
  - Standardized date formats (dd-MM-yyyy → Date type).
  - Trimmed and uppercased Symbol fields to ensure consistent joins.
  - Converted numeric text to decimal values (MarketCap, PE Ratio).
- **Transformations**
  - Created a **Date table** for time intelligence (Year, Month, Quarter).
  - Built an **adjustment factor** for stock splits to normalize historical prices.
  - Aggregated dividends to calculate **Dividend Yield (TTM)**.
- **Modeling**
  - Fact tables: Prices, Events.
  - Dimension tables: Companies, Date.
  - Relationships: Symbol and Date across tables.

## 5. Dashboard Design

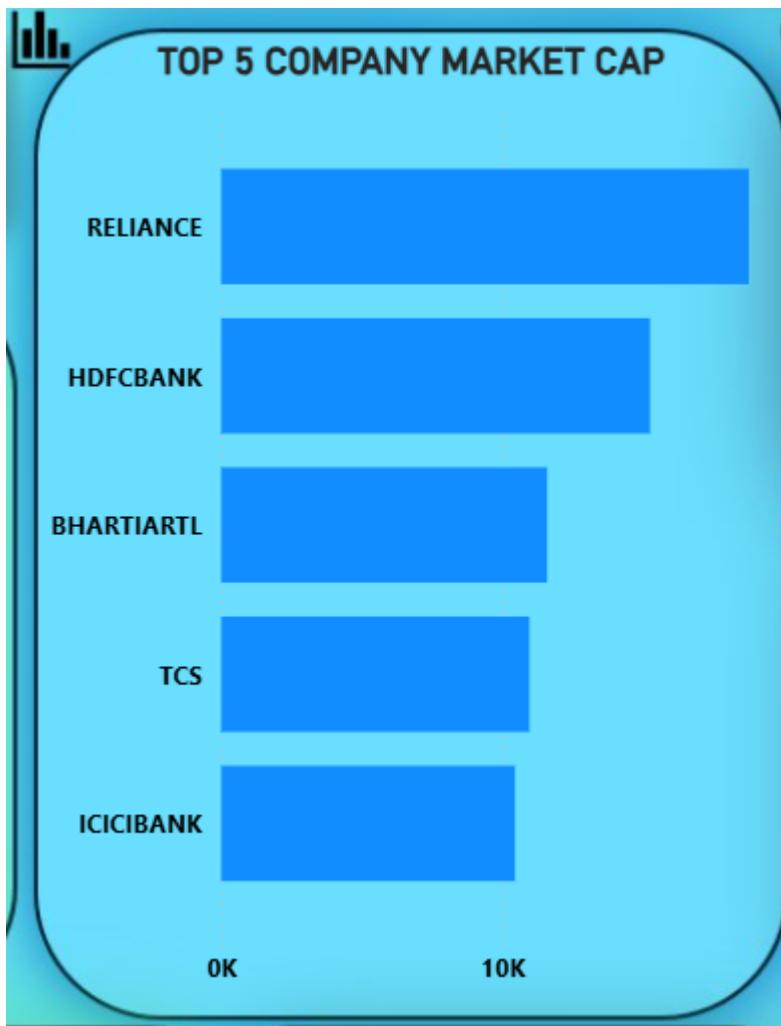
- KPIs
  - Total Market Cap
  - Sum of Market Cap (selected companies)
  - Market Trend (Bullish/Bearish indicator)



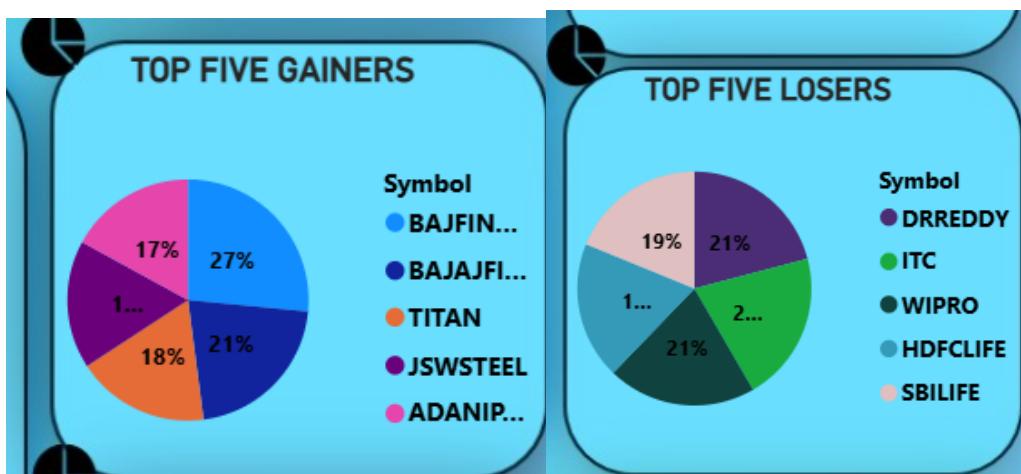
- Visuals
  - Line chart → Market performance trend.



- Bar chart → Top 5 companies by Market Cap.



- Pie charts → Top 5 gainers and losers.

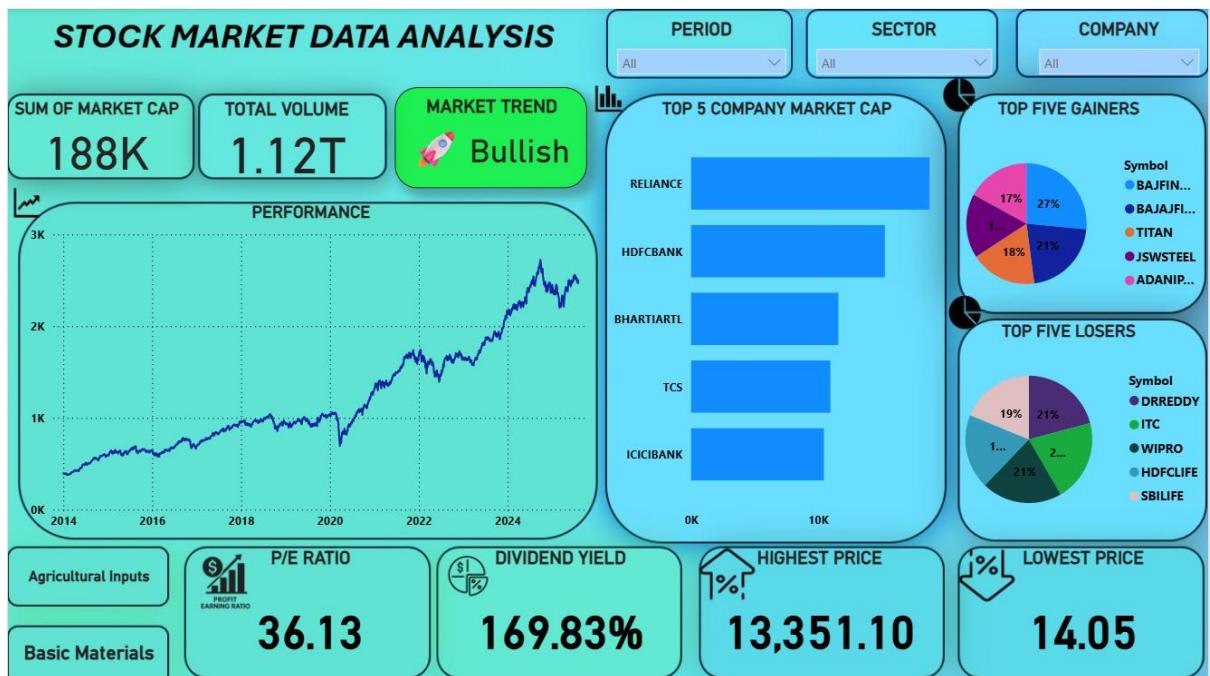
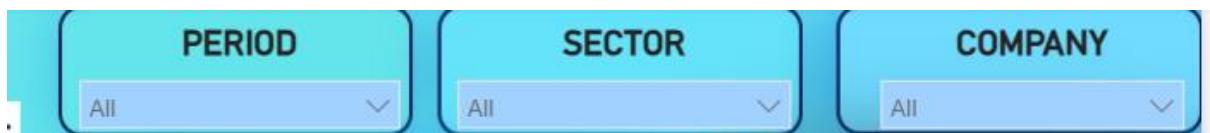


- Cards → Highest & lowest price, PE ratio, dividend yield



- Filters

- Period (1M, 3M, 6M, YTD).
- Sector.
- Company.



## 6. Challenges & Solutions

Challenge	Struggle Faced	Solution
Large Price CSV	File too big to load directly	Used incremental load (split by year) and optimized queries.
Date Format Issues	Different formats caused errors	Standardized all dates in Power Query.
Corporate Actions	Splits/dividends not reflected in raw prices	Built adjustment factors and dividend yield measures.
Symbol Mismatches	Joins failed due to inconsistent naming	Cleaned symbols (Trim, Upper) and created mapping table.
MarketCap Units	Inconsistent scales (K, M, T)	Normalized to rupees and applied formatting.

## 7. DAX Measures Explained

The dashboard uses custom DAX measures to derive key insights:

Measure	Purpose	Explanation
DividendYield	Income Insight	Calculates trailing dividend yield using total dividends divided by average closing price.
Max Price	Price Peak	Finds the highest closing price for a stock.
Min Price	Price Bottom	Finds the lowest closing price for a stock.
Overall Market Trend	Sentiment Indicator	Compares latest open vs. close prices across stocks to classify market as Bullish or Bearish.
Percentage Change	Average Movement	Averages percentage change across all 50 stocks to show overall index movement.
Today NIFTY50 Movement	Daily Pulse	Calculates average percentage change for the latest trading day.
Total Volume	Liquidity Gauge	Sums up trading volume across all stocks.
Market Cap (1000 Cr)	Valuation Scale	Converts raw market cap into a readable format (in ₹1000 Crores).

## 8. Key Learnings

- Handling **large datasets** in Power BI requires incremental refresh and aggregation.
- **Corporate actions** (splits/dividends) must be adjusted for accurate analysis.
- Clean **data modeling** (Fact/Dim tables) makes DAX simpler and visuals faster.
- Dashboard storytelling improves when KPIs are **clear, color-coded, and interactive**.