

# Operational Reporting of Indian Energy

## Equities: A Sector-Wide Analysis

### (Sept 2024 - Sept 2025)

*A self-driven project on dataset generation, exception monitoring, and management reporting*



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## **1. Executive Summary**

This project develops an operational reporting framework for Indian energy equities across the one-year period from September 2024 to September 2025. Ten listed companies were selected to represent the sector, including Reliance, ONGC, NTPC, Power Grid, Coal India, IOC, BPCL, HPCL, Adani Green, and Adani Energy Solutions. Using Google Finance as the data source, 2,470 daily observations were collected and consolidated into a structured dataset of 15 columns, capturing prices, volumes, and derived metrics.

The methodology mirrors operational reporting practices in financial services. Raw data was processed into a unified master sheet through formula-driven consolidation. Exception rules were applied to detect price moves above 5 percent, volume spikes exceeding three times rolling averages, and basic data quality failures. These exceptions were classified, flagged, and summarized through management information (MI) matrices. The reporting framework was designed to produce three complementary views: a sector snapshot of prices, an exceptions matrix to track anomalies, and a monthly summary to consolidate company performance.

The results demonstrate that Adani-linked companies were the most volatile during the period, while Reliance exhibited relative stability. Notable spikes occurred during the May 2024 election season and mid-2025, aligning with market-moving events. The analysis shows the value of exception monitoring and structured reporting in enhancing transparency and discipline in equity operations. By combining data generation, control checks, and management reporting, this project provides a reproducible template for sector-level operational analysis.

## **2. Problem Statement**

Indian equity markets are dynamic and influenced by both domestic and international events. For investors, analysts, and institutions, raw price data alone is insufficient to ensure effective oversight and decision-making. There is a need for systematic operational reporting that not only captures market data but also applies controls, highlights exceptions, and delivers structured summaries for review. This project addresses these needs by building a transparent framework to generate daily datasets, apply exception rules, and deliver management information reports for the Indian energy sector. The aim is to simulate real-world reporting discipline with reproducible tools and methods.

## **3. Objectives**

The primary objective of this project is to design and demonstrate an operational reporting system for Indian energy equities over a one-year period. Specific aims include:

1. Dataset Generation: Collect daily open, high, low, close, and volume data for 10 leading energy companies listed on NSE, covering September 2024 to September 2025.
2. Data Structuring: Consolidate data into a single master sheet with consistent formatting, complete records, and company identifiers.
3. Exception Monitoring: Define and apply quantitative rules to detect significant price changes, unusual trading volumes, and data quality issues. Flag anomalies for further review.
4. Derived Metrics: Compute daily percentage change, absolute percentage change, and rolling averages to support control checks and volatility measures.

5. Management Reporting: Develop MI-style outputs that replicate operational reporting packs used in practice. These include a sector snapshot, an exception matrix to log anomalies, and a monthly summary to track averages and volatility across companies.
  
6. Insight Generation: Identify company-level and sector-level patterns, highlight periods of elevated activity, and link exceptions to real-world events where possible.

Through these objectives, the project demonstrates how reproducible datasets and formula-driven controls can be combined into a coherent operational reporting framework for a critical sector of the Indian economy.

## 4. Methodology

1. Data Sources: Google Finance =GOOGLEFINANCE() function for NSE tickers.  
Example:  
`=GOOGLEFINANCE("NSE:RELIANCE","all",EDATE(TODAY(),-12),TODAY(),"DAILY")`  
a.
2. Data Structuring: Each company placed in separate tabs; consolidated using **ARRAYFORMULA** with **FILTER** to eliminate blanks. Master sheet created with 2,470 rows  $\times$  15 columns.
  
3. Derived Fields:
  - a. Daily % Change: `(Close – Open) / Open`
  
  - b. Abs % Change: `ABS(Daily % Change)`
  
  - c. Month: `TEXT(Date,"MMM-YYYY")`

- d. Volume Spike: flagged when  $\text{Volume} > 3 \times 20\text{-day rolling average}$
  - e. Price Spike: flagged when  $\text{Abs \% Change} \geq 5\%$
  - f. DQC Check:  $\text{High} \geq \max(\text{Open}, \text{Close})$ ,  $\text{Low} \leq \min(\text{Open}, \text{Close})$ ,  $\text{Volume} \geq 0$
4. MI Framework: Three outputs designed - Sector Snapshot, Exceptions Matrix, and Monthly Summary - each implemented through pivot tables and conditional formatting.

## 5. Results and Insights

### Dataset Overview

The consolidated dataset contains 2,470 rows and 15 columns, representing daily records for ten listed Indian energy companies from September 2024 to September 2025. Data completeness checks confirm no missing trading days. Derived fields for daily percentage change, exception flags, and data quality checks support systematic monitoring.

### Exception Analysis

The exception matrix flagged a total of 68 anomalies across the period. Adani Green and Adani Energy Solutions accounted for the highest counts, reflecting greater volatility and trading sensitivity. Reliance and NTPC were among the most stable with the fewest exceptions. Exception spikes were concentrated in April–June 2025, when ONGC reported a sharp fall in crude realizations to USD 67.87 per barrel, down from USD 80.64 in the prior year, and in August–September 2025 when Adani Group announced a USD 60 billion investment plan in power and renewables.

### Monthly Reporting Summary

Volatility analysis showed Adani Green and Adani Energy Solutions averaging above 2 percent, while Reliance remained the most stable with volatility of 0.85 percent. IOC and BPCL displayed moderate volatility tied to crude price fluctuations. Exception counts in June and September 2025 align with periods of elevated policy and corporate

announcements, illustrating the link between operational anomalies and real-world events.

## Company Highlights

- **Reliance Industries** – Low volatility and consistent performance, steady anchor for the sector.
- **ONGC** – Exception spikes tied to weaker crude margins and plans to set up a trading subsidiary.
- **Adani Green / Adani Energy Solutions** – Frequent anomalies reflecting high sensitivity to large capex announcements and renewable expansion.
- **Coal India / NTPC / Power Grid** – Relatively steady, providing baseline stability to the sector.

## 6. Conclusion

This project demonstrates how daily market data can be transformed into an operational reporting framework that mirrors professional practice. By combining dataset generation, exception rules, and management information summaries, it provides a structured approach to monitoring sector performance. The analysis of 2,470 daily records for ten major Indian energy companies highlights the importance of exception monitoring as a control discipline.

The findings show a clear divergence in company profiles. Reliance Industries and NTPC provided stability, while Adani Group entities exhibited persistent volatility linked to large-scale investment announcements. ONGC's performance underscored the impact of global crude price movements on domestic equities, with exceptions clustering during

periods of falling realizations. These insights illustrate how operational reporting does not only record anomalies but also provides context for their occurrence.

The structured outputs – a sector snapshot, exception matrix, and monthly reporting summary – replicate the discipline of a management reporting pack. They demonstrate that exceptions are not random noise but aligned with market-moving events such as crude price shocks and investment disclosures. The project underscores the value of reproducible, formula-driven reporting frameworks in ensuring transparency, enabling escalation of anomalies, and equipping decision-makers with timely insights.

## **7. Scope for Future Research**

1. Extend coverage to other sectors such as IT and Banking to assess cross-sector volatility and exceptions.
2. Compare Google Finance data with official NSE or BSE feeds to evaluate reconciliation differences.
3. Automate the reporting framework through Python scripting or Power BI integration for faster refresh.
4. Enrich exception analysis by linking to macroeconomic indicators such as crude benchmarks, INR exchange rate, and CPI.
5. Apply sentiment analysis on news headlines to anticipate exception spikes.

## **8. References**

1. Google Finance Documentation – <https://support.google.com/docs>
2. National Stock Exchange of India – <https://www.nseindia.com>
3. OilPrice.com – *Lower Oil Prices Impact India's Largest Oil Company* (June 2025)
4. LiveMint – *ONGC Plans Trading Unit for Crude and Petroleum Products* (Aug 2025)
5. EQ Mag Pro – *Adani Group Unveils USD 60 Billion Renewable Investment Plan* (Sept 2025)
6. Net Zero Investor – *Reliance Industries and India's Energy Transition* (2025)
7. Economic Times, Business Standard, Mint – Financial news coverage (2024–2025)

## **9. Appendix**

### **Appendix A: GOOGLEFINANCE Formulas Used**

<b>Company</b>	<b>NSE Ticker</b>	<b>Formula Example</b>
Reliance Industries	NSE:RELIANCE	=GOOGLEFINANCE("NSE:RELIANCE","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
ONGC	NSE:ONGC	=GOOGLEFINANCE("NSE:ONGC","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
NTPC	NSE:NTPC	=GOOGLEFINANCE("NSE:NTPC","all",DATE(2024,

		=,9,16),DATE(2025,9,16),"DAILY")
Power Grid Corp	NSE:POWERGRID	=GOOGLEFINANCE("NSE:POWERGRID","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
Coal India	NSE:COALINDIA	=GOOGLEFINANCE("NSE:COALINDIA","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
Indian Oil Corp (IOC)	NSE:IOC	=GOOGLEFINANCE("NSE:IOC","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
BPCL	NSE:BPCL	=GOOGLEFINANCE("NSE:BPCL","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
HPCL	NSE:HINDPETRO	=GOOGLEFINANCE("NSE:HINDPETRO","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
Adani Green Energy	NSE:ADANIGREEN	=GOOGLEFINANCE("NSE:ADANIGREEN","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")
Adani Energy Solutions	NSE:ADANIENSOL	=GOOGLEFINANCE("NSE:ADANIENSOL","all",DATE(2024,9,16),DATE(2025,9,16),"DAILY")

## Appendix B: Master Consolidation Formula

```
=QUERY(
{
  FILTER({RELIANCE!A2:F,IF(LEN(RELIANCE!A2:A),"RELIANCE.NS","")},LEN(RELIANCE!A2:A));
  FILTER({ONGC!A2:F,IF(LEN(ONGC!A2:A),"ONGC.NS","")},LEN(ONGC!A2:A));
  FILTER({NTPC!A2:F,IF(LEN(NTPC!A2:A),"NTPC.NS","")},LEN(NTPC!A2:A));
  FILTER({POWERGRID!A2:F,IF(LEN(POWERGRID!A2:A),"POWERGRID.NS","")},LEN(POWERGRID!A2:A));
  FILTER({COALINDIA!A2:F,IF(LEN(COALINDIA!A2:A),"COALINDIA.NS","")},LEN(COALINDIA!A2:A));
  FILTER({IOC!A2:F,IF(LEN(IOC!A2:A),"IOC.NS","")},LEN(IOC!A2:A));
  FILTER({BPCL!A2:F,IF(LEN(BPCL!A2:A),"BPCL.NS","")},LEN(BPCL!A2:A));
  FILTER({HINDPETRO!A2:F,IF(LEN(HINDPETRO!A2:A),"HINDPETRO.NS","")},LEN(HINDPETRO!A2:A));
  FILTER({ADANIGREEN!A2:F,IF(LEN(ADANIGREEN!A2:A),"ADANIGREEN.NS","")},LEN(ADANIGREEN!A2:A));
  FILTER({ADANIENSOL!A2:F,IF(LEN(ADANIENSOL!A2:A),"ADANIENSOL.NS","")},LEN(ADANIENSOL!A2:A))
},
"select Col1,Col2,Col3,Col4,Col5,Col6,Col7 where Col1 is not null",
0
)
```

## Appendix C: Exception Rules and Thresholds

Rule Type	Formula/Logic	Threshold
Price Spike	(Close - Open) / Open	$\geq 5\%$
Volume Spike	Volume $> 3 \times$ 20-day rolling average	$3 \times$ threshold
Data Quality Check	High $\geq \max(\text{Open}, \text{Close})$ ; Low $\leq \min(\text{Open}, \text{Close})$ ; Volume $\geq 0$	Must hold true

## Appendix D: Summary of Exceptions (from Matrix)

Company	Exception Count
Adani Energy Solutions.	21
Adani Green	17
BPCL	5
Coal India	4
HPCL	8
IOC	1
NTPC	3
ONGC	6
Power Grid	1
Reliance	2
<b>Total</b>	<b>68</b>

## Appendix E: Sample Dataset Excerpt

The following screenshot provides a representative extract from the consolidated master dataset. It shows the structure of the data, including raw price fields (Open, High, Low, Close, Volume) and the derived fields (Daily % Change, Abs % Change, Month, Exception Flags, Data Quality Checks). The full dataset contains 2,470 rows × 15 columns covering 10 companies across September 2024 – September 2025.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Date	Open	High	Low	Close	Volume	Company	Daily % Change	Abs % Change	Month	MonthStart	ExceptionFlag	VolSpike	ExceptionType	DQC
2	9/16/2024	₹990.50	₹1,010.00	₹978.00	₹980.50	1787723	ADANIENSOL.NS	-1.01%	1.01%	Sep-2024	9/1/2024				