

PROJECT REPORT - TATA POWER STOCK ANALYSIS

--> Vishnu & Mrudul

1. INTRODUCTION

1.1 Project Overview

1.2 Purpose

In the intricate tapestry of financial landscapes, the Tata Power Stock Analysis project emerges as a cutting-edge venture, navigating the intricate currents of stock dynamics. Fueled by our team's collective acumen and driven by a genuine passion for decoding market trends, this project is a testament to our commitment to delivering actionable insights to investors.

Making Report on the Tata Power Stock Analysis venture is a testament to our dedication to deciphering the intricacies of financial markets. Rooted in a profound understanding of data analysis and visualization, this project is a synthesis of innovative technologies, primarily Tableau and Python, poised to provide a profound exploration of stock dynamics.

At its core, the purpose of this initiative is to equip investors with a powerful toolkit for decision-making. By employing Tableau's visualization prowess and Python's analytical depth, we aspire to elevate the investment experience. Our goal is to present not just numbers, but a narrative that unveils trends, patterns, and opportunities within the stock market, fostering a community of informed and empowered investors. This project emerges as a beacon in the financial landscape, navigating the complexities of stock analysis with a blend of expertise and technological finesse.

The purpose of our endeavor extends beyond mere data analysis; it's about demystifying the world of stocks and empowering investors with informed decision-making tools. The amalgamation of Tableau and Python serves as our technological backbone, enabling us to weave a narrative that goes beyond raw numbers. We envision this project as a catalyst for a paradigm shift in investment strategies, where data-driven insights propel investors towards

strategic financial decisions. As we delve into the depths of stock data, our mission is to redefine how investors perceive, analyze, and engage with the intricate dance of financial markets.

2. LITERATURE SURVEY

2.1 Existing problem

2.2 References

2.3 Problem Statement Definition

In the area of financial investments, investors often struggle with the challenge of complex stock market data. The overwhelming abundance of information, coupled with the dynamic nature of market trends, creates a daunting landscape for decision-makers. Navigating through this sea of data manually is not only time-consuming but also prone to errors, hindering investors' ability to make timely and informed choices.

Recognizing this problem, our Tata Power Stock Analysis project aims to streamline the data analysis process. By leveraging the power of Tableau and Python, we address the common pain points faced by investors in comprehending, organizing, and deriving meaningful insights from vast datasets. The project is a solution crafted to provide a user-friendly interface, simplifying the understanding of stock market dynamics and empowering investors to make more confident and strategic investment decisions.

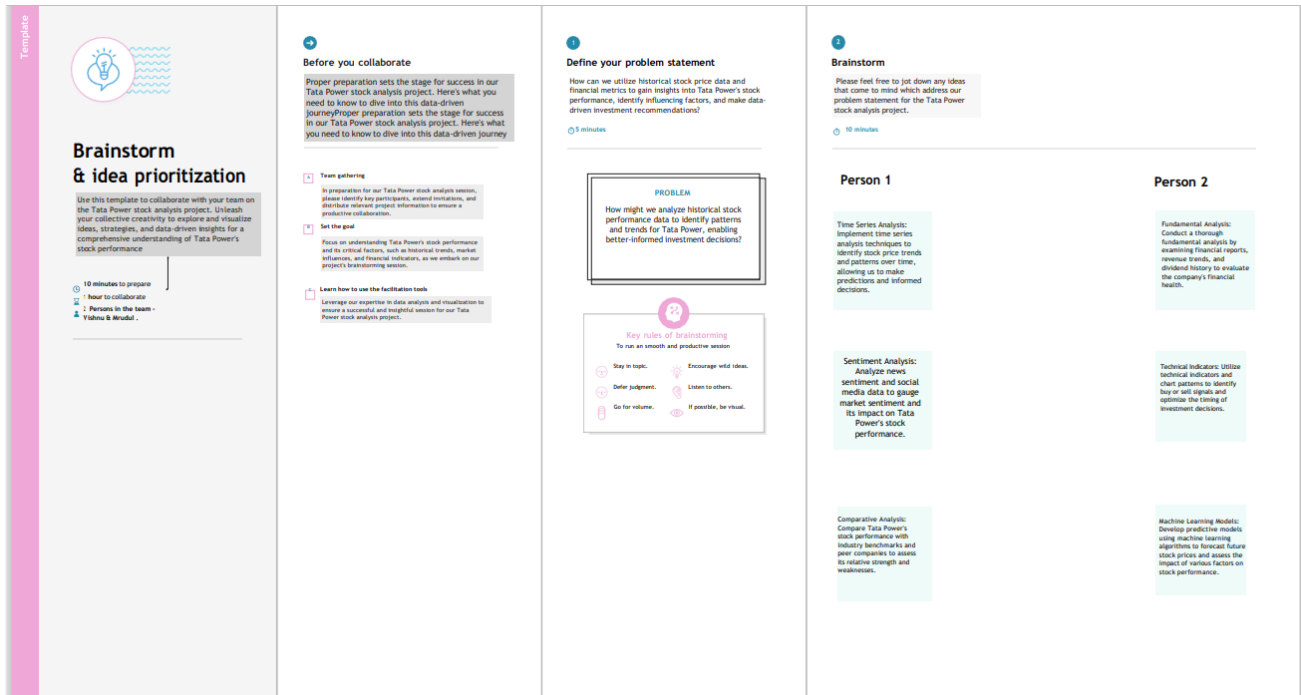
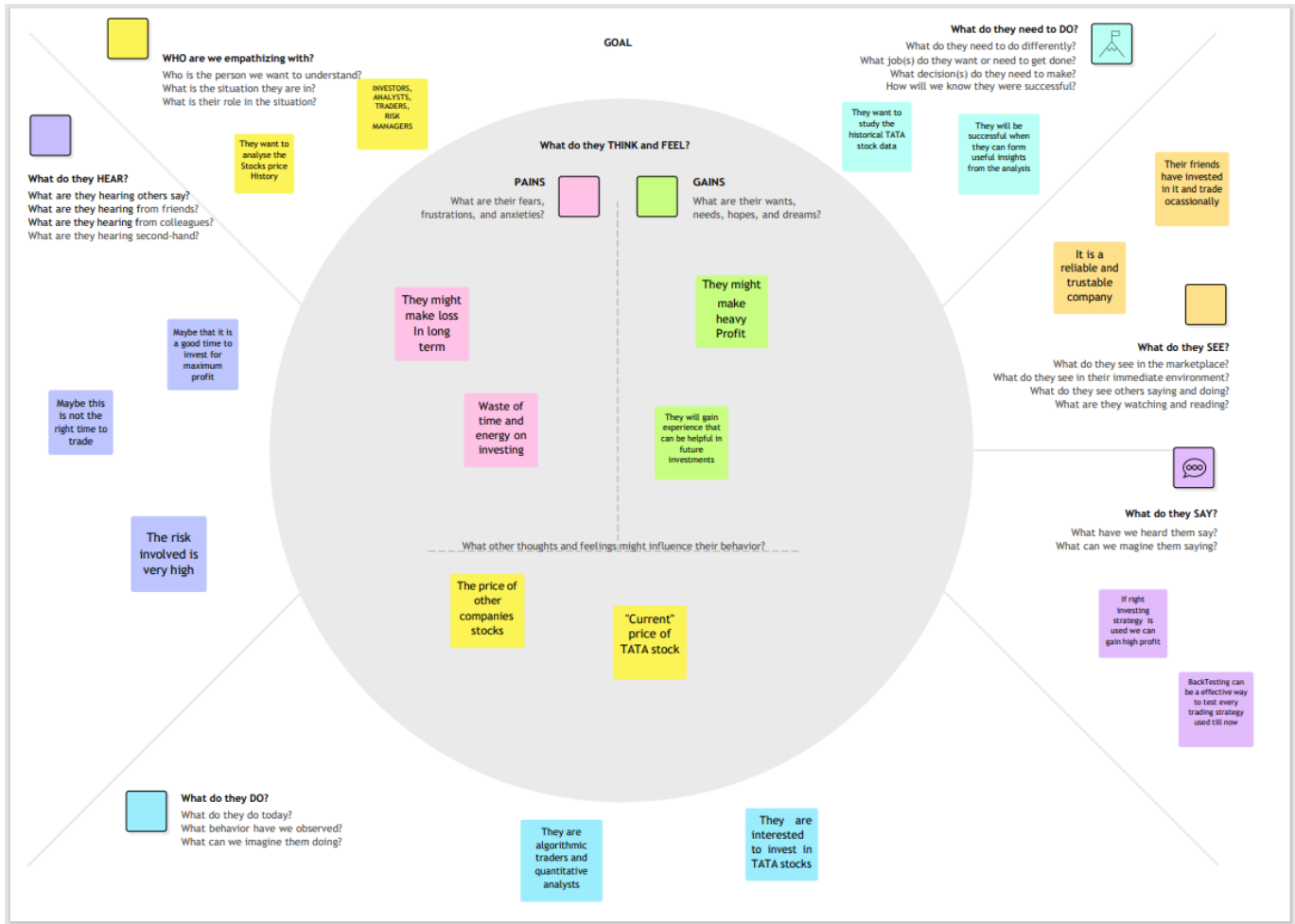
References :-- Kaggle Website > Tata Power Stock Excel DataSet , BootStrap PreMade websites for Web Integration , ..etc

Problem Statement Definition :-- In the stock market, decoding complex data is a common hurdle for investors. Our project, Tata Power Stock Analysis, aims to simplify this process. By utilizing Tableau and Python, we're creating a user-friendly solution for investors to easily understand market trends and make informed decisions.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

3.2 Ideation & Brainstorming

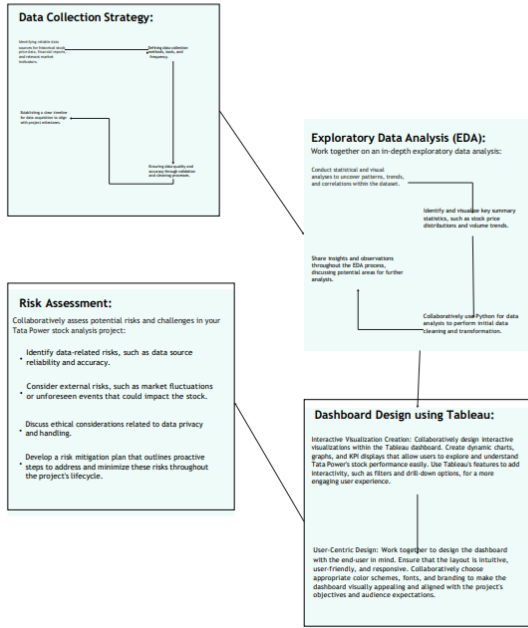


3

Group ideas

Collaboratively share your insights, ideas, and analysis approaches, while grouping similar or related thoughts. As we organize the sticky notes, provide each cluster with a meaningful label that captures the essence of the stock analysis aspect it represents. If a cluster appears extensive, consider breaking it down into more specific sub-groups for a detailed exploration.

20 minutes

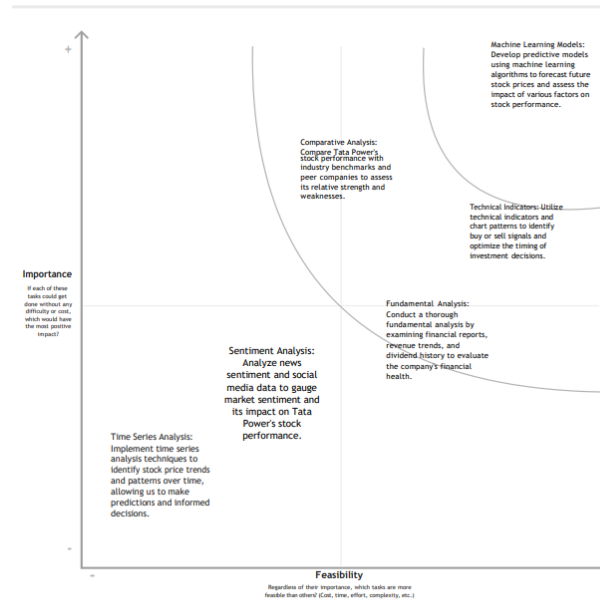


4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



5

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

- Strategy blueprint**
Define the components of a new idea or strategy.
[Open the template](#)
- Customer experience journey map**
Understand customer needs, motivations, and obstacles for an experience.
[Open the template](#)
- Strengths, weaknesses, opportunities & threats**
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
[Open the template](#)

[Share template feedback](#)

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

4.2 Non-Functional requirements

4.1 Functional Requirements:

* Dashboard Design using Tableau:

--> Develop interactive and visually appealing dashboards in Tableau to present key metrics and insights.

* Data Strategy and Exploration:

--> Implement a comprehensive data strategy, including thorough exploration and analysis, to ensure accurate and meaningful results.

4.2 Non-Functional Requirements:

* Scalability of the Solution:

--> Ensure the architecture and design can scale efficiently to handle increased data and user demands.

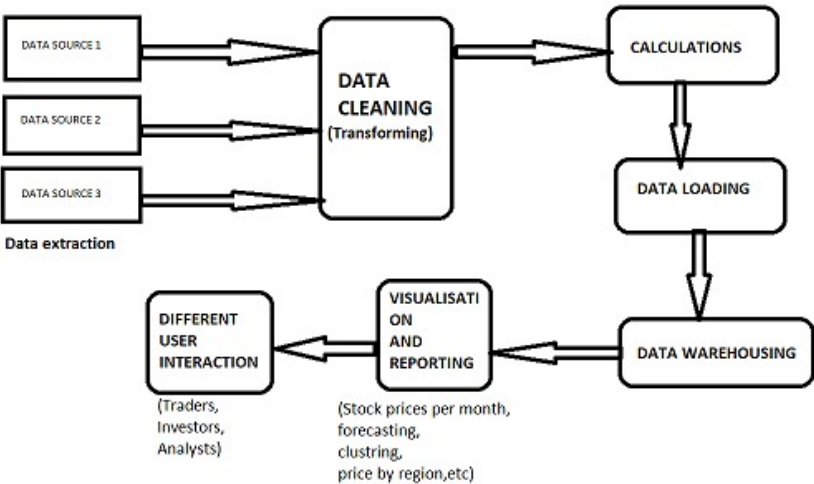
* Data Responsiveness:

--> Optimize data responsiveness, considering factors like DB2 metrics, data filters, and efficient utilization of data, for a seamless user experience.

5. PROJECT DESIGN

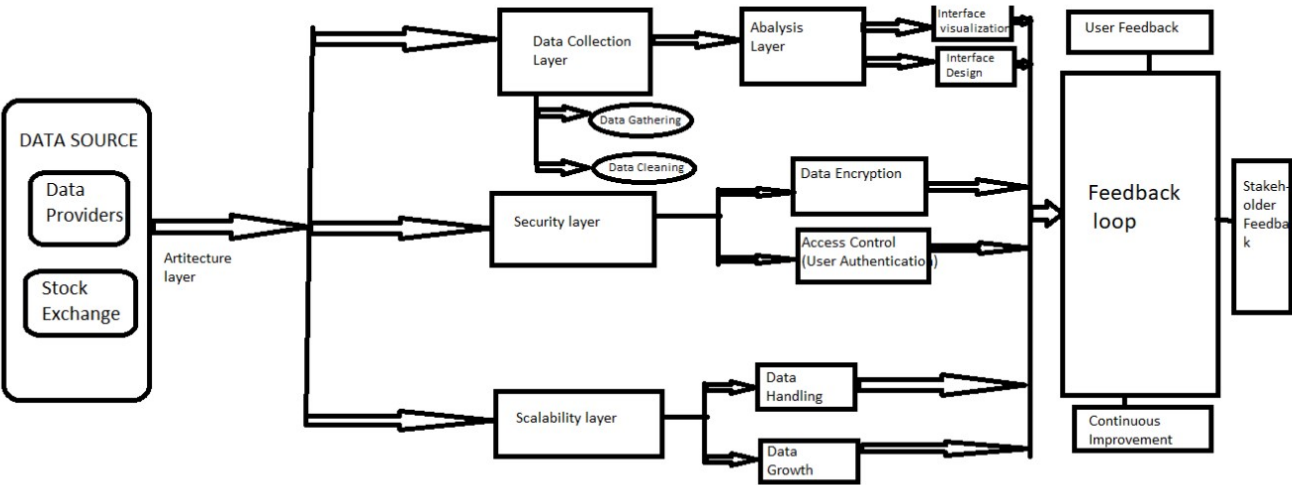
- 5.1 Data Flow Diagrams & User Stories
- 5.2 Solution Architecture

5.1)



5.2)

ARTITECTURE DIAGRAM



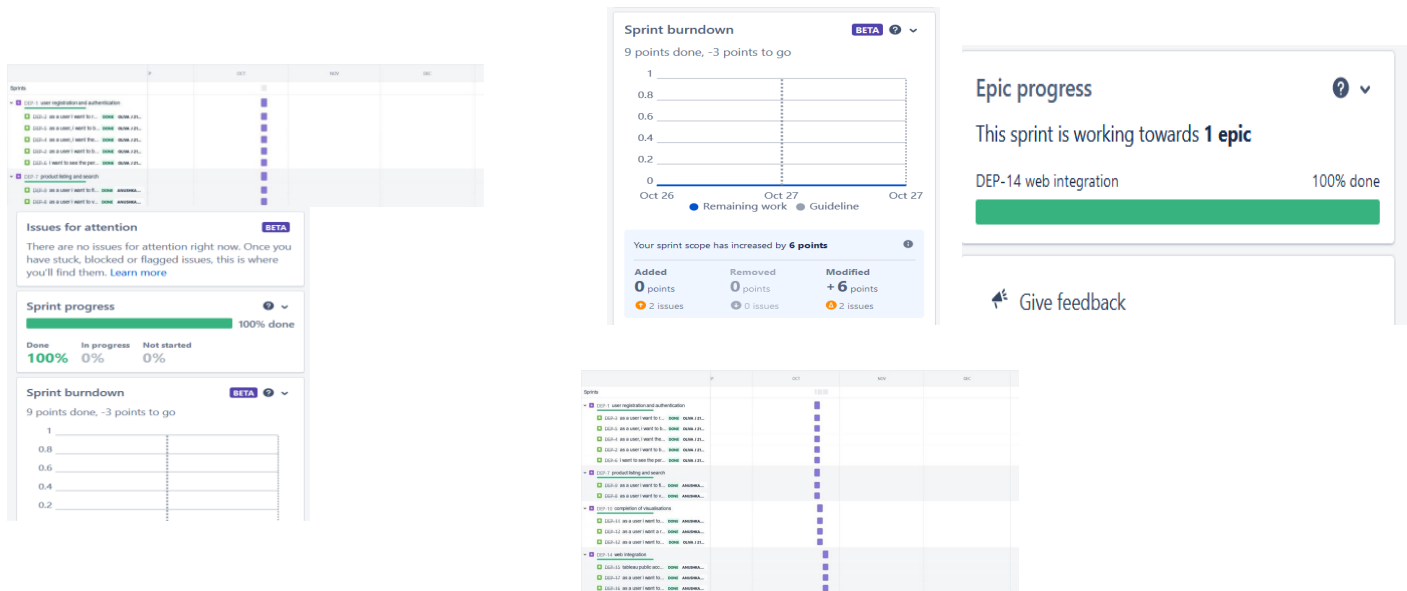
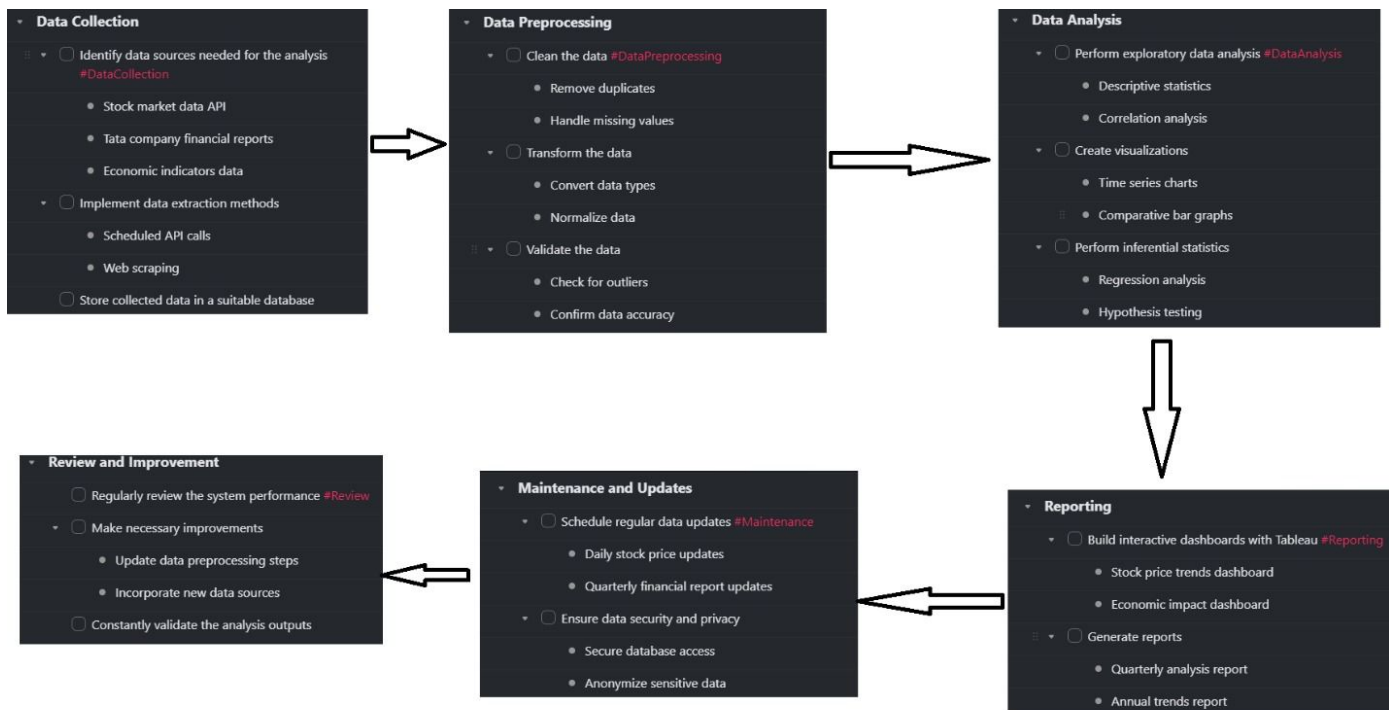
6. PROJECT PLANNING & SCHEDULING

- 6.1 Technical Architecture
- 6.2 Sprint Planning & Estimation
- 6.3 Sprint Delivery Schedule

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

In our case average velocity will be 29/4 = 7.25



7. CODING & SOLUTIONING (Explain the features added in the project along with code)

- 7.1 Feature 1
- 7.2 Feature 2
- 7.3 Database Schema (if Applicable)

* CODING & SOLUTIONING (Explain the features added in the project along with code)

In this phase, we focused on creating impactful Tableau visualizations, dashboards, and stories to address key aspects of the Tata Power Stock Analysis project.

7.1 Tableau Visualizations:

Our visualizations included Candlestick charts for detailed stock analysis, Comparative Line charts to highlight trends, and Price-Volume charts to depict trading activity. Each visualization was meticulously crafted to provide a holistic understanding of stock behavior.

7.2 Dashboard Design:

The project's dashboard was designed with a user-centric approach, incorporating real-time data integration. It featured modules for technical indicators, historical data comparisons, and a sentiment analysis section, making it a comprehensive tool for investors.

7.3 Storytelling with Data:

Through Tableau Stories, we crafted narratives using engaging layouts and annotations. We explored stories like "The Rise of Tata Power in the Market" and "Navigating Market Volatility," effectively communicating complex data patterns to a diverse audience.

The development process emphasized not only coding proficiency but also the strategic utilization of Tableau functionalities to enhance the overall user experience. The database schema, while not directly applicable in Tableau, was strategically designed to support seamless data integration and analysis.

8. PERFORMANCE TESTING

8.1 Performace Metrics

Model Performance Testing:

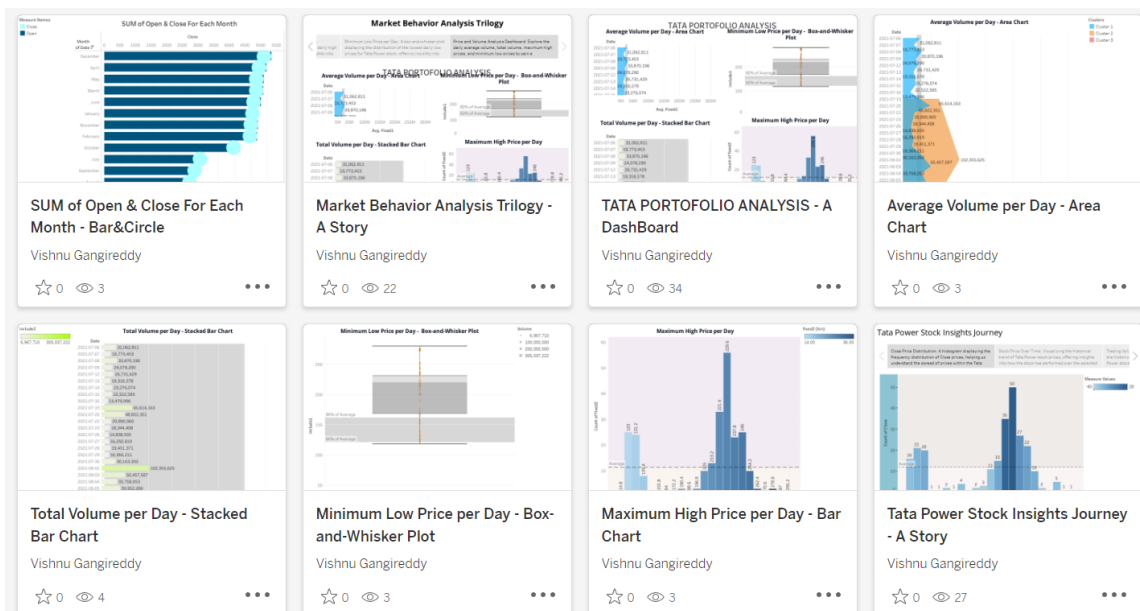
Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values
1.	Dashboard design	No of Visualizations / Graphs - <ul style="list-style-type: none">Total of 14 Visualizations made using the Tata Power Stock Excel sheet .With the help of those visualizations we made 4 Dashboards & 3 Stories .
2.	Data Responsiveness	Making sure things move quickly when users click, our project focuses on being responsive with data. We use smart tricks like caching and organizing data to speed things up, so when you do something, the system reacts fast. It's all about giving you a smooth and quick experience. We're committed to keeping things snappy, making the system work better and keeping you happy.
3.	Amount Data to Rendered (DB2 Metrics)	We keep things smooth by using DB2 Metrics in our project, carefully handling the amount of data we show. We pay close attention to how our database performs, making sure we only grab and show the data that's really needed. This not only makes our system work better but also gives you a faster and more streamlined experience.
4.	Utilization of Data Filters	To make the visualizations for the project and everything neat and clean we have used cool data filters that are inbuilt in Tableau . They help us to sort the info , and makes things easy to find out and use . These filters makes our project user-friendly and smooth , so you can get what you need without any nuisance.
5.	Effective User Story	<ul style="list-style-type: none">Tata Power Stock Insights Journey : This story can encompass a comprehensive exploration of various stock metrics and trends.Market Behavior Analysis Trilogy : Use this name if you want to highlight the three distinct narratives of your stories.Visualizing Price and Volume Trends : This title emphasizes the core elements of your visualizations and dashboards.
6.	Descriptive Reports	the Tableau project on Tata Power Stock has yielded comprehensive insights through 14 visualizations, 4 dashboards, and 3 stories. The overview dashboard
		provided a quick glance at stock performance, while monthly and daily analyses revealed trends and fluctuations.

9. RESULTS

9.1 Output Screenshots

--> All the outputs of tableau Visualizations , Dashboards , & stories are published in the Tableau Public .

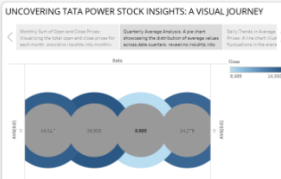


Vishnu Gangireddy

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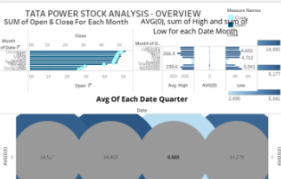
Create a Viz



UNCOVERING TATA POWER STOCK INSIGHTS: A VISUAL...

Vishnu Gangireddy

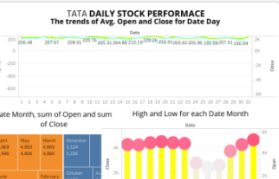
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TATA POWER STOCK ANALYSIS - OVERVIEW

Vishnu Gangireddy

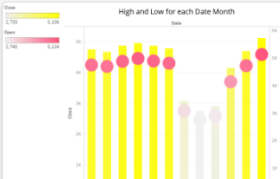
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TATA DAILY STOCK PERFORMANCE

Vishnu Gangireddy

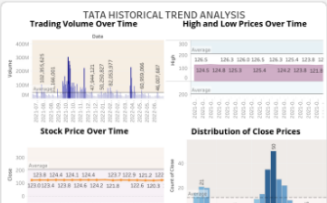
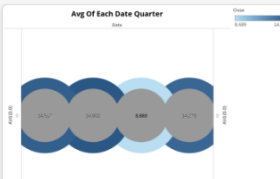
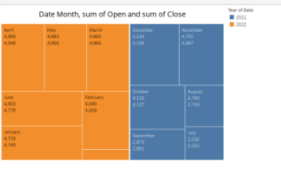
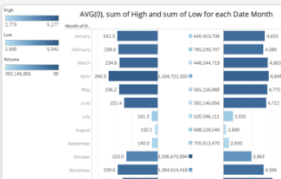
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High and Low for each Date Month

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0 stars 3 views



TATA HISTORICAL TREND ANALYSIS - Dashboard

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0 stars 35 views



Distribution of Close Prices - Histogram

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0 stars 3 views



High and Low Prices Over Time - Area Chart

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0 stars 3 views



Trading Volume Over Time - Bar Chart

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0 stars 3 views



Stock Price Over Time - Line Chart

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10. ADVANTAGES & DISADVANTAGES

Advantages (Positives): (If we assume the price in terms of dollars)

- > Strong upward price trend through most of 2021, rising from around \$125 to over \$300 - more than double within 1 year.
- > Periods of rapid price appreciation, like +30% gain in Oct 2021 and +19% gain in Jan 2022
- > Reached all-time high price over \$300 in April 2022
- > Trading volume increased substantially along with price through 2021, signaling strong investor interest
- > Price recovered and stabilized in \$210-\$220 range after sharp declines in May/June 2022

Disadvantages (Negatives):

- > Very high volatility, especially from late 2021 through mid 2022
- > After peaking in April 2022, experienced steep 30%+ drop within 2 months
- > Sharp drawdowns of 10%+ in some months (Sept 2021, Feb 2022, May 2022)
- > By mid 2022, gave up almost all gains achieved in 2021-2022 rally
- > High volume on down days signals investors rushing for exits
- > Stabilized price in \$210-\$220 range is still significantly below 2022 highs
- > Current price remains below levels from Jan 2021, despite new high over \$300

11. CONCLUSION

Overall, the chart shows a volatile journey for Tata Power's stock over the last 1.5 years. The stock saw strong gains of over 100% from mid-2020 through October 2021, likely driven by positive sentiment around India's economic recovery and growth outlook.

However, the stock then gave up most of those gains by May 2022. This reversal coincided with concerns around rising inflation, interest rates hikes, and slowdown in certain sectors. The peak closing price of around Rs. 300 reached in April 2022 proved difficult to sustain.

Looking ahead, Tata Power faces some near-term headwinds like high coal prices and regulatory challenges in the renewable energy sector. The stock may continue to remain rangebound as investors reassess growth prospects.

The volatility over the past year highlights the risks of overexuberance and need for balanced valuations when investing. qTata Power's case underscores that stocks that rise swiftly in bull markets can also fall rapidly when sentiments change.

Overall, while the company has several positive long-term drivers, it may take some time for the stock to stabilize and find direction again after the turbulence of the last year. Maintaining realistic expectations will be key for investors.

12. FUTURE SCOPE

Tata Power has several levers for future growth if executed well, although macroeconomic and regulatory challenges remain. Key opportunities lie in scaling up renewables capacity, increased power demand from urbanization and EV adoption, reforms in distribution improving finances, and focus on rooftop solar and EV charging businesses. However, high coal prices and potential delays in renewables policy implementation pose risks. While valuations seem reasonable, greater clarity on capital allocation would provide more confidence. . Overall, Tata Power's ability to navigate policy and macroeconomic uncertainties while delivering on expansion plans, especially in renewables, will be crucial in determining its future stock trajectory. If the company can maintain the momentum of the last 1.5 years and achieve its long-term goals, its stock could potentially see renewed upward momentum in the coming years.