“IPL ANALYSIS USING POWER BI”

NANDHA ARTS AND SCIENCE COLLEGE

ERODE-52

NM ID	NAME
B03F19CDB420824A9BF48A6F2E940985	SANJAY PRAVEEN T

ABSTRACT

This Power BI analysis focuses on the Indian Premier League (IPL), providing a comprehensive overview of team performances, player statistics, and match outcomes. By leveraging Power BI's data visualization capabilities, this analysis aims to uncover insights into various aspects of the IPL, including team strengths and weaknesses, player contributions, and match trends. Through interactive dashboards and reports, users can explore historical data, track team progress over multiple seasons, and identify key factors influencing match outcomes. Additionally, this analysis may incorporate external data sources to enrich the understanding of IPL dynamics, such as player auctions, social media sentiment, and weather conditions. Overall, this Power BI analysis offers a dynamic and insightful exploration of the IPL, enabling stakeholders to make data-driven decisions and gain a deeper understanding of one of the most popular cricket leagues in the world.

INDEX

CHAPTER 1

INTRODUCTION

1.1 PROBLEM STATEMENT

As the Indian Premier League (IPL) continues to gain immense popularity worldwide, there's a growing need for comprehensive data analysis tools to understand the various facets of the game. The vast amount of data generated during each IPL season provides an opportunity to derive valuable insights into player performance, team strategies, match outcomes, and fan engagement.

The task at hand is to develop a dynamic and visually appealing Power BI dashboard that enables stakeholders, including team management, analysts, sponsors, and fans, to gain actionable insights from IPL data. The dashboard should encompass various dimensions of analysis, including player statistics, team performance, match results, and audience engagement metrics.

1.2 PROPOSED SYSTEM

The Indian Premier League (IPL) has transformed the landscape of cricket, blending sportsmanship with entertainment on a global scale. With its unique format, star-studded teams, and nail-biting matches, the IPL has captured the imagination of cricket enthusiasts worldwide. In the pursuit of excellence and strategic advantage, teams, coaches, and stakeholders increasingly turn to data-driven insights to decipher the complexities of the game.

1.3 FEATURES

Features for IPL Analysis Using Power BI:

DYNAMIC DASHBOARD CREATION:

- Intuitive interface for creating custom dashboards tailored to specific analysis requirements.
- Drag-and-drop functionality to easily add and arrange visualizations, filters, and slicers.

DATA INTEGRATION:

- Seamless integration with diverse data sources including official IPL databases, APIs, CSV files, and external datasets.
- Automated data refresh capabilities to ensure the dashboard reflects the latest insights.

INTERACTIVE VISUALIZATIONS:

- Wide range of visualization options such as bar charts, line graphs, heat maps, scatter plots, pie charts, and geographical maps.
- Interactive elements like drill-down, hover-over tooltips, and cross-filtering for deeper exploration of data.

PLAYER PERFORMANCE ANALYSIS:

- Player statistics visualization including runs scored, wickets taken, batting averages, bowling averages, strike rates, and player rankings.
- Comparison tools to analyze player performance across seasons, teams, match formats, and playing conditions.

TEAM PERFORMANCE EVALUATION:

- Team-level insights such as win-loss records, net run rates, performance against specific opponents, and trends over multiple seasons.
- Visual representation of team strategies, batting orders, bowling variations, and fielding patterns.

MATCH ANALYSIS:

- Visualization of match results, toss outcomes, venue-wise performance, innings-wise scores, partnerships, and match-winning moments.
- Identification of patterns, trends, and pivotal moments influencing match outcomes and momentum shifts.

FAN ENGAGEMENT METRICS:

- Metrics related to audience engagement such as stadium attendance, TV viewership ratings, social media mentions, hashtag trends, and brand sponsorships.
- Fan sentiment analysis, geographical distribution of fan base, and engagement levels during matches and IPL events.

PREDICTIVE ANALYTICS:

- Integration of predictive models or forecasting algorithms to predict match outcomes, player performances, and audience engagement trends.
- What-if analysis tools to simulate scenarios and assess their potential impact on match results and player performances.

EXPORT AND SHARING:

- Export functionality to save reports and dashboards in various formats such as PDF, Excel, PowerPoint, and CSV.
- Sharing capabilities to collaborate with teammates and stakeholders by sharing reports via email, embedded links, or Power BI service.

SECURITY AND GOVERNANCE:

- Role-based access control to manage user permissions and restrict access to sensitive data.
- Data encryption, compliance with industry standards, and auditing capabilities to ensure data security and regulatory compliance.

1.4 ADVANTAGES

DATA VISUALIZATION:

Power BI enables the creation of visually appealing and interactive dashboards. Users can easily explore IPL data through various charts, graphs, and maps, enhancing comprehension and decision-making.

REAL-TIME INSIGHTS:

With Power BI's data refresh capabilities, users can access near real-time updates of IPL data. This is particularly useful during matches or when analyzing current player performances, allowing for timely decision-making.

CUSTOMIZATION:

Power BI allows users to customize dashboards and reports based on their specific analysis requirements. Whether it's comparing player statistics, evaluating team performance, or assessing fan engagement, users can tailor visualizations to suit their needs.

INTEGRATION WITH DIVERSE DATA SOURCES:

Power BI seamlessly integrates with a wide range of data sources, including official IPL databases, APIs, CSV files, and external datasets. This ensures comprehensive analysis by incorporating various data sources into a single platform.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 SERVICES USED

AZURE SERVICES:

- **Azure Data Lake Storage:** Store and manage large volumes of structured and unstructured data from various sources, including IPL data.
- **Azure SQL Database:** Use Azure SQL Database for storing and managing structured IPL data securely in the cloud.
- **Azure Analysis Services:** Create data models and perform advanced analytics on IPL data using Azure Analysis Services, which provides scalable and high-performance OLAP (Online Analytical Processing) cubes.

AZURE MACHINE LEARNING:

Employ Azure Machine Learning to develop predictive models for forecasting match outcomes, player performance, or audience engagement trends based on IPL data.

AZURE DATA FACTORY:

Orchestrate and automate data workflows to ingest, transform, and load IPL data from various sources into Azure services such as Azure Data Lake Storage or Azure SQL Database.

AZURE DATABRICKS:

Leverage Azure Databricks for big data processing, analytics, and machine learning on IPL data. It provides a collaborative environment for data engineers, data scientists, and analysts to work together on IPL analysis projects.

GITHUB:

Use GitHub or other version control systems for managing and versioning Power BI reports and datasets collaboratively, enabling team members to track changes and work on analysis projects efficiently.

2.2 TOOLS AND SOFTWARE USED

POWER BI DESKTOP:

Power BI Desktop is the primary tool for creating data models, designing visualizations, and building interactive reports. It provides a user-friendly interface for importing, transforming, and analyzing data from various sources.

POWER BI SERVICE:

Power BI Service enables collaboration, sharing, and publishing of Power BI reports and dashboards. It allows users to access reports from anywhere, on any device, and facilitates real-time data updates and insights sharing among stakeholders.

POWER QUERY EDITOR:

Power Query Editor within Power BI Desktop allows for data transformation, cleaning, and shaping. It enables users to prepare IPL data for analysis by performing tasks such as data merging, filtering, and data type conversion.

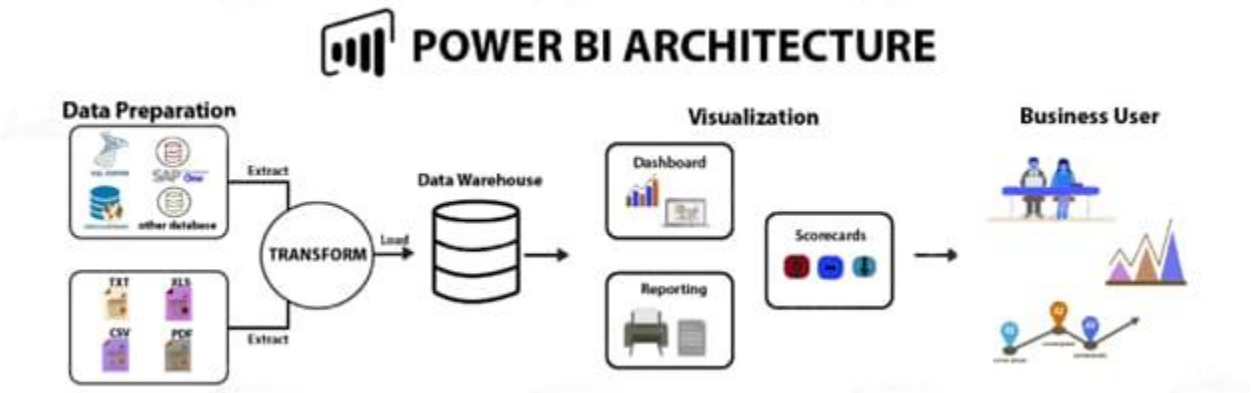
POWER BI VISUALS:

Power BI offers a wide range of built-in visualizations such as charts, graphs, maps, and tables. These visuals can be customized and configured to represent IPL data in a meaningful and insightful manner.

POWER BI MOBILE APP:

The Power BI Mobile App allows users to access and interact with Power BI reports and dashboard on mobile devices. It enables stakeholders to stay connected and informed even while on the go, enhancing accessibility and collaboration. By leveraging these services and tools, IPL analysis using Power BI can deliver comprehensive insights, actionable recommendations, and enhanced decision-making capabilities to stakeholders across the cricketing ecosystem.

CHAPTER 3
PROJECT ARCHITECTURE



Analyzing the Indian Premier League (IPL) using Power BI involves several steps and components in the project architecture:

DATA COLLECTION:

Obtain IPL data from reliable sources such as official IPL websites, APIs, or datasets available online. Ensure the data is clean and relevant to your analysis.

DATA PREPARATION:

Cleanse and transform the raw data to make it suitable for analysis. This step involves tasks like removing duplicates, handling missing values, and formatting data types appropriately.

DATA MODELING:

Design a data model that represents the relationships between different entities in the IPL data, such as matches, teams, players, and venues. Define measures and calculated columns to perform analysis efficiently.

DATA VISUALIZATION:

Create interactive visualizations to present insights derived from the data model. Power BI offers various visualization options like charts, graphs, maps, and tables to represent the data effectively.

DASHBOARD CREATION:

Develop a dashboard by arranging the visualizations in a meaningful layout. Dashboards provide an overview of key metrics and allow users to explore data interactively.

FILTERS AND SLICERS:

Implement filters and slicers to enable users to dynamically slice and dice the data based on different dimensions like teams, seasons, players, and venues. This enhances the user experience and enables deeper analysis.

PERFORMANCE OPTIMIZATION:

Optimize the performance of the Power BI report by minimizing data refresh times, improving query performance, and optimizing DAX calculations.

DEPLOYMENT:

Deploy the Power BI report to a suitable environment such as Power BI Service or SharePoint for sharing with stakeholders. Ensure appropriate security measures are in place to restrict access to sensitive data.

MONITORING AND MAINTENANCE:

Regularly monitor the report usage, data refreshes, and performance metrics. Address any issues or update to ensure the report remains accurate and up-to-date.

DOCUMENTATION:

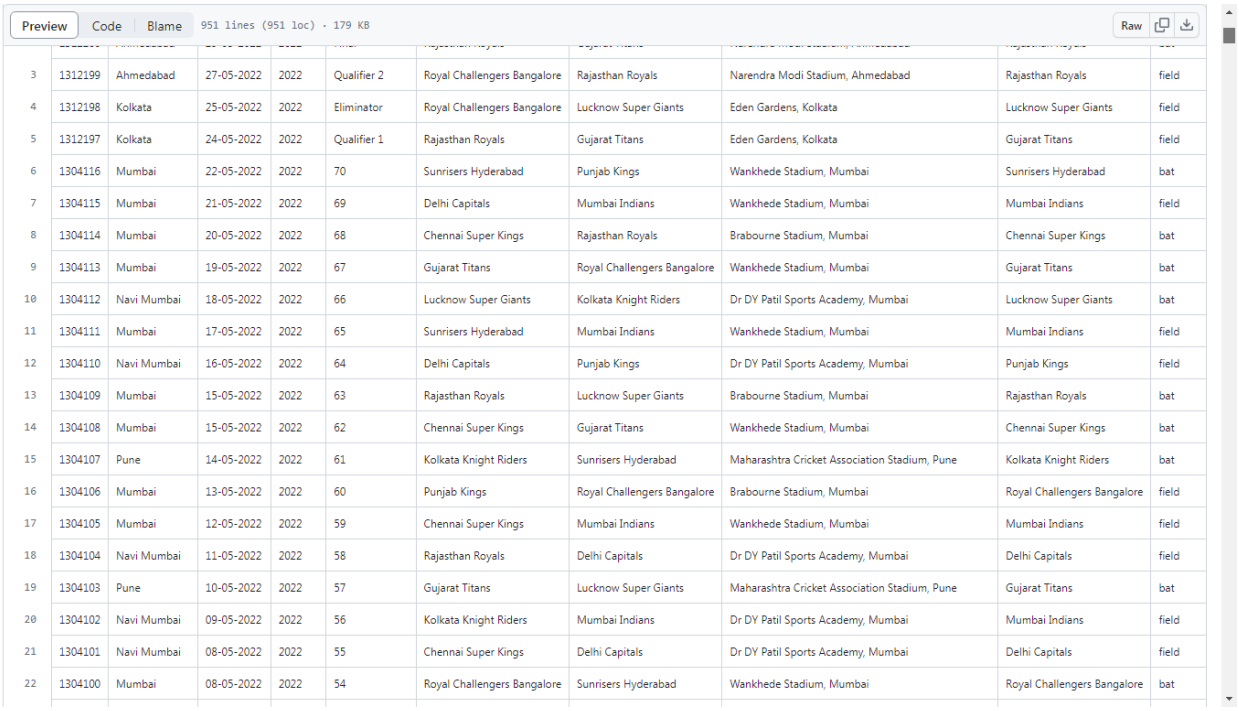
Document the project architecture, data sources, data transformations, and visualization design choices for future reference and collaboration. By following this project architecture, you can effectively analyze IPL data using Power BI and derive actionable insights for stakeholders.

CHAPTER 4

MODELING AND RESULT

TABLE NAME: ipl_matches_2008_2022

```
CREATE TABLE ipl_matches_2008_2022
(
id int PRIMARY KEY,
city varchar(50),
match_date date,
season varchar(50),
match_number varchar(50),
team1 varchar(50),
team2 varchar(50),
venue varchar(100),
toss_winner varchar(50),
toss_decision varchar(50),
superover varchar(50),
winning_team varchar(50),
won_by varchar(50),
margin varchar(50),
method varchar(50),
player_of_match varchar(50),
umpire1 varchar(50),
umpire2 varchar(50)
)
```



Preview | Code | Blame | 951 lines (951 loc) · 179 KB | Raw

3	1312199	Ahmedabad	27-05-2022	2022	Qualifier 2	Royal Challengers Bangalore	Rajasthan Royals	Narendra Modi Stadium, Ahmedabad	Rajasthan Royals	field
4	1312198	Kolkata	25-05-2022	2022	Eliminator	Royal Challengers Bangalore	Lucknow Super Giants	Eden Gardens, Kolkata	Lucknow Super Giants	field
5	1312197	Kolkata	24-05-2022	2022	Qualifier 1	Rajasthan Royals	Gujarat Titans	Eden Gardens, Kolkata	Gujarat Titans	field
6	1304116	Mumbai	22-05-2022	2022	70	Sunrisers Hyderabad	Punjab Kings	Wankhede Stadium, Mumbai	Sunrisers Hyderabad	bat
7	1304115	Mumbai	21-05-2022	2022	69	Delhi Capitals	Mumbai Indians	Wankhede Stadium, Mumbai	Mumbai Indians	field
8	1304114	Mumbai	20-05-2022	2022	68	Chennai Super Kings	Rajasthan Royals	Brabourne Stadium, Mumbai	Chennai Super Kings	bat
9	1304113	Mumbai	19-05-2022	2022	67	Gujarat Titans	Royal Challengers Bangalore	Wankhede Stadium, Mumbai	Gujarat Titans	bat
10	1304112	Navi Mumbai	18-05-2022	2022	66	Lucknow Super Giants	Kolkata Knight Riders	Dr DY Patil Sports Academy, Mumbai	Lucknow Super Giants	bat
11	1304111	Mumbai	17-05-2022	2022	65	Sunrisers Hyderabad	Mumbai Indians	Wankhede Stadium, Mumbai	Mumbai Indians	field
12	1304110	Navi Mumbai	16-05-2022	2022	64	Delhi Capitals	Punjab Kings	Dr DY Patil Sports Academy, Mumbai	Punjab Kings	field
13	1304109	Mumbai	15-05-2022	2022	63	Rajasthan Royals	Lucknow Super Giants	Brabourne Stadium, Mumbai	Rajasthan Royals	bat
14	1304108	Mumbai	15-05-2022	2022	62	Chennai Super Kings	Gujarat Titans	Wankhede Stadium, Mumbai	Chennai Super Kings	bat
15	1304107	Pune	14-05-2022	2022	61	Kolkata Knight Riders	Sunrisers Hyderabad	Maharashtra Cricket Association Stadium, Pune	Kolkata Knight Riders	bat
16	1304106	Mumbai	13-05-2022	2022	60	Punjab Kings	Royal Challengers Bangalore	Brabourne Stadium, Mumbai	Royal Challengers Bangalore	field
17	1304105	Mumbai	12-05-2022	2022	59	Chennai Super Kings	Mumbai Indians	Wankhede Stadium, Mumbai	Mumbai Indians	field
18	1304104	Navi Mumbai	11-05-2022	2022	58	Rajasthan Royals	Delhi Capitals	Dr DY Patil Sports Academy, Mumbai	Delhi Capitals	field
19	1304103	Pune	10-05-2022	2022	57	Gujarat Titans	Lucknow Super Giants	Maharashtra Cricket Association Stadium, Pune	Gujarat Titans	bat
20	1304102	Navi Mumbai	09-05-2022	2022	56	Kolkata Knight Riders	Mumbai Indians	Dr DY Patil Sports Academy, Mumbai	Mumbai Indians	field
21	1304101	Navi Mumbai	08-05-2022	2022	55	Chennai Super Kings	Delhi Capitals	Dr DY Patil Sports Academy, Mumbai	Delhi Capitals	field
22	1304100	Mumbai	08-05-2022	2022	54	Royal Challengers Bangalore	Sunrisers Hyderabad	Wankhede Stadium, Mumbai	Royal Challengers Bangalore	bat

TABLE NAME: ipl_ball_by_ball_2008_2022

```
CREATE TABLE ipl_ball_by_ball_2008_2022
(
    id int8 NOT NULL,
        innings int8,
        overs int8,
        ball_number int8,
        batter varchar(50),
        bowler varchar(50),
        non_striker varchar(50),
        extra_type varchar(50),
        batsman_run int,
        extras_run int8,
```

total_run int8,

non_boundry int8,

iswicket_delivery int8,

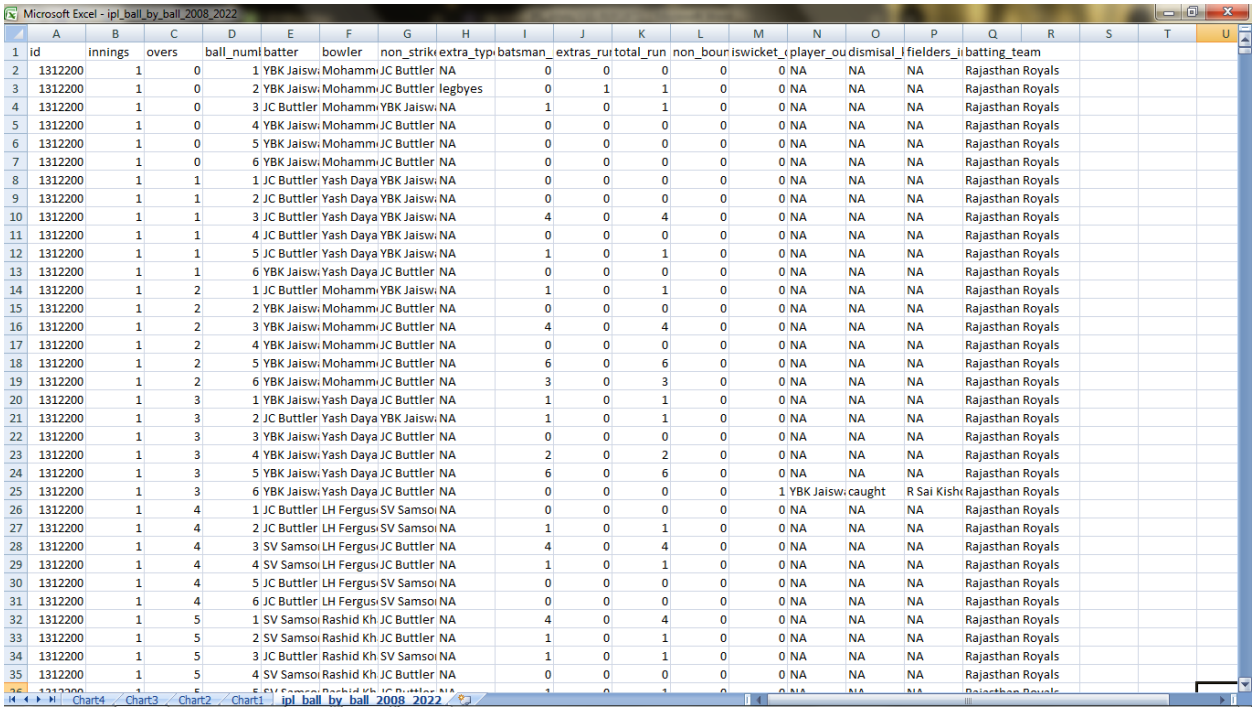
player_out varchar(50),

dismisal_kind varchar(50),

fielders_involved varchar(50),

batting_team varchar(50)

)



Microsoft Excel - ipl_ball_by_ball_2008_2022

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	id	innings	overs	ball_numl	batter	bowler	non_strike	extra_typ	batsman_	extras_ru	total_run	non_bour	iswicket_(	player_ou	dismisal_l	fielders_i	batting_team				
2	1312200	1	0	1	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
3	1312200	1	0	2	YBK Jaisw	Mohamm	JC Buttler	legbyes	0	1	1	0	0	NA	NA	NA	Rajasthan Royals				
4	1312200	1	0	3	JC Buttler	Mohamm	YBK Jaisw	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
5	1312200	1	0	4	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
6	1312200	1	0	5	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
7	1312200	1	0	6	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
8	1312200	1	1	1	JC Buttler	Yash Daya	YBK Jaisw	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
9	1312200	1	1	2	JC Buttler	Yash Daya	YBK Jaisw	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
10	1312200	1	1	3	JC Buttler	Yash Daya	YBK Jaisw	NA	4	0	4	0	0	NA	NA	NA	Rajasthan Royals				
11	1312200	1	1	4	JC Buttler	Yash Daya	YBK Jaisw	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
12	1312200	1	1	5	JC Buttler	Yash Daya	YBK Jaisw	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
13	1312200	1	1	6	YBK Jaisw	Yash Daya	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
14	1312200	1	2	1	JC Buttler	Mohamm	YBK Jaisw	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
15	1312200	1	2	2	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
16	1312200	1	2	3	YBK Jaisw	Mohamm	JC Buttler	NA	4	0	4	0	0	NA	NA	NA	Rajasthan Royals				
17	1312200	1	2	4	YBK Jaisw	Mohamm	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
18	1312200	1	2	5	YBK Jaisw	Mohamm	JC Buttler	NA	6	0	6	0	0	NA	NA	NA	Rajasthan Royals				
19	1312200	1	2	6	YBK Jaisw	Mohamm	JC Buttler	NA	3	0	3	0	0	NA	NA	NA	Rajasthan Royals				
20	1312200	1	3	1	YBK Jaisw	Yash Daya	JC Buttler	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
21	1312200	1	3	2	JC Buttler	Yash Daya	YBK Jaisw	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
22	1312200	1	3	3	YBK Jaisw	Yash Daya	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
23	1312200	1	3	4	YBK Jaisw	Yash Daya	JC Buttler	NA	2	0	2	0	0	NA	NA	NA	Rajasthan Royals				
24	1312200	1	3	5	YBK Jaisw	Yash Daya	JC Buttler	NA	6	0	6	0	0	NA	NA	NA	Rajasthan Royals				
25	1312200	1	3	6	YBK Jaisw	Yash Daya	JC Buttler	NA	0	0	0	0	1	YBK Jaisw	caught	R Sai Kish	Rajasthan Royals				
26	1312200	1	4	1	JC Buttler	LH Fergus	SV Samso	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
27	1312200	1	4	2	JC Buttler	LH Fergus	SV Samso	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
28	1312200	1	4	3	SV Samso	LH Fergus	JC Buttler	NA	4	0	4	0	0	NA	NA	NA	Rajasthan Royals				
29	1312200	1	4	4	SV Samso	LH Fergus	JC Buttler	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
30	1312200	1	4	5	JC Buttler	LH Fergus	SV Samso	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
31	1312200	1	4	6	JC Buttler	LH Fergus	SV Samso	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				
32	1312200	1	5	1	SV Samso	Rashid Kh	JC Buttler	NA	4	0	4	0	0	NA	NA	NA	Rajasthan Royals				
33	1312200	1	5	2	SV Samso	Rashid Kh	JC Buttler	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
34	1312200	1	5	3	JC Buttler	Rashid Kh	SV Samso	NA	1	0	1	0	0	NA	NA	NA	Rajasthan Royals				
35	1312200	1	5	4	SV Samso	Rashid Kh	JC Buttler	NA	0	0	0	0	0	NA	NA	NA	Rajasthan Royals				

Chart4 Chart3 Chart2 Chart1 ipl_ball_by_ball_2008_2022

RESULT:

DASHBOARD BACKGROUND:

IPL ANALYSIS OUTPUT:

CONCLUSION

To conclude an IPL analysis using Power BI, you might summarize key insights such as top-performing teams, players, trends in batting or bowling, correlations between various factors like match venues, toss outcomes, and match results. Additionally, you could highlight any unexpected findings or anomalies discovered during the analysis. Ultimately, the conclusion should provide actionable insights for teams, sponsors, or broadcasters to make informed decisions.

FUTURE SCOPE

The future scope of IPL analysis using Power BI could involve incorporating real-time data feeds during matches for live insights, implementing advanced predictive modeling to forecast match outcomes, player performances, or fan engagement metrics. Additionally, exploring sentiment analysis from social media to gauge public opinion and integrating machine learning algorithms for more sophisticated data analysis and decision-making could be valuable directions. Furthermore, leveraging augmented reality or virtual reality technologies to create immersive fan experiences based on data insights could be another exciting avenue for exploration.

REFERENCES

- Saha, Sudipta & Pal, Madhumita & Ghosh, Abir & Das, Abhijit & Sarkar, Soumya & Ghosh, Jyotirmoy. (2017). "Performance analysis of Indian Premier League (IPL) cricket teams using data envelopment analysis." International Journal of Data Analysis Techniques and Strategies. 9. 217-236.
- Shinde, N. D., & Doshi, V. (2017). "Analysis of IPL Teams Using Data Mining Techniques." International Journal of Computer Applications. 167. 1-5.

LINK

https://github.com/Sanjaypraveen123/Sanjaypraveen123.git