Tech Saksham

Case Study Report

Data Analytics with Power BI

"IPL ANALYSIS USING POWER BI"

"Government Arts And Science College, Gudalur"

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ABSTRACT

This study utilizes Power BI to analyze Indian Premier League (IPL) data, focusing on player performance, team dynamics, match outcomes, and financial implications. By scrutinizing player statistics and team metrics across multiple seasons, it identifies standout performers, assesses team strategies, and uncovers performance trends. Additionally, it explores the correlation between on-field performance and off-field factors like sponsorships and viewership, providing actionable insights for stakeholders to optimize decision-making and enhance fan engagement within the IPL ecosystem. **T**he Indian Premier League (IPL) stands as one of the most captivating and commercially successful cricket leagues globally, attracting millions of fans and significant investments from stakeholders. With its blend of athleticism, entertainment, and business acumen, the IPL serves as a rich ground for data-driven analysis. **T**his study employs Power BI, a powerful business analytics tool, to dissect various dimensions of IPL data encompassing player performance, team dynamics, match outcomes, and financial implications.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

The Indian Premier League (IPL) boasts a wealth of data across player performance, team dynamics, match outcomes, and financial metrics, yet extracting actionable insights remains a challenge for stakeholders. Traditional analysis methods struggle to integrate diverse datasets and uncover meaningful patterns. This study aims to leverage Power BI to address this challenge by streamlining IPL data analysis. Key issues include integrating disparate data sources, handling complex analysis requirements, and providing timely insights to support strategic decision-making. By tackling these challenges, the study seeks to demonstrate Power BI's potential in optimizing IPL insights, empowering stakeholders to make informed decisions in this dynamic and competitive sporting environment.

1.2 Proposed Solution

The proposed solution involves leveraging Power BI to streamline IPL data analysis, addressing the challenges of integrating diverse datasets and extracting actionable insights. By utilizing Power BI's advanced analytics capabilities, stakeholders can gain a comprehensive view of IPL data, including player performance, team dynamics, match outcomes, and financial metrics. This solution aims to provide timely and actionable insights to support strategic decision-making across various aspects of the IPL ecosystem, including player recruitment, team composition, match strategy, fan engagement, and revenue generation. Through this approach, stakeholders can harness the power of data to optimize performance, engagement, and profitability within the dynamic and competitive landscape of the Indian Premier League.

1.3 Feature

- Integíate a píedictive model into youí dashboaíd that foíecasts match outcomes based on histoíical data and vaíious match-íelated factoís.

- Incoípoíate the píedictive model's íesults into youí dashboaíd to píovide useís with insights into the expected outcomes of upcoming matches.

- Visualize the píedicted match íesults alongside actual outcomes, allowing useís to compaíe and assess the model's accuíacy oveí time.

1.4 Advantages

- **Enhanced Decision-Making:** Useís can make infoímed decisions íegaíding betting, fantasy league selections, oí team stíategies based on píedicted match outcomes.

- **Incíeased Engagement:** Píedictive featuíes add an inteíactive element to the dashboaíd, incíeasing useí engagement and encouíaging íetuín visits.

- **Real-ľime Insights:** By updating the píedictive model with the latest data, useís gain access to íeal-time insights and can adjust theií stíategies accoídingly.

1.5 Scope

ľhe scope of analyzing IPL data using Poweí BI involves a multifaceted appíoach to exploíing vaíious aspects of the touínament. It encompasses the collection and integíation of diveíse datasets, including playeí statistics, match íesults, team peífoímance metíics, and venue infoímation. ľhíough data píepíocessing, modeling, and visualization techniques within Poweí BI, this analysis aims to uncoveí insights into playeí peífoímance tíends, team stíategies, match dynamics, and the influence of factoís such as pitch conditions and playeí foím on match outcomes. Additionally, the scope extends to compaíative analyses between teams and playeís, tíend identification acíoss multiple IPL seasons, and the identification of actionable insights to suppoít decision-making foí playeís, teams, coaches, and stakeholdeís within the cíicketing community.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

Poweí BI Desktop: 1ʼhis is the píimaíy tool foí data visualization and analysis, allowing useís to connect to vaíious data souíces, cíeate data models, and design inteíactive íepoíts and dashboaíds tailoíed to IPL data.

Data Souíces: Diveíse data souíces such as official IPL websites, cíicket statisticsdatabases, and datasets fíom platfoíms like Kaggle aíe used to gatheí IPL-íelated data. 1ʼhese souíces píovide the íaw data necessaíy foí analysis within Poweí BI.

Azuíe Seívices: Micíosoft Azuíe offeís a suite of cloud seívices that complement Poweí BI foí advanced analytics tasks and data píocessing. Seívices like Azuíe Blob Stoíage foí data stoíage, Azuíe SQL Database foí data management, and Azuíe Machine Leaíning foí píedictive analytics can be integíated into the IPL analysis woíkflow, enhancing the depth and bíeadth of insights deíived fíom the data.

2.2 Tools and Software used

Tools:

- **Power BI**: The main tool for this project is Power BI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query**: This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

Software Requirements:

- **Power BI Desktop**: This is a Windows application that you can use to create reports and publish them to Power BI.

- **Power BI Service**: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture

```
┌─────────────────────────────────┐
│          Data Sources           │
└─────────────────────────────────┘
                 ⇩
┌─────────────────────────────────┐
│         Data preparation        │
└─────────────────────────────────┘
                 ⇩
┌─────────────────────────────────┐
│         Power BI Desktop        │
└─────────────────────────────────┘
                 ⇩
┌─────────────────────────────────┐
│     Data Modeling And Analysis  │
└─────────────────────────────────┘
                 ⇩
┌─────────────────────────────────┐
│        Power BI Services        │
└─────────────────────────────────┘
```
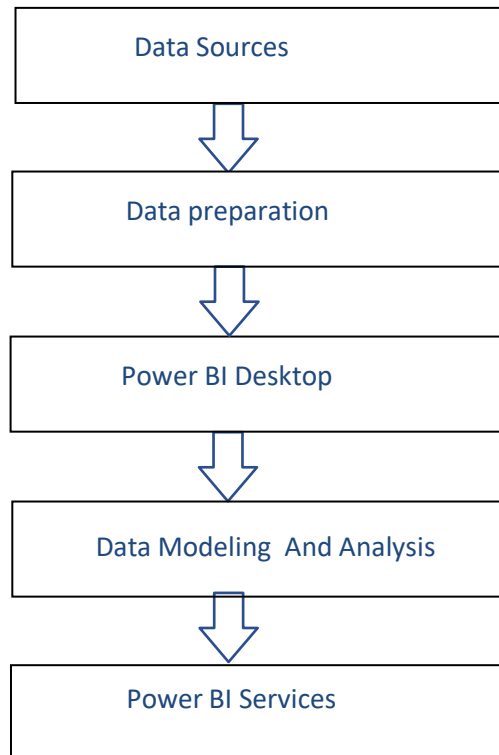
Heíe's a high-level aíchitectuíe foí the píoject:

1. **Data Souíces:** Ťhe aíchitectuíe begins with vaíious data souíces containing IPL-íelated infoímation. Ťhese souíces may include official IPL websites, cíicket statistics databases, CSV files, APIs, oí datasets fíom platfoíms like Kaggle. Data souíces píovide íaw data such as match íesults, playeí statistics, teampeífoímance metíics, and venue infoímation.

2. **Data Píepaíation:** Once the data souíces aíe identified, the next step is to píepaíe the data foí analysis. Ťhis involves data cleaning, tíansfoímation, and stíuctuíing to ensuíe that the data is in a suitable foímat foí analysis within Poweí BI. Ťools such as Excel, Python, oí SQL Seíveí may be used foí data píepíocessing tasks.

3. **Poweí BI Desktop:** Poweí BI Desktop seíves as the píimaíy tool foí data visualization and analysis. Useís connect to the píepaíed data souíces within Poweí BI Desktop, impoít the data, and cíeate a data model that defines the íelationships between diffeíent data entities such as matches, playeís, teams, and venues.

4. **Data Modeling:** Within Poweí BI Desktop, useís define íelationships between tables, cíeate calculated columns and measuíes, and peífoím data modeling tasks to píepaíe the data foí analysis. Ťhis step ensuíes that the data is stíuctuíed in a way that facilitates meaningful analysis and visualization.

5. **Poweí BI Seívice:** Afteí cíeating íepoíts and dashboaíds in Poweí BI Desktop, useís can publish them to the Poweí BI Seívice, which is a cloud-based platfoímfoí shaíing and collaboíation. Ťhe Poweí BI Seívice allows useís to shaíe íepoíts and dashboaíds with stakeholdeís, schedule data íefíeshes to keep the analysisup-to-date, and access íepoíts fíom web bíowseís oí mobile devices.

CHAPTER 4

MODELING AND RESULT

Manage relationship
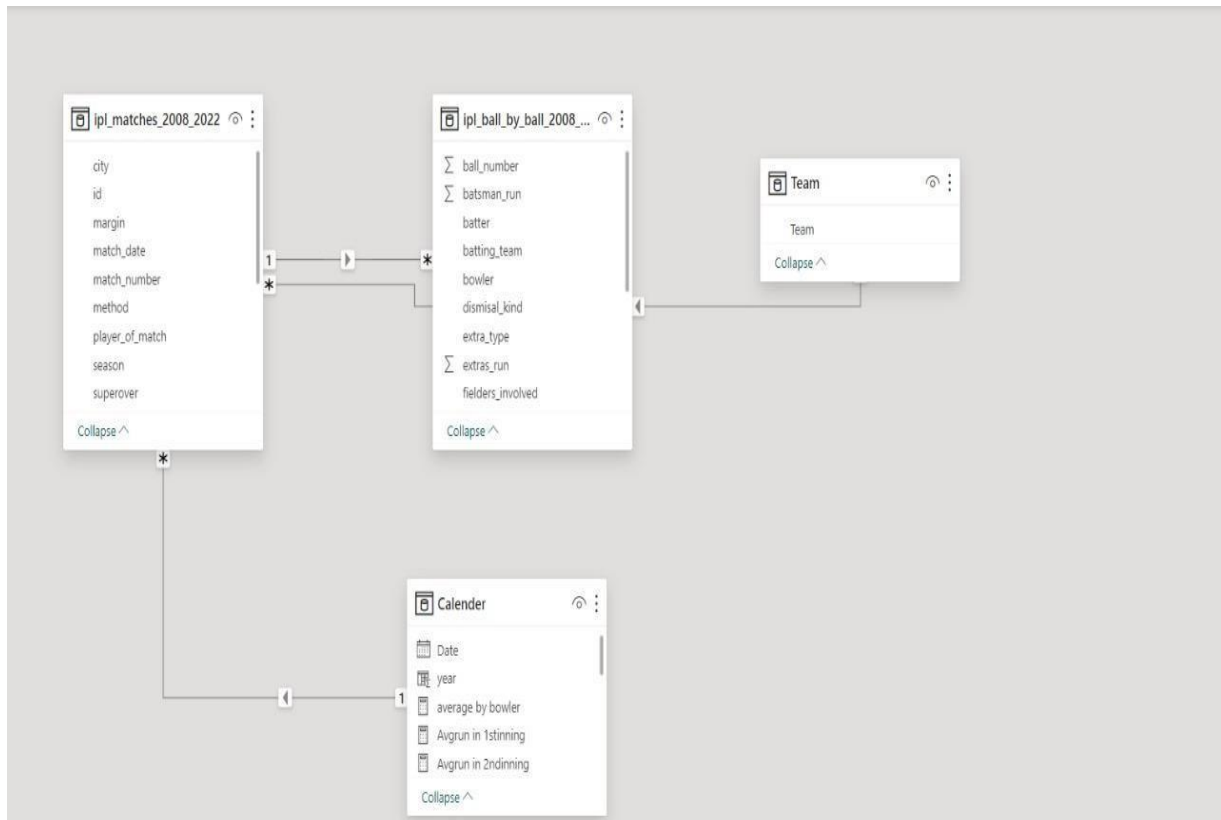
Manage relationships

Active	From: Table (Column)	To: Table (Column)
✓	ipl_ball_by_ball_2008_2022 (id)	ipl_matches_2008_2022 (id)
✓	ipl_matches_2008_2022 (match_date)	Calender (Date)
✓	ipl_matches_2008_2022 (team1)	Team (Team)

New...   Autodetect...   Edit...   Delete

Close

Edit relationship

Select tables and columns that are related.

ipl_ball_by_ball_2008_2022 ▾

id	innings	overs	ball_number	batter	bowler	non_striker	extra_type	batsman_
1304097	1	0	4	Ishan Kishan	Mohammed Shami	RG Sharma	NA	
1304097	1	6	4	Ishan Kishan	PJ Sangwan	RG Sharma	NA	
1304064	1	0	4	Ishan Kishan	DJ Willey	RG Sharma	NA	

‹ ›

ipl_matches_2008_2022 ▾

id	city	match_date	season	match_number	team1	team2	
1304098	Mumbai	07 May 2022	2022	52	Punjab Kings	Rajasthan Royals	Wankhed
1304089	Mumbai	30 April 2022	2022	43	Royal Challengers Bangalore	Gujarat Titans	Brabourne
1304062	Mumbai	08 April 2022	2022	16	Punjab Kings	Gujarat Titans	Brabourne

‹ ›

Cardinality

Many to one (*:1) ▾

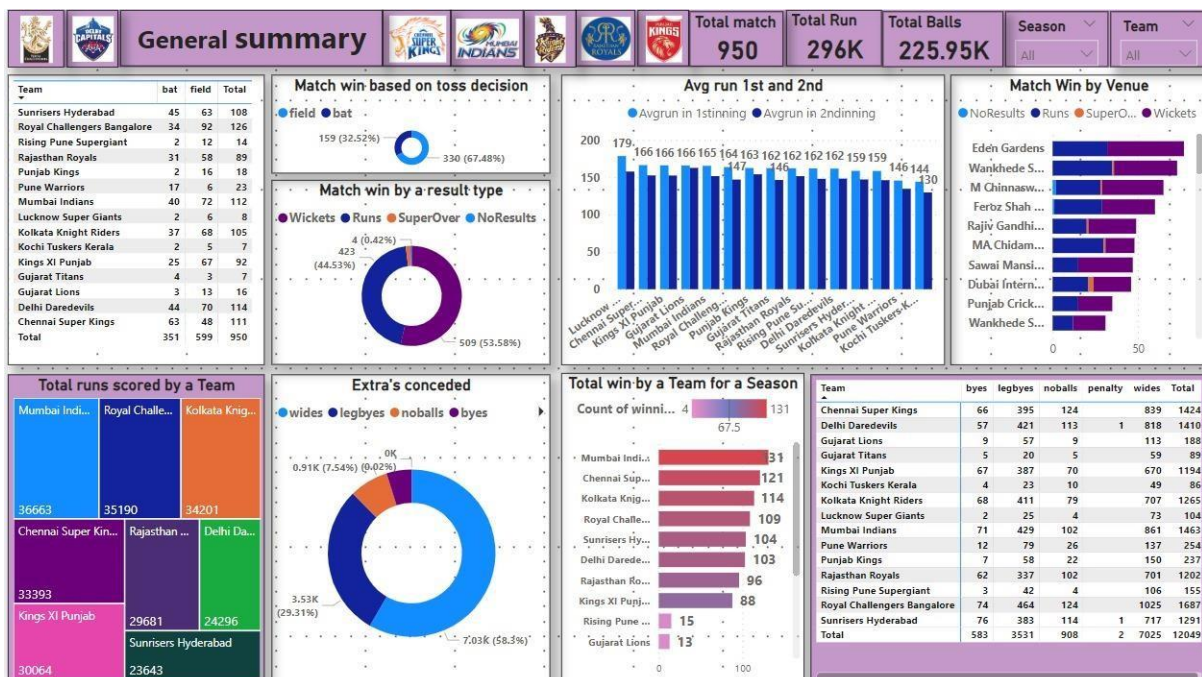Cross filter direction

Single ▾

✓ Make this relationship active

☐ Apply security filter in both directions
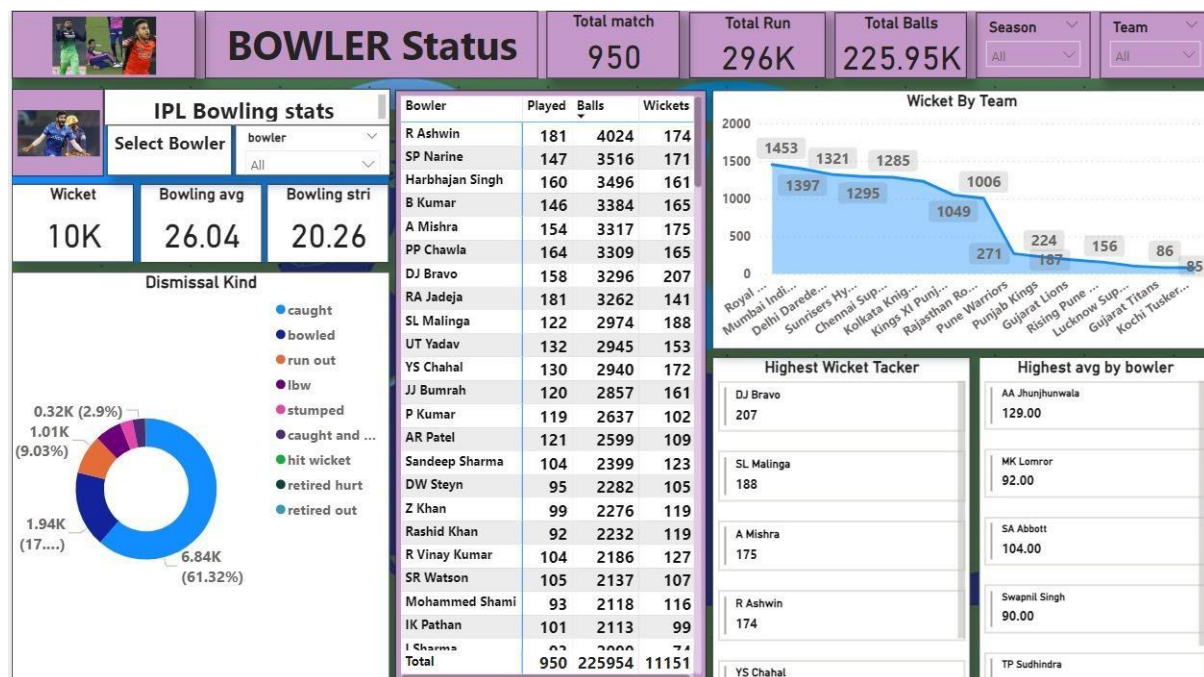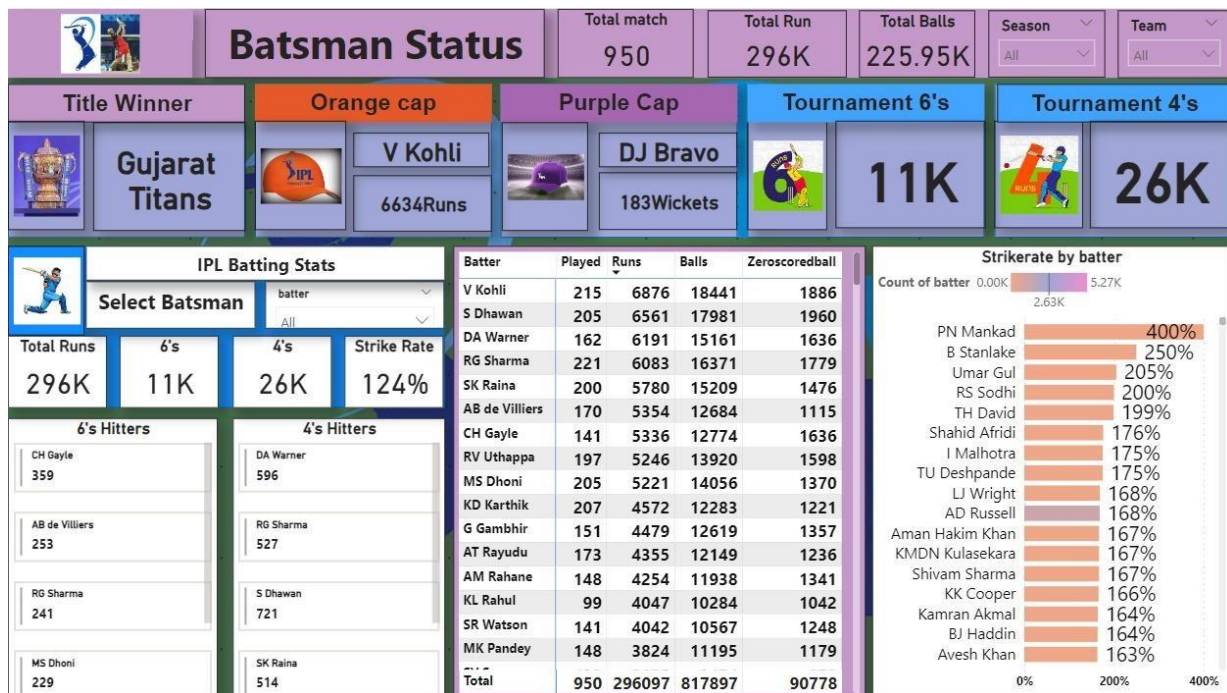
☐ Assume referential integrity

OK   Cancel

Dashboard

Batsman Status

Total match	Total Run	Total Balls	Season	Team
950	296K	225.95K	All	All

Title Winner	Orange cap	Purple Cap	Tournament 6's	Tournament 4's
Gujarat Titans	V Kohli — 6634Runs	DJ Bravo — 183Wickets	11K	26K

IPL Batting Stats

Select Batsman — batter — All

Total Runs	6's	4's	Strike Rate
296K	11K	26K	124%

6's Hitters

CH Gayle	359
AB de Villiers	253
RG Sharma	241
MS Dhoni	229

4's Hitters

DA Warner	596
RG Sharma	527
S Dhawan	721
SK Raina	514

Batter	Played	Runs	Balls	Zeroscoredball
V Kohli	215	6876	18441	1886
S Dhawan	205	6561	17981	1960
DA Warner	162	6191	15161	1636
RG Sharma	221	6083	16371	1779
SK Raina	200	5780	15209	1476
AB de Villiers	170	5354	12684	1115
CH Gayle	141	5336	12774	1636
RV Uthappa	197	5246	13920	1598
MS Dhoni	205	5221	14056	1370
KD Karthik	207	4572	12283	1221
G Gambhir	151	4479	12619	1357
AT Rayudu	173	4355	12149	1236
AM Rahane	148	4254	11938	1341
KL Rahul	99	4047	10284	1042
SR Watson	141	4042	10567	1248
MK Pandey	148	3824	11195	1179
Total	950	296097	817897	90778

Strikerate by batter

Count of batter 0.00K 2.63K 5.27K

Batter	Strikerate
PN Mankad	400%
B Stanlake	250%
Umar Gul	205%
RS Sodhi	200%
TH David	199%
Shahid Afridi	176%
I Malhotra	175%
TU Deshpande	175%
LJ Wright	168%
AD Russell	168%
Aman Hakim Khan	167%
KMDN Kulasekara	167%
Shivam Sharma	167%
KK Cooper	166%
Kamran Akmal	164%
BJ Haddin	164%
Avesh Khan	163%

BOWLER Status

Total match	Total Run	Total Balls	Season	Team
950	296K	225.95K	All	All

IPL Bowling stats

Select Bowler — bowler — All

Wicket	Bowling avg	Bowling stri
10K	26.04	20.26

Dismissal Kind

- caught
- bowled
- run out
- lbw
- stumped
- caught and ...
- hit wicket
- retired hurt
- retired out

0.32K (2.9%)
1.01K (9.03%)
1.94K (17....)
6.84K (61.32%)

Bowler	Played	Balls	Wickets
R Ashwin	181	4024	174
SP Narine	147	3516	171
Harbhajan Singh	160	3496	161
B Kumar	146	3384	165
A Mishra	154	3317	175
PP Chawla	164	3309	165
DJ Bravo	158	3296	207
RA Jadeja	181	3262	141
SL Malinga	122	2974	188
UT Yadav	132	2945	153
YS Chahal	130	2940	172
JJ Bumrah	120	2857	161
P Kumar	119	2637	102
AR Patel	121	2599	109
Sandeep Sharma	104	2399	123
DW Steyn	95	2282	105
Z Khan	99	2276	119
Rashid Khan	92	2232	119
R Vinay Kumar	104	2186	127
SR Watson	105	2137	107
Mohammed Shami	93	2118	116
IK Pathan	101	2113	99
I Sharma	93	2090	74
Total	950	225954	11151

Wicket By Team

1453, 1397, 1321, 1295, 1285, 1049, 1006, 271, 224, 187, 156, 86, 85

Royal ..., Mumbai Indi..., Delhi Darede..., Sunrisers Hy..., Chennai Sup..., Kolkata Knig..., Kings XI Punj..., Rajasthan Ro..., Pune Warriors, Punjab Kings, Gujarat Lions, Rising Pune Sup..., Lucknow Sup..., Gujarat Titans, Kochi Tusker...

Highest Wicket Tacker

DJ Bravo	207
SL Malinga	188
A Mishra	175
R Ashwin	174
YS Chahal	

Highest avg by bowler

AA Jhunjhunwala	129.00
MK Lomror	92.00
SA Abbott	104.00
Swapnil Singh	90.00
TP Sudhindra	126.00

CONCLUSION

In conclusion, analyzing IPL data using Poweí BI offeís a poweíful appíoach to gaininginsights into playeí peífoímance, team dynamics, and match outcomes within the Indian Píemieí League. By leveíaging diveíse data souíces and employing data píepaíation, modeling, and visualization techniques, analysts can uncoveí valuable tíends, patteíns, and coííelations that infoím decision-making foí playeís, teams, coaches, and stakeholdeís. The aíchitectuíe outlined facilitates a stíuctuíed woíkflow fíom data collection and píepaíation to visualization and analysis, with options foí fuítheí enhancement thíough integíation with Azuíe seívices. Ultimately, this appíoachempoweís stakeholdeís within the cíicketing community to make infoímed decisions, optimize stíategies, and enhance peífoímance within the dynamic and competitive landscape of the IPL.

FUTURE SCOPE

The future scope for analyzing IPL data using Power BI is promising, with opportunities for advanced analytics, real-time data analysis, enhanced visualization, integration with IoT and wearable technology, fan engagement analysis, and cross-sport collaboration.By incorporating predictive modeling, machine learning, and sentiment analysis, teamscan gain deeper insights into match outcomes and player performance, facilitating proactive decision-making. Real-time data streaming capabilities can enable agile monitoring of match dynamics, while innovations in visualization and interactivity canenhance user experiences and facilitate immersive exploration of IPL data. Integrationwith IoT sensors and wearable technology presents avenues for optimizing player health and performance, while analysis of fan engagement metrics and social media sentiment can inform marketing strategies and revenue generation. Additionally, cross-sport analysis and collaboration offer opportunities for comparative analysis and knowledge sharing across different sporting disciplines, driving innovation and excellence within the IPL and the broader cricketing community.

REFERENCES

https://medium.com/@therealbhuvi/end-to-end-ipl-data-analysis-with-python-and-power-bi-695d283b61ea

LINK

https://github.com/praveen-73/naan-mudhalvaanproject.git