

CRICKET DATA ANALYSIS USING PYTHON AND POWER BI
FOR DATA-DRIVEN DECISIONS

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CHAPTER1

INTRODUCTION

1.1 Introduction

Cricket is played worldwide, and it's a sport that requires a complex balance between skill and strategy. With different game formats such as T20, one-day series, Test matches, and different international and national level leagues, it has become very important to make data-driven decisions in cricket for better team performance. There is no doubt that the sport cricket is enriched in data. With every match played, we get loads of data, including statistics of the players, patterns of the pitch, weather conditions, and other insights that can be used to make beneficial insights to increase performance or strengthen the team. This project aims to do Cricket Data Analysis to form a team 11 in the given match scenarios: chasing a specific score or defending the score against a strong batting lineup. By using web scrapping, python libraries, and Power BI, the project will provide comprehensive insights and solutions for our required score against or forming our strong and desired team. The goal of the project is to fill the gap between traditional methods of team formations and to see how data science can turn traditional cricket strategies into robust data-driven decisions that would improve the performance of the team and lead to positive outcomes

1.2 Problem Background

Cricket is one of the most popular sports that can derive enormous amounts of data. The traditional method of forming a cricket team relies on the intrusiveness of the experts or past experiences. However, this traditional approach of forming a team mostly overlooks the vast amount of data available that can help form better data-driven decisions.

The management faces challenges in making up a team either for chasing a large total, needing bowlers to defend a low total, or just making a balanced team against certain odds. Cricket is also affected by weather and pitch conditions, which makes it highly unpredictable, with these sudden changes, it might be hard to rely on the traditional method of forming a team, and they may fail to adapt to these changes quickly. These challenges highlight that without proper analytical tools, teams rely on traditional methods that lead to poor decision-making, this project aims to overcome this and provide data-driven decisions, as there is an abundance of data available in cricket.

1.3 Problem Statement

In cricket, team selection is the main and important part. However, the traditional methods of forming a team can lead to subjective decisions resulting in bad outcomes or the poor performance of the team. Despite the vast amount of data available, there is a lack of analysis of that data that can recommend better team selection through the techniques of data analysis. The lack and absence of data-driven decisions limit the ability of the management or coaches to form a team according to given scenarios like weather conditions, the strengths and weaknesses of the opponents, and the format of the game. There is a visible need for Data Analysis on cricket data that uses advanced data analytics and machine learning models by processing the data, the player performance, and other major insights from the data to give the best possible data-driven solution for the formation of the team.

1.4 Research Question

1. How can cricket data be collected, processed, and used to effectively to get data-driven solutions?
2. What key metrics are the most important in getting useful insights for team formation?

3. How can visualization tools improve the interpretability of the data insights for the team management and coaches?
4. To what extent can Data-driven decisions improve the performance of the team as compared to the traditional method?

1.5 Aim and Objectives

The project aims to present a dashboard that performs data analysis techniques on the cricket data that will recommend data-driven solutions for team selection. By utilizing web scrapping to collect the data, advanced data analysis techniques, machine learning models, and Power BI visualization tools, the project will aim to provide robust data-driven solutions for team management to for a team to improve match outcomes in different scenarios. The objectives of this research are:

- (a) To collect and preprocess the cricket data from various sources that include insights and players statistics.
- (b) To analyze different metrics of the players like their strike rates, batting average, wicket-taking ability, and bowling economy to check their suitability for different matches.
- (c) To provide insights based on the match like batting order or bowling line or the placement of players in the field.
- (d) To provide visualization of the important insights gathered from the data using visualization tools, like Power BI.

1.6 Scope of Study

This cricket data analysis involves data analytics techniques, python, and data visualization tools such as Power BI to form data-based strategies for team formulation.

It includes data scrapping from different sources that include different important metrics of player performances like strike rates, bowling economy, match reports, wicket-taking or six-hitting abilities against different opponents, pitches, and weather conditions. The project will analyze individual player and team performance trends to give a recommended team suggestion for certain odds, like chasing a high total, defending a low score, and players according to the pitch. Moreover, a visual representation of the trends and insights using Power BI will give easy and understandable insights for the couches and team management to make better data-driven decisions.

1.7 Significance of Research

This research on cricket is important as it highlights the need for data-driven decisions in the world of cricket, where choices made through strategy bring different outcomes. The study introduces an innovative approach for selecting team members and forming a team based on different important metrics, eliminating the subjectiveness and decisions made on intuitiveness. This project's ability to analyze huge datasets and figure out important metrics like strike rate, bowling economy, six-hitting capabilities, and performance of players against different balling techniques and to suggest players against different odds.

This research adds more to the field of sports, indicating how technology can add more and transform traditional methods in sports into robust data-driven decisions. Besides cricket, this project can lay the ground for every other sport for better outcomes. It focuses on performance optimization, better decision-making, and strategic planning, contributing to modern sports.