Business Case: Data-Driven Framework for Cricket Player Performance Analysis

Organization and department

As part of the Data Analytics for Business course at St. Clair College, we have embarked on a project to address the prevalent issue of biases in player selection, particularly within the sport of cricket. It has been observed that biases in player selection often arise from personal preferences, peer pressure, or the influence of groupthink, which can lead to unfair or suboptimal decisions. This problem is prevalent in many sports, including cricket, where decisions about team composition can be influenced by factors beyond just performance metrics. To tackle this issue, our goal is to develop a model that eliminates bias and provides an objective, data-driven method for selecting players.

Nowadays, many teams and coaches rely on subjective judgment, which may overlook emerging talents or favoring players based on personal connections rather than actual performance. By developing an analytical model that assesses players based on a comprehensive set of performance metrics such as batting and bowling statistics, fielding efficiency, and consistency, we aim to establish a transparent, fair, and equitable process for player selection. This model will empower coaches and managers to make decisions that are rooted in data, ensuring that the best talent is always prioritized without being influenced by external pressures.

Requirements and Justification

In cricket, team selection often hinges on personal judgment, individual preferences, and peer influence, which can lead to biased decisions and hinder the growth of emerging players. As a result, there is a clear need for a more objective, data-driven approach to ensure that the best players are selected based on their performance metrics rather than external factors. Hence, we suggest the development of an analytical model that evaluates player performance using comprehensive statistics such as batting and bowling averages, strike rates, fielding efficiency, and overall consistency.

The justification for this project lies in the significance of fair and transparent player selection processes in forming balanced, high-performing teams. Current methods often miss out on potential talent and may favor players based on personal relationships or other biases. By implementing this model, coaches and

managers will be able to make informed, data-driven decisions that emphasize skill and consistency, ultimately leading to better team performance and player development.

Developing the model will require technical expertise in data analytics and machine learning. The project will involve collecting and processing player performance data, building the analytical model, and testing its effectiveness. The team will also need to collaborate with cricket experts to ensure the model accurately captures the key factors that lead to player success. Additionally, ongoing maintenance and updates will be necessary to keep the model relevant and precise as player data evolves over time.

Functional Requirements

- The model must include a user interface where coaches and managers can enter player performance data, such as batting, bowling, and fielding statistics as input data.
- The model should categorize players based on their performance metrics, ensuring that players are evaluated based on objective data rather than personal opinion.
- It must contain a selection algorithm that ranks players based on their statistics and identifies the best performers for specific team roles.
- The system must enable users to generate detailed player performance reports for coaches and managersto review.
- It also needs a feature to compare player performance over different time periods (e.g., season, career) to track their development and consistency.
- The model should allow data and reports to export into common formats like CSV or PDF for easy sharing and analysis.
- A feedback mechanism should be included, allowing coaches to manually adjust player rankings or override system suggestions while keeping a record of changes.
- The system should include a secure login and user registration page, allowing authorized users such as coaches and managers to access and modify the data.
- The system must allow coaches and managers to manually enter data or integrate with existing cricket performance tracking systems for automated data entry.

Non-Functional Requirements

- The system needs to be available 24/7 to ensure that coaches and managers can retrieve player data and generate reports whenever they need.
- All data transactions, including player statistics and personal information, must be encrypted using Secure Socket Layer (SSL) to ensure secure communication.
- A robust database should be used to store player performance data (batting, bowling, fielding statistics) and related information, ensuring the database can handle large volumes of data efficiently.
- A backup mechanism should be implemented to regularly back up data and ensure quick recovery in case of system failure or data loss.
- The system should automatically log out users after a specified period of inactivity to prevent unauthorized access if a user leaves the system unattended.
- The web applications must be compatible with all modern browsers (Chrome, Firefox, Safari, Edge) and major mobile operating systems (iOS, Android), ensuring accessibility for all users.
- The system should perform efficiently even when handling large datasets, ensuring that data entry, report generation, and player ranking updates are completed within a reasonable time frame (under 3 seconds).
- The system should ensure compliance with data protection regulations (such as GDPR) to protect the privacy and security of user and player data.

Solution and cost estimation

Resources	Cost
Web Application Development	50,000USD
Database Setup & Management	15,000 USD
Server Installation & Hosting	10,000 USD
AI/ML-Based Player Ranking Algorithm	20,000 USD
UI/UX Design & Development	12,000 USD
Integration with Existing Cricket Data Systems	15,000 USD

Security & Encryption (SSL, Authentication)	8,000 USD
Testing & Quality Assurance	20,000 USD
Training for Coaches & Managers	10,000 USD
Implementation & Deployment	10,000 USD
Maintenance & Support (1st Year)	15,000 USD
Total Estimated Cost = $185,000 USD	

Benefits of investing in this solution

- Saves time and effort by automating player data collection, ranking, and reporting.
- Helps in better team selection using real performance stats instead of opinions.
- Tracks player's progress over multiple seasons to identify consistency and improvement.
- Insights from performance reports help in planning game strategies and training sessions.
- Easy access anytime, anywhere
- Integrates with existing cricket tracking tools.
- Keeps data safe by Secure login and encryption protect player information.
- The audit trail keeps track of changes made by users, ensuring accountability and fairness in player selection.