

T20 CRICKET TEAM SELECTOR

MANAGEMENT REPORT

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Introduction

Team selection is a constant conundrum in the sporting world. Knowing what combination of players give a team the best chance of winning is almost as critical as how the players perform. Sporting teams ideally want to give themselves the best chance of winning when selecting a team, however due to human bias and lack of insight this may sometimes not be the case. Team selection is therefore critical. However, the decision is that much more important when it comes onto cricket. This is so, as unlike other sports, cricket does not allow for substitutions unless serious injury has occurred, so the team that is selected is the team that you must rely on for the duration of the match.

This project intends to remove human bias as well as optimize the team selection process as best as possible. In doing so, the process will be separated into two parts:

1. Finding the best team composition (how many of each type of player the team should have).
2. Selecting the players that are most fit to occupy these positions given the opposition

Objective

The aim of this project is to assist in advancing the T20 format of cricket both performance-wise and business-wise. As such, there are two main objectives for this research.

1. Advance Performance by Building a Team Selection Optimizer

- Use match level data (Team Compositions) and player level data (statistics of each player in the selection pool) in order to develop a model that will generate the optimal team.

The main benefit of this Team Selection Optimizer is that team selection will become easier as well as the fact that human bias is taken out of team selection. Hence, players will be given fair and equal opportunities. An additional benefit is that the performance of the teams should increase as it is expected that the most efficient composition of teams will be playing against each other.

NB: The makeup of a balanced cricket team must be kept intact. That is, the team must include a wicketkeeper and at least five (5) players considered to be bowlers.

Method

To help achieve the objective, the first thing that was done was to take data from all men's T20 cricket matches in history. From this data, for each match it was possible to get the team composition for each team involved in a match (home and away team) as well as the result of the match. Team composition comprises of how many types of bowlers, batters and player roles were present in each team.

For example, a team composition may look like this:

Right Hand Batter: 4

Left Hand Batter: 7

No Batting Style: 0

Right Arm Fast: 1

Left Arm Fast: 2

Right Arm Spinner: 0

Left Arm Spinner: 2

Right Arm Wrist Spinner: 1

Left Arm Wrist Spinner: 0

No Bowling Style: 5

Opening Batter: 2

Top Order Batter: 1

Middle Order Batter: 1

Batting Allrounder: 1

Allrounder: 1

Bowling Allrounder: 2

Bowler: 2

Wicketkeeper: 1

NB: Batting Styles, Bowling Styles and Player Roles all add to 11 each.

Once team compositions and match results were stored, it was used to look what happened in the past and use it to be able to predict what will happen given a combination of team combinations, taking where the match is being played into consideration. These matches, based on the model that was created can be predicted correctly at an accuracy rate of 61%. That is, the model was able to predict which team won correct 61 out of 100 times.

Now that the model was created, it was time to select a team from a selection pool. How this is done is by taking all possible teams that the selection pool is able of making (each team must have 5 players that can bowl, 4 specialist batters and a wicketkeeper). Each of these teams are passed through the model and the composition that gives the highest chance of winning. Once this composition is found, player statistics then come into play. The composition is filled out with players that have the best batting index, and the recommended playing 11 is then displayed.

How To Use Tool

Now, a tool was created to integrate the model that was created and user interaction. The use of this tool is simple to use and has three (3) steps. Firstly, the player IDs of the players in the selection pool are entered and once completed, the squad available will be displayed on the screen. Next, the user will be required to enter the player IDs of the expected 11 of the opposition similarly to how the selection pool players was selected. Lastly, select the country/region of where the match will be played. Once all the inputs are entered correctly, the program will start running and the output will show the composition of team recommended and the percentage chance of winning as well as the recommended playing 11 for the user.

Below is an example of the outputs:

Recommended Team Composition

Recommended Team Composition that gives a 55.3 % chance of victory is as follows...

Number of Left Hand Batters: 4

Number of Right Hand Batters: 7

Number of No Bat: 0

Number of Left Arm Wrist Spinners: 0

Number of Right Arm Wrist Spinners: 1

Number of Left Arm Fast Bowlers: 1

Number of Right Arm Fast Bowlers: 5

Number of Left Arm Spinners: 0

Number of Right Arm Spinners: 2

Number of No Bowl: 2

Number of Top Order Batters: 3

Number of Opening Batters: 0

Number of Middle Order Batters: 1

Number of Batting Allrounders: 0

Number of Allrounders: 1

Number of Bowling Allrounders: 2

Number of Bowlers: 3

Selection Process

There were 6 possible teams that could have been selected with this composition!

The team that was chosen, with the highest team batting index of 546.81 is...

	Full Name	Player Role	Batting Style	Bowling Style
0	Brandon Alexander King	Top order Batter	Right hand Bat	NoBowl
1	Nicholas Pooran	Wicketkeeper	Left hand Bat	Right Arm Spinner
2	Shamarh Shaqad Joshua Brooks	Top order Batter	Right hand Bat	Right Arm Spinner
3	Shimron Odilon Hetmyer	Top order Batter	Left hand Bat	NoBowl
4	Jason Omar Holder	Bowling Allrounder	Right hand Bat	Right Arm Fast
5	Rovman Powell	Middle order Batter	Right hand Bat	Right Arm Fast
6	Alzarri Shaheim Joseph	Bowler	Right hand Bat	Right Arm Fast
7	Obed Christopher McCoy	Bowler	Left hand Bat	Left Arm Fast
8	Romario Shepherd	Bowling Allrounder	Right hand Bat	Right Arm Fast
9	Keemo Mandela Angus Paul	Allrounder	Right hand Bat	Right Arm Fast
10	Hayden Rashidi Walsh	Bowler	Left hand Bat	Right Arm Wrist Spinner

Benefits

As previously stated, this process will add a few benefits over the typical, human team selection process.

1. Reduce Human Bias

Naturally, with human nature comes relationships and friendships. There is no difference when it comes on to a cricket team environment. Thus, leaving team selection up to humans may leave a team susceptible to human bias. The use of the team selector will reduce this, as it uses historical data as well as statistics only to recommend a team.

2. Improve Team Performance

This team selector tool should also look to improve team performance as it should produce the most competitive team available given the opposition and match location. Hence, this should allow results to improve once being used.

Limitations

1. The recent form of players is not taken into consideration, which is one additional variable that may affect team selection. With additional time, this would have been a potential variable to investigate.
2. Some players in this data set were not popular enough to have their player batting style, bowling styles and player roles filled out.
3. Does not account for if the quality of players in the selection pool is widely skewed (the players at the bottom end of quality are far off the players at the top especially).