International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 04 Issue: 03 | March-2017 www.irjet.net p-ISSN: 2395-0072

Analysis on Attributes Deciding Cricket Winning

Swetha [1], Saravanan.KN[2]

[1]*Student, Department of Computer Science, Christ University, Bengaluru, Karnataka, India.*

[2]*Professor, Department of Computer Science, Christ University, Bengaluru, Karnataka, India.*

Abstract - *Winning is the goal of any sport. Cricket is one the most watched sport now a days. Winning in Cricket depends on various factors like home crowd advantage, performances in the past, experience in the match, performance at the specific venue, performance against the specific team and the current form of the team and the player. During the past few years lot of work and research papers have been published which measure the player performance and their winning predictions. This article briefs about the factors that cricket game depends on and discuss about few other research papers that predicted the cricket wining.*

Key Words: Cricket, One Day International cricket, Test cricket, Factors for Cricket winning, Performance of Cricket Matches.

1.INTRODUCTION

Cricket is one of the most popular and unpredictable game. Till the very last moment it is difficult to predict the game. Due to its extensive popularity, media has shown its full coverage to the issues related to cricket.

Cricket [1] is played in three formats namely Twenty over (T20), One day international (ODI) and Test.

A Twenty over game is the shortest format in cricket. It includes two teams, batting for a maximum of 20 overs, each has a single innings. It is claimed to have resulted as an "explosive" form of cricket and more athletic than other two formats.

One Day International cricket match is of limited overs, played between two international teams where each team must face fixed number of overs, usually 50.

Test cricket format is the longest form compared to Twenty over and ODI format and is also considered its highest standard. It is played between national representative teams selected from the best players stated as "Test Status", as determined by the International Cricket Council(ICC). A standard test cricket day consists of 3 sessions of 2 hours each.

From the 16th century to first official test cricket match on 1877 to first ODI cricket World Cup in 1975 with 60 overs match to 50 overs match world in 1987, Cricket has changed a lot.

Introduction of Twenty format game cricket gave birth to franchise league in many countries. Indian Premier League(IPL) in India is the most watched and expensive cricket league. IPL has attracted a lot of people and investors as it fast money, twenty over format and pure entertainment. Other popular franchise leagues are Bangladesh Premier League(BPL), Big Bash and Caribbean Premier League(CPL).

2. FACTORS

Cricket winning can be predicted like all other games. We need to find the best attributes or factors that influence the match outcome. The result of a cricket match depends on more of in-game and pre-game attributes. Pre-game attributes like Pitch, Team Strength, Weather, Venue etc. and in-game attributed like run rate, total run, strike rate, wickets in hand etc. influence a match result predominantly. Below are the attributes that decide outcome of the cricket match:

Pitch: Unlike other sports, cricket stadium's size and shape is not fixed except the dimensions of the inner circle and pitch which are 30 yards and 22 yards respectively. Outfield variations and pitch can have a substantiate effect on bowling and batting. The spin of the ball, seam movement and the bounce depends on the nature of the pitch.

It depends on how wet is the pitch. The more wet the pitch, the slower it will play. On the off chance that it is drying out, those balls will change significantly, yet all it will get less difficult those drier it gets.

It additionally relies on upon how much grass is on the pitch. A green top pitch with a greater amount of grass will have a greater amount of crease development, particularly if the pitch is hard. It will be troublesome for spinners to turn the ball. Pitches with no grass tend to help spinners, if dry and dusty (they tend to be simpler to bat at first before they have decayed). It also depends on how hard is the pitch. Hard pitches will have high rate of bounce and the ball will come onto the bat more quickly. They give and equal chance to batsmen and bowlers.

Green pitches tend to get easier to bat on. Wickets can get significantly more dry or wet (on the off chance that it downpours). They might start to break up if they are soft (which would help the bowlers). Bowl first, if it is going to get easier to bat. Bat first, if it is going to get harder.

After rain, the green pitch becomes soft and the ball bounces more erratically, making it tough for the batsman to bat and as mentioned in [3], in cricket matches where the teams batting first have their innings curtailed, the Duckworth Lewis method tends to prop up their totals, this adds extra runs that the team batting first did not even make. Thus, batting first may be a lot favorable in rain affected games.

Toss: According to cricket analysts, there is sure measure of advantage for a team if it wins the toss. This might not be deciding factor in a match but it would give the team the opportunity of choosing "what they want".

Team strength: The team strength should be balanced for winning a match. Captainship in a team is also a deciding factor.

Past Records: The past team performances can be considered to predict the outcome of a match. History of games at that venue how did the teams perform, performance at that specific venue, Performance against the specific opposition and experience at the specific venue. For example, India is playing against New Zealand, in Melbourne and India scores say 150 runs in 25 overs with the loss of 3 wickets, the analysis should be for performance of India in last 25 overs when 7 wickets are in hand, then overall performance of India against New Zealand in general, India's performance in Melbourne and the usual performance in Melbourne by any average team.

Home Ground Advantage: This is another attribute which determines the winner in the match. If you are playing in the home ground conditions everything would be in your hands like climatic factors, pitch nature and major role is played by the home crowd. Home Team gets better motivation.

Current Performance: The current form (performances and scores) of the team and as an individual player is a

deciding factor in a match. Current form is the magnitude of confidence of the players. The performance of the batting depends on the average score of the batting. Run rate is defined as the number of runs scored per the number of overs bowled. However, run rate is considered as criteria for calculating the final score of the match.

Weather: The game is also affected by the atmospheric conditions such as altitude and weather. So, weather can also be a deciding factor. The Duckworth-Lewis method was proposed by Frank Duckworth and Tony Lewis. ICC adopted D/L method in the year 1999 to address the issue of delayed ODI cricket matches due to interruptions such as weather conditions, floodlight failures, crowd problems and poor light. Depending on these set of variations, a venue may be batsman friendly or bowler friendly.

There were several research works done in cricket. Ananda Bandulasiri [4] has written an article on predicting the winner in One Day International Cricket match which specifies the importance of "home ground" advantage and explains how Duckworth Lewis method is most favorable decision to the interrupted matches. The comparison of the accuracy of the D/L method is done by Receiver Operating Characteristics (ROC) curves. In this paper, the author used statistical methods to find all the wining attributes for an ODI match.

Tejinder Singh, Vishal Singla and Parteek Bhatia put forward a model [5] that has two methods, first method predicts the score of first innings based on current run rate and also considers number of wickets fallen, batting team and venue of the match. The second method predicts the outcome of the match in the second innings considers the same attributes as of the first method along with the target given to the batting team. Implementation of the two methods has been done using Linear Regression Classifier and Naïve Bayes Classifier for first innings and second innings respectively. The accuracy of the Naïve Bayes for predicting the outcome of the match, goes from 70% (initially) to 91% as the match progresses.

Amal Kaluarachchi and Aparna S. Varde [6] have developed a software tool called CricAI. This is based on artificial intelligence techniques, specifically Bayesian classifiers in machine learning, to predict how these factors affect the outcome of an ODI cricket match also taking day/day-night game into account. They also used association rules and analyzed the factors contributing to a win. But they do not estimate the final score of the innings.

Viraj and Sourabh [7] [2] presented a detailed evaluation of the Duckworth Lewis Method which is used to predict the target scores in the matches when one or both the teams have had their innings shortened due to interruptions such as weather conditions or poor visibility after match has begun.

Likewise, Raj and Padma [8] analyzed the Indian cricket team's ODI matches data and mine association rules on the attributes namely home or away game, toss, batting first or second and the match result.

Swartz et al [9] use Markov Chain Monte Carlo methods to simulate ball by ball outcome of a cricket match using a Bayesian Latent variable model. Depending on the ability of current batsman, bowler and game situation (number of wickets lost and number of balls bowled), the outcome of

the next ball had been predicted.

Bailey and Clarke organized a study to predict the outcome in ODI cricket match while the game is still in progress [10]. This study was performed using statistical models. The interesting fact about this article is that the authors proved statistically how the match resources (number of overs and batsmen left) affect the outcome of the match. However, they deal with analysis during the current game. They do not predict in advance the chances of winning a new game based on previous matches.

Akhtar and Scarf [11] used multinomial logistic regression in their work on predicting an outcome of a test matches played between two teams.

Choudhury et al. [12] used Artificial Neural Network to predict result of a multi team one day cricket match using Duckworth-Lewis method, depending on the past 10 years' data. They used training set to model the data in neural network.

Chedzoy studied the problem of umpiring errors in cricket matches [13]. An umpire is the referee in a cricket match. This research focuses on the decisions taken by the umpire during the match and how they affect the outcome of the match. This study was based on a statistical approach. Moreover, it focused only on one criteria of the game, the effect of umpire's decisions.

3. CONCLUSIONS

In this article, I have addressed the factors or attributes that Cricket match depends on. Also, have mentioned few of the other articles where cricket winning has been predicted on considering the pre-game attributes and in-game attributes.

REFERENCES

[1] http://en.wikipedia.org/wiki/Cricket

[2] http://www.duckworth-lewis.com/mags/dlmethod/

[3] http://www.espncricinfo.com/

[4] Ananda Bandulasiri, "Predicting the Winner in One Day International Cricket" Journal of Mathematical Sciences & Mathematics Education.

[5] Tejinder Singh, Vishal Singla and Parteek Bhatia, "Score and Winning Prediction in Cricket through Data Mining" 8 October 2015.

[6] Amal Kaluarachchi and Aparna S Varde, "CricAI: A classification based tool to predict the outcome in ODI cricket".

[7] Viraj Phanse, Sourabh Deorah, "Evaluation & extension to the Duckworth Lewis method: A dual application of data mining techniques".

[8] K. Raj and P. Padma. Application of association rule mining: A case study on team India. In International Conference on Computer Communication and Informatics (ICCCI), pages 1–6, 2013.

[9] T. B. Swartz, P. S. Gill, and S. Muthukumarana. Modelling and simulation for one-day cricket. Canadian Journal of Statistics.

[10] M. Bailey and S. R. Clarke. "Predicting the match outcome in one-day international cricket matches, while the game is in progress". Journal of sports Science and Medicine.

[11] Sohail Akhtar and Philip Scarf, "An analysis of strategy in the first three innings in test cricket: declaration and the follow-on ".

[12] D. Roy Choudhury, Preeti Bhargava, Reena and Samta Kain, "Use of Artificial Neural Networks for Predicting the Outcome of Cricket Tournaments ".

[13] O.B. "Issue of the effect of umpiring errors in cricket Statistician",1997.