

A STATISTICAL ANALYSIS FOR PREDICTING THE TOP PERFORMING PLAYERS DURING IPL 2020

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ABSTRACT. Cricket is an immensely popular sport around the world. Every day forms of cricketing ethnicity were invisible in every walk of real life and were well represented through diverse forms of media in the wake of the world cup. Analysis of cricket players based on their performance is always a complicated task because of the interrelated character of the variables used to enumerate contributions to the team. Lack of precision of current methods, due to viable confidentiality, creates a necessity for new and transparent evaluative methods. In this paper, the performance of players in the recent international matches, domestic competitions around the globe is discussed and predicting the top performers during IPL 2020 that can be easily adapted to other team sports.

1. Introduction

1.1. CRICKET. Cricket is a bat-and-ball game played between two teams of eleven players on a cricket field, at the centre of which is a rectangular 22-yard-long pitch with a wicket (a set of three wooden stumps) at each end. One team bats, attempting to score as many runs as possible, while their opponent field. Each phase of play is called an innings. After either ten batsmen have been dismissed or a fixed number of overs have been completed, the innings ends and the two teams then swap over roles. The winning team is the one that scores the most runs, including any extras gained, during their innings.

1.2. INDIAN PREMIER LEAGUE. The Indian Premier League (IPL) is a professional Twenty20 cricket league in India contested during March/April and May of every year by eight teams representing eight different cities in India. The league was founded by the Board of Control for Cricket in India (BCCI) in 2008. On 13 September 2007, the BCCI announced the launch of a franchise-based Twenty20 cricket competition called Indian Premier League whose first season was slated to start in April 2008, on a "high-profile ceremony" in New Delhi. The IPL is the most-attended cricket league in the world and in 2014 ranked sixth by average attendance among all sports leagues.

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1.3. IPL 2020. The 2020 Indian Premier League, also known as IPL 13 and officially known as Vivo IPL, will be the thirteenth season of the IPL. Mumbai Indians are the defending champions and also the most successful team with 4 titles with the next being Chennai Super Kings with 3 titles to their name. The auction for this year happened on 19th December 2019 with a pre and post transfer window.

2. REVIEW OF LITERATURE

The list of literature studies on performance analysis of cricket players as given below:

- Bennet (1998, pp. 93-95) discusses on the performance of players.
- Borooah and Mangan (2010) evaluates the remedial measures to key issues related to batsmen for test matches.
- Van Staden (2009) describes the comparing bowlers, batsmen and all-rounders using graphical method.
- Lakkaraju and Sethi (2012) discusses the application of Sabermetrics-style principals to the game of cricket.
- Ananda et.al (2013) provides the technique of Principal Component Analysis used in the performance analysis of players in T-20 World cup 2012.

Various problems in cricket has been discussed in Allsopp Clarke (2004), Amin Sharma (2014), Duckworth Lewis (2004), Fernando et al. (2013), Lemmer (2013, 2014), McHale Asif (2013), Norton Phatarfod (2008), Silvaa at al. (2015), Swartz et al. (2006) and Wright (2014), Agarwal and Ganesh (2020).

3. METHODOLOGY

3.1. PRINCIPAL COMPONENT ANALYSIS. The concept of Principal Component Analysis (PCA) are explained in detail in the books of

- Practical Guide To Principal Component Methods in R by Kassambara (2017)
- Generalized Principal Component Analysis by Vidal et.al (2005)
- Applied Multivariate Statistical Analysis by Johnson Wichern (2002) provides an example in which principal component analysis is used with sports data.

Principal component analysis (PCA) is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. The number of principal components is less than or equal to the number of original variables. This transformation is defined in such a way that the first principal component has the largest possible variance (that is, accounts for as much of the variability in the data as possible), and each succeeding component in turn has the highest variance possible under the constraint that it is orthogonal to the preceding components. The resulting vectors are an uncorrelated orthogonal basis set. PCA is sensitive to the relative scaling of the original variables.

3.2. FIRST PRINCIPAL COMPONENT. If the first principal component incarcerates a significant percentage of the total variation in the observations, it can perhaps be utilized to discriminate between the k-vectors. Definitely, if T1 reports for most of the variation observed in the data, then there is a superior reason to regard it as that it can effectively be used for ranking purposes. For this reason, we call this procedure the First Principal Component (FPC) ranking technique. To carry out this method, it is standard to use the correlation matrix as an alternative of the variance-covariance matrix when the measurement units for the components of the data vector are mostly unrelated. For this reason, the correlation matrix is used in this analysis.

4. DATA

4.1. DATA COLLECTION. For the analysis, we considered various components like data on all IPLs for batting, bowling, team records and the particular segment wise performance of players. Details from these matches can be found via the Archive link at the following websites (<http://www.espnricinfo.com><https://chennai.cricket-21.com/SHDV3>). Since it is a tournament that has more than 10 years history, retired and unsold players will be featuring to make the data balanced.

4.2. DATA DESCRIPTION.

- (1) Inns - The number of innings batted/bowled by the player
- (2) Runs- The runs aggregated by the player
- (3) Batting Average- The average runs scored by a player in total dismissed innings
- (4) Batting SR- The number of runs struck per 100 deliveries
- (5) 50+s- The number of 50+ scores scored by the player
- (6) BPB- The average number of balls taken to hit a boundary
- (7) Boundary % - The percentage of runs of a player scored in boundary
- (8) Dot %- The percentage of dot balls faced by a batsman
- (9) Wickets- The number of wickets taken by bowler
- (10) Bowling Average- The average number of runs conceded for picking a wicket
- (11) Bowling SR- The average number of deliveries taken for a wicket
- (12) Economy- The average number of runs conceded per over (6 balls)
- (13) Dot %- The percentage of dot balls bowled by a bowler
- (14) Control %- The percentage of deliveries that the batsman missed of the particular bowler
- (15) RR- The average run rate scored by the team.
- (16) Win %- The percentage of wins acquired by the team

5. ANALYSIS

5.1. IPL BATSMEN. Top batsmen with highest aggregate in the IPL, their performance against a particular opposition, their records in T20s in India and their aggregate in the powerplay and death overs were integrated in each investigation, so as to total batsmen include this list. For every batsman we gathered (6x

1) column vectors of the structure $X = (\text{Innings, Runs, Ave, SR, 50+, Boun\%})'$ and with that, we calculated the sample correlation matrix with SPSS 20.0. After that, we got hold of all eigen values and linked eigenvectors for the correlation matrix and recognized it as the leading eigen value, b for each set of data. The latent value was the largest eigen value and SPSS 20.0 accounts that the first principal component $P1=e^1 X$ accounts for maximum of the total variability. Thus, it is liable to contemplate on just the FPC, as it reports for a considerable segment of the entire variability. Consequently, we select to rank the batsmen based on their individual scores generated by the FPC computation. Table 5.1.1 provides the top 15 FPC-rankings for the top batsmen among the top batsmen in IPL along with their leading runs rankings, Table 5.1.2 provides the top 15 FPC-rankings for the top batsmen against oppositions along with their leading runs rankings, Table 5.1.3 gives the top 15 FPC-rankings for the top batsmen's performance in India among the top batsmen along with their leading runs rankings, Table 5.1.4 and 5.1.5 gives the top performing players during powerplay and death overs in T20s along with the leading runs scored in that phase respectively.

TABLE 1. Best Batsmen in IPL (Min 10 Inns and 500 runs)

Player	Inns	Runs	SR	50+s	Rank
Virat Kohli	169	5412	131.6	41	1
Suresh Raina	189	5368	137.1	39	2
David Warner	126	4706	142.4	48	4
AB de Villiers	142	4395	151.2	36	9
Chris Gayle	124	4484	151	34	6
Rohit Sharma	183	4898	130.8	37	3
MS Dhoni	170	4432	137.8	23	7
Gautam Gambhir	152	4217	123.9	36	10
Shikhar Dhawan	158	4579	124.8	37	5
Robin Uthappa	170	4411	130.5	24	8
Ajinkya Rahane	132	3820	121.9	29	11
Shane Watson	130	3575	139.5	23	13
Dinesh Karthik	163	3654	129.8	18	12
Yusuf Pathan	154	3204	143	14	15
Ambati Rayudu	140	3300	126	19	14

Considering all 12 seasons of the IPL, the FPC and the normal rankings don't differ that much with Kohli and Raina occupying the top 2 slots. Only Gambhir(retired) and Y.Pathan (unsold) are the players missing and hence the top batsmen will be again from this group. If we take against a particular opposition, Warner, Raina and Rohit Sharma feature thrice in the top 15 FPC rankings and Kings XI Punjab are the most receiving team with 5 players scoring more runs against them. In T20s in India, Virat, Raina and Rohit seal the first three spots in either rankings and only three foreign players feature in the top 15. KL Rahul is a notable player since he is only 23rd in the leading run scorer list but has made it in the FPC cutoff which is due to the efficient performance in fewer innings. The

TABLE 2. Best Batsmen vs Opposition in IPL (Min 5 Innings)

Player	Opponent	Inns	Runs	SR	50+s	Rank
David Warner	Kings XI Punjab	17	819	142.2	10	4
Chris Gayle	Kings XI Punjab	16	797	174.8	8	8
Virat Kohli	Delhi Daredevils	20	825	138.9	8	2
Suresh Raina	Mumbai Indians	32	818	140.8	7	6
Rohit Sharma	Kolkata Knight Riders	25	824	133.8	6	3
Ajinkya Rahane	Delhi Daredevils	18	784	133.3	7	10
David Warner	Kolkata Knight Riders	21	829	147.8	6	1
David Warner	Royal Challengers Bangalore	15	669	165.2	8	19
AB de Villiers	Kings XI Punjab	19	680	160.8	7	17
Suresh Raina	Kings XI Punjab	23	814	151.6	5	7
Rohit Sharma	Royal Challengers Bangalore	25	689	137.3	7	16
Rohit Sharma	Chennai Super Kings	27	705	125	7	15
Gautam Gambhir	Kings XI Punjab	23	730	123.5	7	13
MS Dhoni	Royal Challengers Bangalore	25	794	143.6	4	9

TABLE 3. Best Batsmen in T20s in India (Min 20 Inns and 500 runs)

Player	Inns	Runs	SR	50+s	Rank
Virat Kohli	197	6671	136.6	52	1
Suresh Raina	226	6328	137.9	44	2
Rohit Sharma	222	6137	135.7	44	3
Shikhar Dhawan	208	6115	123.1	48	4
David Warner	131	4963	145.5	48	8
Chris Gayle	126	4663	154.3	37	10
Robin Uthappa	215	5977	135.3	34	5
Gautam Gambhir	194	5328	122.8	47	6
AB de Villiers	136	4205	156.4	35	15
MS Dhoni	201	5053	138.6	24	7
Dinesh Karthik	214	4871	131.9	26	9
Yusuf Pathan	207	4332	139.7	21	14
Ambati Rayudu	196	4509	123.9	26	11
KL Rahul	95	3246	139.8	31	23
Ajinkya Rahane	161	4336	120.2	31	13

other important aspect of T20 batting is the way of starting the innings and the ability to finish off highly. In the powerplay phase, Chris Gayle is clearly dominant as he is the first in both the tables and the less run scored (ranked 37th) yet good FPC ranked (13th) player is Sunil Narine who has the ability to strike well in the PP. If we consider the death batting, the Windies Trio of Pollard, Russell and Dwayne Bravo dominate the list although Bravo is ranked 9th in normal rankings. Among Indians, Dhoni is the only player featuring in the top 15 FPC rankings and is rightly regarded as the best finisher.

TABLE 4. Best Batsmen in Powerplay in T20s (Min 30 Inns and 500 runs)

Player	Inns	Runs	Avg	SR	Bdry %	Dot %	Rank
Chris Gayle	203	3583	31.71	133.6	80.8	54.2	1
Brendon McCullum	159	2359	26.81	137.1	74.7	47.7	3
Colin Munro	143	2348	33.07	147.9	74.3	43.2	4
Aaron Finch	142	2542	39.72	148.1	69.3	40.2	2
Alex Hales	124	2184	37.02	149.7	76.3	43.6	8
Paul Stirling	117	2284	34.09	150.1	75.1	43.5	5
Cameron Delpport	149	2262	25.13	132.4	72	46.4	6
Evin Lewis	123	2081	32.52	138.4	76.8	50.5	10
Chris Lynn	111	1871	34.65	142.7	79.7	49.8	14
Luke Ronchi	84	1726	34.52	171.1	78.6	40.5	20
Jason Roy	112	2078	25.98	148	73	42.5	11
Martin Guptill	118	2182	33.57	136.5	71.5	45.4	9
Sunil Narine	90	1281	17.55	155.8	82.9	50.8	37
Quinton de Kock	96	2010	43.7	141.7	74.1	45	12
Colin Ingram	113	1498	37.45	140.8	76.7	48.7	32

TABLE 5. Best Batsmen in Death Overs in T20s (Min 25 Inns and 500 runs)

Player	Inns	Runs	Avg	SR	Bdry %	Dot %	Rank
Kieron Pollard	141	2476	26.62	178.6	66.7	28.6	1
Andre Russell	118	1857	22.37	194.7	79.1	34	2
Dwayne Bravo	129	1424	17.8	155.5	62.9	32.4	9
Darren Sammy	111	1545	21.46	165.1	66.4	32.7	6
Rashid Khan	90	650	11.4	166.7	71.6	39.4	41
Mohammad Nabi	100	1508	20.38	188.7	70.4	28.4	7
Daniel Christian	101	1565	26.08	180.7	64.2	26	5
Carlos Brathwaite	74	954	17.35	174.4	72.3	33.4	17
Shoaib Malik	108	1720	27.3	168.3	60.2	21.9	3
Shahid Afridi	67	749	14.4	165.3	69.6	34.4	33
MS Dhoni	91	1667	40.66	168	62.9	27.9	4
Ravi Bopara	97	1462	23.97	167.8	60.1	23.8	8
Sohail Tanvir	74	606	14.43	123.7	58.7	38.7	49
Thisara Perera	79	1073	20.63	177.4	66.7	28.7	12
Ben Cutting	60	864	20.09	173.2	70.3	34	20

5.2. IPL BOWLERS. Top bowlers with highest aggregate in the IPL, their performance against a particular opposition, their records in T20s in India and their aggregate in the powerplay and death overs were included in each analysis, so that total bowlers comprise this list. For each bowler we collected (5×1) column vectors of the form $X = (\text{Innings, Wkts, Ave, SR, Eco})'$ and using them computed

the sample correlation matrix with SPSS 20.0. Next, we obtained all eigen values and associated eigenvectors for the correlation matrix and identified the largest eigen value, λ_1 for each set of data. The latent value was the largest eigen value and SPSS 20.0 reports that the first principal component $P_1 = \lambda_1^{-1} X$ accounts for maximum of the total variability. So, it is liable to concentrate on just the First Principal Component (FPC), as it accounts for a substantial portion of the total variability. Accordingly, we choose to rank the bowlers based on their individual scores produced by the first principal component computation. Table 5.2.1 provides the top 15 FPC-rankings for the top bowlers among the top bowlers in IPL along with their leading wickets rankings, Table 5.2.2 provides the top 15 FPC-rankings for the top bowlers against oppositions along with their leading wickets rankings. Table 5.2.3 gives the top 15 FPC-rankings for the top bowler's performance in India among the top bowlers along with their leading wickets rankings, Table 5.2.4 and 5.2.5 gives the top performing players during powerplay and death overs in T20s along with the leading wickets scored in that phase respectively.

TABLE 6. Best Bowlers in IPL (Min 10 Inns and 10 Wickets)

Player	Inns	Wkts	Avg	Econ	SR	Rank
Lasith Malinga	122	170	19.8	7.1	16.6	1
Amit Mishra	147	157	24.2	7.3	19.8	2
Harbhajan Singh	157	150	26.4	7.1	22.5	4
Piyush Chawla	156	150	27.1	7.8	20.8	3
Bhuvneshwar Kumar	117	133	23.7	7.2	19.6	6
Dwayne Bravo	131	147	24.6	8.4	17.6	5
Sunil Narine	109	122	23.3	6.7	21	8
Ravichandran Ashwin	136	125	26.5	6.8	23.4	7
Ravindra Jadeja	142	108	29.2	7.6	23.1	10
Dale Steyn	92	96	24.7	6.8	21.9	15
Ashish Nehra	88	106	23.5	7.8	18	11
Yuzvendra Chahal	83	100	23.2	7.8	17.9	14
Umesh Yadav	118	119	29.4	8.5	20.8	9
Zaheer Khan	99	102	27.3	7.6	21.6	13
Sandeep Sharma	79	95	23.9	7.8	18.4	16

Like the batting perspective, the FPC and the normal rankings don't differ that much with Malinga and Amit Mishra occupying the top 2 slots. Only Nehra and Zaheer Khan (retired) are the players missing and hence the top bowlers will be again from this group. The next category had drastic difference in the two tables since the fringe players have performed against oppositions. Shreyas Gopal tops the list and Negi features the most time. In T20s in India, Chawla tops the lists in both rankings and only two foreign players feature in the top 15. Amit Mishra is the 2nd leading wicket taker in India, but he features at the 9th spot in the FPC rankings due to more inninnings played. A bowler is regarded as one of the best in the shortest format if he has the temperament to bowl in the powerplay as well as the end overs. In the powerplay phase, pace bowlers have been dominant but

TABLE 7. Best Bowlers vs Opposition in IPL (Min 3 Innings)

Player	Opponent	Inns	Wkts	Avg	Econ	SR	Rank
Shreyas Gopal	Royal Challengers Bangalore	4	12	5.2	4.8	6.5	108
Pawan Negi	Delhi Daredevils	4	8	8.5	7.6	6.8	225
Jofra Archer	Mumbai Indians	4	9	11	6.2	10.7	187
Anil Kumble	Rajasthan Royals	6	9	12	5.1	14	190
Imran Tahir	Delhi Daredevils	4	7	12	6.3	11.4	262
Kevon Cooper	Kings XI Punjab	4	9	11.9	7.1	10	186
Pawan Negi	Kolkata Knight Riders	5	8	12.3	5.7	13	228
Farveez Maharroof	Rajasthan Royals	6	11	12.6	6	12.5	128
Mitchell Starc	Kings XI Punjab	4	7	13.3	6.6	12	263
Siddarth Kaul	Mumbai Indians	5	10	13.1	7.3	10.8	155
Sreenath Aravind	Kings XI Punjab	6	11	12.6	7.7	9.8	126
Yuzvendra Chahal	Rajasthan Royals	8	11	13.7	5.7	14.5	136
Jacques Kallis	Royal Challengers Bangalore	6	9	14.1	6	14	191
Lasith Malinga	Delhi Daredevils	13	22	14.2	6.7	12.8	13
Ben Hilfenhaus	Delhi Daredevils	4	6	14.5	6.7	13	319

TABLE 8. Best Bowlers in T20s in India (Min 20 Innings and 30 Wickets)

Player	Inns	Wkts	Avg	Econ	SR	Rank
Piyush Chawla	212	228	24.6	7.5	19.6	1
Murali Kartik	65	39	41.7	7.1	35.2	128
Praveen Kumar	149	118	32.8	7.4	26.4	19
Ishant Sharma	107	84	36	7.9	27.5	44
Ravindra Jadeja	158	116	31.1	7.6	24.5	20
Harbhajan Singh	196	188	25.7	6.9	22.4	3
Angelo Mathews	51	31	40.5	8.2	29.6	179
Suresh Raina	89	35	37.8	7.2	31.3	149
Amit Mishra	202	219	22.8	7.1	19.2	2
Tim Southee	47	38	39.3	8.8	26.9	137
Ravichandran Ashwin	181	177	25.2	6.9	21.9	4
Umesh Yadav	134	135	29.1	8.4	20.8	14
Shadab Jakati	80	59	34.5	7.7	26.8	78
Vinay Kumar	152	166	24.9	7.9	19	6
Irfan Pathan	124	115	28.5	7.6	22.5	21

barring the Pakistan players, Narine has the most success in powerplays although being a spinner and he also features in the batting PP hitters. If we consider the death bowling, which has become quite vital in these days, another spinner Rashid Khan tops the list with Dwayne Bravo taking the 2nd spot.

5.3. IPL TEAMS. For teams, the analysis is based on the results, batting and bowling. For each team in batting case, we collected (7×1) column vectors of the form $X = (\text{Inn}, \text{Runs}, \text{RR}, \text{RPW}, \text{BPW}, \text{Bdry}\%, \text{Win}\%)'$, in bowling case, we

TABLE 9. Best Bowlers in Powerplays in T20s (Min 25 Inns and 25 Wickets))

Player	Inns	Wkts	Econ	SR	Dot%	Control %	Rank
Sohail Tanvir	144	60	6	29.4	56.9	74.1	1
Sunil Narine	158	42	6.1	28.7	53.6	73.0	3
Bhuvneshwar Kumar	106	41	6.1	31.9	56.2	70.2	4
Mohammad Amir	120	54	5.8	26.5	55.9	75.3	2
Mohammad Sami	92	33	6.1	30.9	58.0	67.1	8
Jasprit Bumrah	107	29	6.4	32.5	51.4	70.4	5
Mohammad Irfan	88	53	6.2	21.5	56.2	70.6	6
Andre Russell	136	66	7.6	19.6	50.5	73.6	10
Mohammad Nabi	144	58	6.8	23.3	48.1	85.4	14
Chris Morris	126	47	7.5	26.7	50.6	77.7	20
Mitchell McClenaghan	131	69	8.1	21.1	47.7	73.7	11
Shakib Al Hasan	129	66	7.2	18.2	49.1	75.6	9
Mujeeb Ur Rahman	99	49	6.4	25	53.0	82.1	37
David Willey	105	64	7.4	19.8	52.8	80.1	12
Mustafizur Rahman	98	37	6.7	21.4	52.3	66.2	32

TABLE 10. Best Bowlers in Death Overs in T20s (Min 25 Inns and 25 Wickets)

Player	Inns	Wkts	Econ	SR	Dot%	Control %	Rank
Rashid Khan	148	94	7.4	12.3	40.5	73.9	3
Dwayne Bravo	199	186	9.4	11.3	29.9	66.5	1
Wahab Riaz	130	93	7.8	13.8	40.1	69.2	4
Mustafizur Rahman	99	76	7.9	12.9	39.2	58.2	12
Adam Milne	46	36	7.2	10	37.9	80.7	55
Mohammad Amir	100	83	8.2	11.6	35.3	70.5	8
Usman Shinwari	38	36	8.4	8.2	38.3	64.2	56
Tymal Mills	76	52	7.4	13.1	39.2	76.2	24
Imran Tahir	113	67	7.9	11	32.7	78.5	18
Adam Zampa	64	45	8	9.1	33.3	72.6	36
Chris Morris	107	91	8.7	11.1	32.4	71	5
Andre Russell	128	89	9.4	11.7	34.8	65.4	6
Rohan Mustafa	26	26	7.4	8.7	35.8	88.9	101
Andrew Tye	124	106	9	11.8	31.3	74.1	2
Jasprit Bumrah	102	77	8.2	13.9	34.6	63.6	10

collected (6x 1) column vectors of the form $X = (\text{Inn}, \text{Wkts}, \text{Eco}, \text{RPW}, \text{BPW}, \text{Win}\%)'$ and using them computed the sample correlation matrix with SPSS 20.0. Next, we obtained all eigen values and associated eigenvectors for the correlation matrix and identified the largest eigen value, b for each set of data. The latent value was the largest eigen value and SPSS 20.0 reports that the first principal

component $P_1 = e_1^T X$ accounts for maximum of the total variability. So, it is liable to concentrate on just the First Principal Component (FPC), as it accounts for a substantial portion of the total variability. Accordingly, we choose to rank the bowlers based on their individual scores produced by the first principal component computation. Table 5.3.1. provides the top 15 FPC-rankings for the top batting performances of teams in particular venue along with their leading runs rankings, Table 5.3.2 gives the top 15 FPC-rankings for the top bowling performances of teams in particular venue along with their leading wickets rankings.

TABLE 11. Best Team Batting in Particular Venue in IPL (Min 5 Innings)

Player	Venue	Inns	Runs	RR	Balls/Wkt	Win%	Rank
Chennai Super Kings	Punjab Cricket Association Stadium	6	1064	9.3	31.1	50	57
Chennai Super Kings	Maharashtra Cricket Association Stadium	8	1370	8.8	28.4	75	34
Mumbai Indians	Eden Gardens	13	2249	8.7	23.1	76.92	9
Chennai Super Kings	Feroz Shah Kotla	8	1308	8.3	26.4	75	38
Royal Challengers Bangalore	M Chinnaswamy Stadium	76	12307	8.8	19.3	48.05	1
Royal Challengers Bangalore	Feroz Shah Kotla	9	1505	8.9	23.1	66.67	25
Kolkata Knight Riders	Eden Gardens	74	11547	8.3	21	60.81	2
Mumbai Indians	Wankhede Stadium	67	10914	8.4	19.7	62.69	4
Chennai Super Kings	MA Chidambaram Stadium Chepauk	56	9026	8.2	22.7	71.43	6
Chennai Super Kings	Rajiv Gandhi International Stadium Uppal	6	1003	8.4	26.5	50	59
Sunrisers Hyderabad	Punjab Cricket Association Stadium	6	1015	8.5	26.6	66.67	58
Kings XI Punjab	Himachal Pradesh Cricket Association Stadium	9	1502	8.6	21.9	55.56	27
Kings XI Punjab	Holkar Cricket Stadium	8	1324	9.1	20.9	50	37
Rajasthan Royals	Sawai Mansingh Stadium	47	7282	8.1	23.3	68.09	7
Kolkata Knight Riders	Maharashtra Cricket Association Stadium	6	955	8.3	22.4	100	64

A STATISTICAL ANALYSIS FOR PREDICTING THE TOP PERFORMING PLAYERS...

TABLE 12. Best Team Bowling in Particular Venue in IPL (Min 5 Innings)

Player	Venue	Inns	Wickets	Eco	Balls/Wkt	Win %	Rank
Kolkata Knight Riders	Maharashtra Cricket Association Stadium	6	45	7.1	15.9	100	45
Chennai Super Kings	MA Chidambaram Stadium Chepauk	56	361	7.7	18.3	71.43	5
Kolkata Knight Riders	Eden Gardens	74	438	8.0	19.1	60.81	1
Mumbai Indians	Wankhede Stadium	67	423	8.2	18.4	62.69	3
Sunrisers Hyderabad	Rajiv Gandhi International Stadium Uppal	44	273	7.7	18.5	68.18	8
Mumbai Indians	Dr DY Patil Sports Academy	7	51	7.8	14.7	71.43	35
Rajasthan Royals	Sawai Mansingh Stadium	47	286	7.8	18.8	68.09	7
Royal Challengers Bangalore	Maharashtra Cricket Association Stadium	6 43	7.5	16.3	66.67	51	
Mumbai Indians	Rajiv Gandhi International Stadium	11	69	7.1	18.4	63.64	13
Delhi Daredevils	Feroz Shah Kotla	69	401	8.2	19.5	44.93	4
Royal Challengers Bangalore	M Chinnaswamy Stadium	75	432	8.5	19.4	49.33	2
Sunrisers Hyderabad	Feroz Shah Kotla	8	53	7.6	17.9	75	32
Sunrisers Hyderabad	Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket Stadium	6	38	7.3	17.1	50	59
Mumbai Indians	M Chinnaswamy Stadium	12	76	7.8	18.7	75	11
Chennai Super Kings	Maharashtra Cricket Association Stadium	8	52	8.0	18.1	75	33

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CSK has been the most successful team with the bat having scored consistently at different venues across India and also have a decent win record too. In the bowling front, KKR has been a successful franchise and at their home ground Eden Gardens and also SRH and CSK enjoyed more success in the bowling department too.

6. Conclusion

In this article we have put-forth an easy, but a direct technique, for analyzing the performance of players in various criteria. We compared our FPC tables with the leading tables and made for the top performing players for the upcoming IPL. Using the above methods as benchmarks, we calculated FPC for teams also and predicted that CSK has been the dominant team with the bat while KKR are the most successful with the ball. The ability of the First Principal Component method to consistently obtain a significant portion of the variability in cricket data is the main advantage of the considered technique, which offers an open way of analysis for the cricket-loving and analyzing people.

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