FORECASTING CRICKET PLAYERS PERFORMANCE:
UTILIZATION OF TIME SERIES ANALYSIS

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ABSTRACT

In recent years, trend analysis has apparently attracted considerable amount of focus in varied professions such as business, marketing and even in sports. Forecasting the future outcome in sports, can play a key role in many aspects of planning and implementation. Despite of the fact that, Cricket is seems to be one of the most unpredictable sports even though forecasting the future performance in cricket can be decisive and can be utilized in players selection, tactics and strategies in a competitions. In the present study time series analysis has been computed to predict the future performance of cricket players. Regression line has been formulated by using past batting performance data of five years from 2014-2018 of selected players of Indian Premier League and forecast has been made for IPL for the year 2019. Result of the study reveals that Virat Khoil will score highest number of run and will also achieve highest strike rate amongst the selected players followed by Shikhar Dhawan, Suresh Raina, M.S. Dhoni, and Rohit Sharma. Forecasting pertaining to Average run rate and strike rate is also framed for all the selected players. It is recommended that these findings can be employed efficiently by coaches, manger, captain and other administrative personal to their advantage in term of many aspects of the sports.

Keywords: Time series analysis, Cricket, Prediction and IPL

INTRODUCTION

Time series is known as a numerical data observed at different point of time or the set of observation. Generally it is also termed as Prediction analysis or forecasting, where we predict the future outcome. Time series analysis is used in Business, weather, other profession and even in sports to anticipate future event. (Gupta, 1969). Forecasting has been a growing trend in the world of sports (Miller Ryan, Harrison Schwarz & Ismael S. Talke ,2017). Forecasting has been utilized to predict the outcome of the game for a club or team based on the past performances. Forecasting is imperative for sports fan, Team manager, sponsors and even for punters who bet on online platforms. (Spann, M. and Skiera, B., (2009). Indian premier league is one of the most spectacular, globally followed and considered as one of the best organized Cricket Premier League. It is a professional twenty-twenty over cricket game organized by Board of cricket control of India every year. The present league is played among eight franchise cities of India. They are Chennai Super kings, Mumbai Indians, Kolkata Knight Rider, Royal Challenger Bangalore, Sunrisers Hyderabad, Kings XI Punjab, Rajasthan Royals, Delhi Capitals. In this game every team will face off each other in home-and-away macthes. In the past ten seasons of IPL thirteen teams have participated and out of those eight teams still exist in the present IPL tournament. In the last 10 Year of IPL history most trophies were lifted

by Chennai super kings led by M.S. Dhoni and Mumbai Indians led by Rohit Sharma, both the team have won three times and the championship have been lifted two times by Kolkata Knight Rider and first time by Rajasthan Royals in the year 2008 and one time by Deccan Charger. The demand of the players in auction is rating higher every season. Time series analysis not only helps the team selector to identify the best suitable player for their team but also can be utilized in creates more impact in performance of the cricket team.

Keeping in mind these factors, we empirically utilize the data of past batting performance of cricket players who participated from 2014 to 2018. Time series analysis was conducted using liners regression method and forecasting is formulated for batting performance of selected cricket players of the Indian premier league.

MATERIAL AND METHODS

Five players who have played all the IPL series from 2014 to 2018 were selected as a participant of the study.

Past results of IPL from 2014 to 2018 were utilized for the study. Performance of all the selected player were categorized as per the following Batting parameters

- o Total Run scored
- o Average Run scored
- o Strike Rate

All the past performances and results of IPL 2014 -2018 were taken from the Official website of IPL.

For the study purposive sampling was utilized as only the players who have participated continuously from 2014 to 2018 were used as a sample. Least Square Method of liner regression was computed to analysis the date. Regression line was calculated for each set of

performance parameters. Data was presented graphically with the help of line graph.

RESULTS AND DISCUSSION

TABLE 1
TIME SERIES ANALYSIS OF IPL CRICKET PLAYERS FOR TOTAL RUN SCORED, BATTING AVERAGE AND STRIKE RATE (LINEAR REGRESSION METHOD)

| ASPECTS | Players | Year | | | | | | REGRESSION EQUATION | PREDICTION FOR 2019 IPL |
		2014	2015	2016	2017	2018	R2		
TOTAL RUN SCORED	M.S. Dhoni	371	372	284	290	455	0.0636	8.6X+328.6	380.2
	Virat Kohli	959	505	973	308	530	0.0133	14.5X+491.5	578.5
	Suresh Raina	523	374	399	442	445	0.1005	(-8.8)X+463	410.2
	Rohit Sharma	390	482	489	333	286	0.5345	(-35.7)X+ 503.1	288.9
	Shikhar Dhawan	377	352	501	479	497	0.7797	38.6 x+331.6	551.2
AVERAGE RUN RATE	M.S. Dhoni	74.2	31	40.57	26.36	75.83	0.0001	(0.138)x+50.006	49.17
	Virat Kohli	27.61	45.9	81.08	30.8	48.4	0.07	2.728x+38.654	55.02
	Suresh Raina	67.08	40.18	28.5	24.93	40.23	0.0684	(0.895)x+36.869	31.49
	Rohit Sharma	80	34.42	44.45	23.78	23.83	0.2748	(2.298)+38.19	24.4
	Shikhar Dhawan	29	27.15	38.53	36.84	38.23	0.7799	2.815x+25.505	42.39
AVERAGE STRIKE RATE	M.S. Dhoni	148.4	121.96	135.23	116	150.66	0.0004	(0.144)x+134.8	134.016
	Virat Kohli	122.1	130.82	152.03	122.22	139.1	0.1643	2.54x+125.63	140.87
	Suresh Raina	146.08	123.01	127.88	143.97	132.44	0.0173	(0.633)x+136.58	132.78
	Rohit Sharma	133.02	121.97	132.88	144.75	129.13	0.136	1.499x+127.84	136.83
	Shikhar Dhawan	118.18	123.42	116.78	127.39	136.91	0.7667	4.143x+112.11	136.96

Table 1 depict the Time series analysis of selected IPL cricket players for Total run scored, batting average and average strike rate by Linear regression method. The findings reveals that that total run scored by selected cricket players for the year 2011, 2012, 2013, 2015, 2016, 2017 and 2018 is 371, 372, 284, 290, 455 of Ms Dhoni and 359, 505, 973, 308, 530 is of virat kholi and 523, 374, 399, 442, 455 of Suresh Raina and 390, 482, 489, 333, 286 of Rohit Sharma and 377,353,501,479,497 of Shikhar Dhawan for respective years. Further on the basis of linear regression method the computed regression lines for the Total run score is Y=8.6x+328.6 for M S Dhoni and Y=14.5x+491.5 for virat kholi and Y= (-8.8)x+463 for Suresh Raina and Y= (-

35.7)x+503.1 for Rohit Sharma and Y=36.8x+331.6 for Shikhar Dhawan and with values of R2 is 0.0636, 0.0133, 0.1005, 0.5347, 0.7797respectively. Therefore it is predicted from the statistical analysis that total run score for the IPL players for the year 2019 would be 380.2, 578.5, 410.2, 288.9 and 551.2 for Ms Dhoni , Virat kholi , Suresh Raina , Rohit Sharma , Shikhar Dhawan respectively.

On the other hand in the case of average run score table 1 disclose that the average run score of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan for the year 2011,2012,2013,2015,2016,2017 and 2018 is 74.2, 31, 40.57, 26.36, 75.83 (M S DHoni) and 27.61, 45.9, 81.08, 30.8, 48.4(Virat Kholi) and 37.08, 40.18, 28.5, 24.93, 40.23(suresh raina) and 30, 34.42, 44.45, 23.78, 23.88 (Rohit sharma)and 29, 27.15, 38.53, 36.84, 38.23 (shikar dhawan) respectively. The computed regression line on the basis of linear regression method is Y= (-0.138)x +50.006, Y=2.728x+38.654, Y= (-0.895)x+36.869, Y= (-2.298)x+38.19, Y=2.815x+25.505 and value of R2 is 49.17, 55.02, 31.49, 24.402, 42.39 of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan respectively. It can concluded from the findings of the study

that Forecast for average run score of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan for the year 2019 is 49.17 , 55.02, 31.49, 24.4, 42.39 correspondingly.

As far the average strike rate is concerned the findings reveals that the average strike rate of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan for the year 2011,2012,2013,2015,2016,2017 and 2018 is 148.4, 121.96, 135.23, 116, 150.66 (M S DHoni) and 122.1, 130.82, 152.03, 122.22, 139.1 (Virat Kholi) and 146.08, 123.01, 127.88, 143.97, 132.44 (suresh raina) and 133.02, 121.97, 132.88, 144.75, 129.13 (Rohit sharma)and 118.18, 123.42, 116.78, 127.39, 136.91 (shikar dhawan) individually. The computed regression line on the basis of linear regression method is Y= (-0.144)x+134.88, Y=2.54x+125.63, Y= (-0.633)x+136.58, Y=1.499x+127.84, Y=4.143x+112.11 and value of R2 is 49.17, 55.02, 31.49, 24.402, 42.39 of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan respectively. Hence it can be concluded from the findings of the study that Forecast for strike rate of M.S. Dhoni, Virat Kohli, Suresh Raina, Rohit Sharma and Shikhar Dhawan for the year 2019 is 134.016, 140.87, 132.78, 136.83, 136.96 correspondingly.
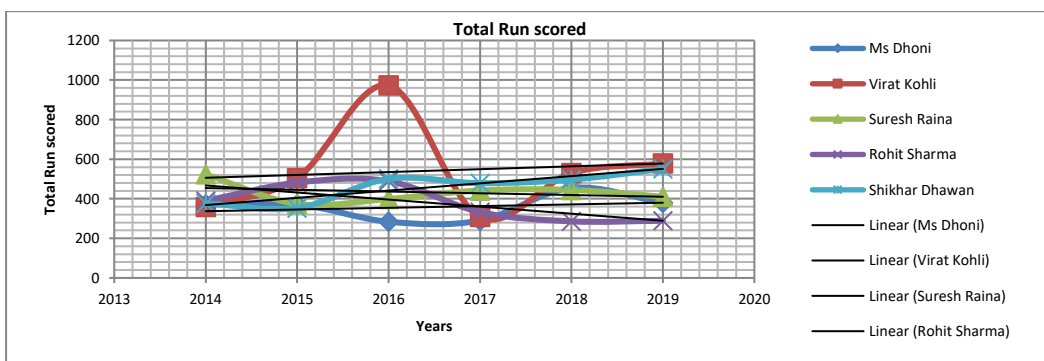

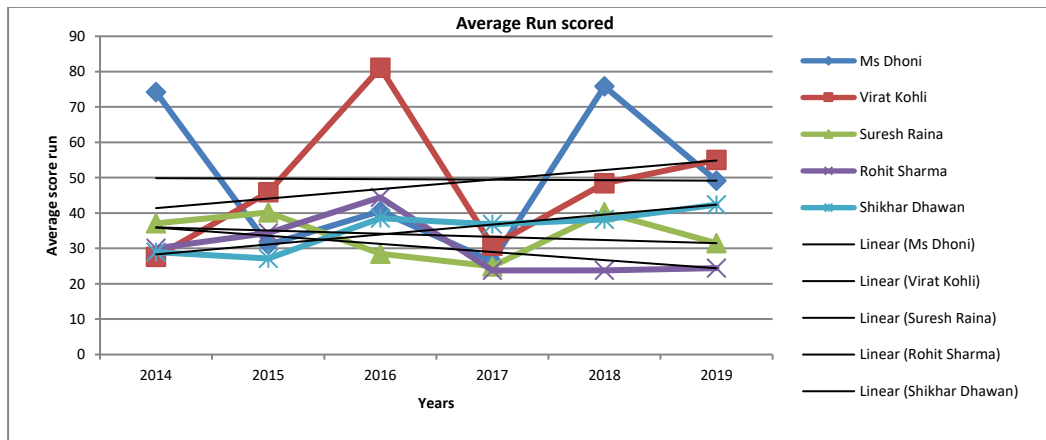FIGURE 1: TOTAL RUN SCORED AND PREDICTION FOR 2019

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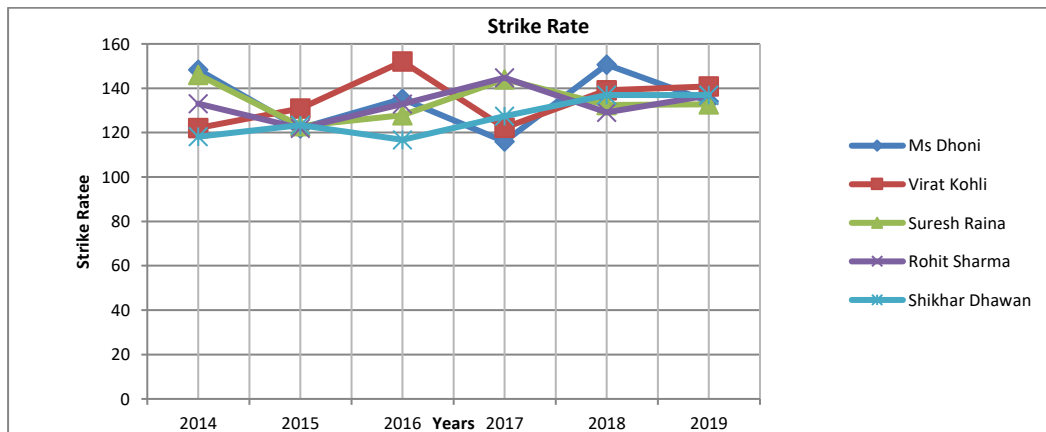FIGURE 2: AVERAGE RUN SCORED AND PREDICTION FOR 2019

FIGURE 3: STRIKE RATE AND PREDICTION FOR 2019

DISCUSSION OF FINDINGS

IPL has been considered as one of the vital platform for upcoming and established cricket players. IPL was started in the year 18 April 2008 and have become an ideal and well established competition, which display professionalism in terms of organizations management talent identification and grooming of young cricket players. There are many strategies by which a team management coaches and captains of various clubs identify and build up their teams. In the present study time series analysis which is considered as one of the efficient technique to predict future outcome have been used in a systematic way. On the basis of linear regression method certain perdition have been conducted. In the

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case of Batsman , despite the fact that cricket is a unpredictable game it has been found that Virat Kohli of RCB will be the highest score among the selected batsman in the year 2019 with the total score 578.5 . At the same time as per the regression equation Sikhar Dhawan will be scoring 552.4 run in the year 2019. Further it is predicted that Suresh Raina , M.S Dhoni and Rohit Sharma will be scoring 380.2 , 410.2 and 288.9 run in the IPL 2019. These findings are in line with several studies , Spann, M. and Skiera, B., (2009) conducted a study on prediction of result with the help of time series analysis in German football league to . In a another study (Millaer Ryan etal., 2017) conducted a time series analysis on NFL and NBA popularity on the basis of past data.

IPL is based on a format of 20-20 over where the match is played for 20 over each for both the team. Therefore higher average run average is required form a batsman and the batsman who is achieving higher average run rate is considered to be the most suitable for this format of competition.As per the demand of the runs in IPL Average run rate is very important. Only scoring in one game is not enough. One needs to be very consistent in every match, so for that average run rate of the batsman is also predicted. As far as the prediction of average run rate is concerned, the analysis of result predicted that Virat Kohli will be achieving 55.02. At the same time M.S.Dhoni Sikhar Dhawan and Suresh Raina will be attaining 49.178, 42.394 and 31.4 respectively. As per the regression equation Rohit Sharma will be achieving lowest average run rate of 24.4 amongst all the selected players. (Manu Kalia and Saugata Ghosh ,2015) conducted a study on IPL by using Radom matrix theory of the past performance of the cricket players.

Keeping in mind the less numbers of over in 20-20 format average strike rate is considered to be crucial and decisive factor in the outcome of a match. Usually the player who seems to have a higher strike rate turn out to be a match winner for a particular team. In the present study result of the study reveal that Virat Kohli will have the highest strike rate amongst the selected players with 148.87. Further Sikhar Dhawan , Rohit Sharma , M.S Dhoni and Suresh Raina will have 136.9 , 136.8, 134.0 and 132.70 respectively. In all three prediction of batsman Virat Kohli`s Performance figure has a lot more potentiality than any other batsman. And that's why at Present he is number one in ICC ranking for Batsman. (Akhil Nimmagadda etal.2018), applied multiple linera regression method to predict the win loss percentage of cricket Teams.

CONCLUSIONS
On the basis of the research findings and prediction among the selected player for the study Virat Kohli will be likely to score the highest run among the selected batsman and his run rate and strike rate will also be highest among the selected batsman with 578 run. Sikhar Dhawan would be the Second highest scorer with a good figure of 552 run and suresh raina will be third highest run score followed by M.S. Dhoni and Rohit Sharma with 410.2, 380.2 and 288 runs correspondingly.. .

It is also concluded that in average run rate virat kohli will have highest run rate of 55.02. . M.S.Dhoni will be achieving second highest average run with 49.17. Sikhar Dhawan will be third highest with 42.39 and followed by Suresh Raina and Rohit Sharma with 31.49 and 24.40 average run individualy. However in Twently twenty format all these are good figures.

As per the analysis in Average strike rate again Virat Kohli will have the highest strike rate of

142.87. Sikhar Dhawan will attain second highest strike rate is with136.96 Rohit sharma will be achieving the third highest strike rate with136.83 followed by MS Dhoni and Suresh Raina with 134.01 and 132.78 individallu.

IPL is a successful business sports model which facilitates upcoming players' ,coaches trainers, managers and mentors. Each clubs is willing to achieve success in competition. Identification and prediction of most suitable cricket player is essential. Time series analysis should be utilized by the coaches', captain and manager in appropriate way to select best player for the team.

Prediction analysis should utilize to define the role and position of the player during a competition. Time series analysis should be utilized for formulating the strategies and tactics by the coaches and captains against opponent team.

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