

THE INDIAN PREMIER LEAGUE: GAUGING PLAYER PERFORMANCE

Soumya Roy, Soumyadeep Kundu, and Dipayan Roy wrote this exercise solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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The 11th edition of the Indian Premier League (IPL) concluded on May 12, 2019, with the Mumbai Indians emerging victorious against rivals Chennai Super Kings. Asmit Mitra, a senior analyst at a leading market research firm and a sports blogger predominantly focusing on cricket, had been eagerly following the 60-odd games. The IPL commanded a significant following in India, with thousands in attendance and millions glued to their television sets or streaming the games over mobile devices.¹ Mitra's analytical skills and devotion to cricket often led him to capture the subtle analytical nuances of the game in his articles.

With eight teams competing along with their teams, the IPL was a spectacle of international cricketing talent over almost two months, and it had significant entertainment value. For the IPL and the teams' management, however, there were subtler business decisions to be made. Teams² usually spent millions of dollars on various types of expenses, including the cost of acquiring players through auctions, salaries for coaches and other key personnel, and promotional campaign expenses. In the 2019 season teams spent ₹1.068 billion (US\$15 million)³ on 60 players in various play positions such as batsmen, bowlers, and all-rounders. These expenses were comparable to the costs for prevalent positions in other major sporting leagues, such as the US Major League Baseball.⁴

Mitra had started following these player auctions, which usually took place a couple of months before the league commenced. More recently, the bids on some players had gone into the millions of dollars. This often seemed excessive to Mitra, particularly given the disparity in performance of some of the so-called star players, as they were referred to by various media outlets.⁵ Did these players really merit these price tags? Mitra decided to conduct an analysis as part of his concluding article for this IPL season.

¹ Vidhi Choudhary, "IPL 2018 TV Viewership Increases at Tepid 11% despite Increase in Channels," *Hindustan Times*, May 11, 2018, <https://www.hindustantimes.com/cricket/ipl-2018-tv-viewership-increases-at-tepid-11-despite-increase-in-channels/story-UVp6levkSAJx04xovRDUpM.html>.

² "Franchisee" and "team" can be used interchangeably throughout the case.

³ ₹ = INR = Indian rupee; US\$1 = ₹74 in December 2019. All dollar amounts are in USD unless otherwise stated.

⁴ Jephther Nickels, "IPL 2019 Auction: 8 Teams Spend Rs 106.80 Crore on 60 Players," *India Today*, December 18, 2018, <https://www.indiatoday.in/sports/cricket/story/ipl-2019-auction-yuvraj-singh-sam-curran-jaydev-unadkat-1412387-2018-12-18>.

⁵ Kunal Dhyani, "IPL 2018 MONEYBALL: Performance Report of the Highest Paid Players for 2018!," *Insidesport*, May 10, 2018, <https://www.insidesport.co/ipl-moneyball-performance-report-highest-paid-players-2018-0610052018/>.

THE RULES OF CRICKET

Cricket as a modern sports form emerged in mid-nineteenth-century England.⁶ The International Cricket Council (ICC), the international governing body for the sport, was established in 1909 and had 12 full members and 94 associate members.⁷ The game was played in three formats internationally: as test matches, one-day internationals, and the fairly recent Twenty20 (T20) format.⁸ Cricket was predominantly an outdoor sport played between two teams of 11 members each. At the start of the game, the two team captains tossed a coin to decide which team would choose to bat or bowl first.

Cricket often drew parallels to baseball; however, the rules and regulations were different and included some unique terms (see Exhibit 1). In cricket, the batting team would set a target of runs within the stipulated number of overs and 10 wickets. The other team would then try to chase this target within the same stipulation of overs and wickets. During a match, a bowler from the bowling team pitched the ball, aiming to knock off the stumps defended by the batsman, while the 10 other team members fielded in various positions (see Exhibit 2).

Two batsmen from the batting team were present at the crease, with one striking batsman facing the bowler and the other at the bowler's side of the pitch. The objective of the bowler was to get the batting batsman "out," or dismissed under the rules of cricket, while conceding the lowest number of runs possible.⁹ The opposing team's batsman had to survive at the crease, while gathering as many runs as possible. Usually, players specialized as batsmen, bowlers, or all-rounders.

The Indian Premier League

The IPL began in 2008 with the Board of Control for Cricket in India (BCCI) convening the first edition. The IPL would go on to change the cricketing landscape in India and the world, placing it in the ranks of other professional sporting leagues, such as the National Basketball Association and National Football League in the United States.

The 2019 edition of the IPL had eight teams (see Exhibit 3) with a few more teams competing in previous editions, and the brand value of the IPL ran into billions of dollars.¹⁰ Matches were played in a T20 format in which each side had to face 20 overs. This shorter format had proven to be a success since it allowed for two games to be played on a given day.

The IPL had fused entertainment and cricket, creating a lucrative opportunity that drew in investors and fans alike.¹¹ Its eventual success in India led to the creation of similar tournaments in other cricketing nations, such as the Big Bash League in Australia, Pakistan Super League in Pakistan, and the Caribbean Premier League in the West Indies.

⁶ "History of Cricket," International Cricket Council, accessed September 15, 2021, <https://www.icc-cricket.com/about/cricket/history-of-cricket/early-cricket>.

⁷ "History of ICC," International Cricket Council, accessed January 5, 2022, <https://www.icc-cricket.com/about/the-icc/history-of-icc/1909-1963>; "About Our Members," International Cricket Council, accessed January 5, 2022, <https://www.icc-cricket.com/about/members/about-our-members>.

⁸ "The Three Formats of Cricket," International Cricket Council, accessed September 16, 2021, <https://www.icc-cricket.com/about/cricket/game-formats/the-three-formats>.

⁹ "Cricket Rules and Regulations," International Cricket Council, accessed September 16, 2021, <https://www.icc-cricket.com/about/cricket/rules-and-regulations/playing-conditions>.

¹⁰ Varun Gupta, "Duff & Phelps Launches IPL Brand Valuation Report 2019," Duff & Phelps, September 20, 2019, <https://www.duffandphelps.com/insights/publications/valuation/ipl-brand-valuation-report-2019>.

¹¹ "At IPL Auction, Shock and Awe," DH News Service, January 30, 2018, <https://www.deccanherald.com/content/656805/at-ipl-auction-shock-awe.html>.

The IPL teams spent heavily on marketing and worked on garnering lucrative sponsorship and advertising deals with big brands. The IPL also allowed the participation of foreign players and up-and-coming players to be a part of the team. The fans got to see some of their favourite players in action, with an average attendance of over 25,000 per game and millions more watching from home.¹²

The IPL was also a lucrative brand on its own, with a brand value estimated at \$3.2 billion in 2014 which had grown to \$6.3 billion since that time.¹³ Recently, the Indian television network Star Sports had acquired the broadcasting rights until 2023 for an estimated \$2.3 billion.¹⁴ Sponsorship deals were also lucrative. Vivo Communication Technology Co. Ltd paid ₹21.99 billion to retain title sponsorship over five years.¹⁵ The associated revenue for the teams was taken from a central pool in a 60:40 share, with the BCCI getting the larger share.¹⁶ The BCCI also had a 20 per cent share in the teams.¹⁷ Shares from media rights and merchandise sales were also substantial. For instance, Kolkata Knight Riders, an IPL team, reported ₹4.48 billion in revenue in 2018–2019.¹⁸

The IPL was a big business with multiple revenue streams but ultimately relied on providing good cricket to the fans. Choosing the right players and eliciting performance was essential for the teams since they relied heavily on sponsors for a substantial proportion of their revenue.

The Players

Over the years, various international players participated in the IPL alongside their Indian counterparts. This was a major selling point for fans who followed team formations and drove debates on online forums and social media.

The teams spent heavily on acquiring their players, with auctions seeing bids for players going above ₹50 million (see Exhibit 4). The auctions usually involved both national and international players. They included star players such as MS Dhoni, Virat Kohli, Rohit Sharma, Steve Smith, and Chris Gayle, as well as up-and-coming players like Prithvi Shaw and Akash Singh. The teams had a limited budget of ₹850 million to spend on players.¹⁹ This was unlike some major leagues that had no limit on team spending. Trading players between teams was also allowed.

¹² Christina Gough, "Average Sports Attendance by League 2019/20," *Statista*, August 13, 2021, <https://www.statista.com/statistics/1119911/average-sports-attendance-by-league/>.

¹³ Varun Gupta, "Duff & Phelps Launches the IPL Brand Valuation Report 2018," *Duff & Phelps*, August 9, 2018, <https://www.duffandphelps.com/insights/publications/valuation/ipl-brand-valuation-report-2018>.

¹⁴ Arjun Srinivas, "Even the Pandemic Can't Derail the IPL Juggernaut," *Livemint*, January 5, 2021, <https://www.livemint.com/sports/cricket-news/even-the-pandemic-can-t-derail-the-ipl-juggernaut-11609832561056.html>.

¹⁵ Urvi Malvania, "Vivo Retains IPL Title Sponsorship; To Pay Rs 2,199 Cr to BCCI Over 5 Yrs," *Business Standard*, December 16, 2019, https://www.business-standard.com/article/companies/vivo-retains-ipl-title-sponsorship-to-pay-rs-2-199-cr-to-bcci-over-5-yrs-117062700562_1.html.

¹⁶ "Analyzing the Economics of the Indian Premier League," *News18*, November 20, 2018, <https://www.news18.com/cricketnext/news/analyzing-the-economics-of-the-indian-premier-league-1944069.html>.

¹⁷ Vidhi Choudhary, "IPL 2018 Set to Fetch Profits for All Eight Teams for the First Time," *The Hindustan Times*, April 22, 2018, <https://www.hindustantimes.com/cricket/ipl-2018-set-to-earn-profits-for-all-eight-teams-for-the-first-time/story-D0zF2F8Mt8sUYzRdujgkWJ.html>.

¹⁸ Arjun Srinivas, "Even the Pandemic Can't Derail the IPL Juggernaut," *Livemint*, January 5, 2021, <https://www.livemint.com/sports/cricket-news/even-the-pandemic-can-t-derail-the-ipl-juggernaut-11609832561056.html>.

¹⁹ The Hindu Net Desk, "2019 IPL Auction | As It Happened," *The Hindu*, December 18, 2018, <https://www.thehindu.com/sport/cricket/ipl-auction-2019-live-updates-jaipur/article25771626.ece>.

Sports analysts and critics offered commentary on player performances aimed at those making decisions on how to spend the significant funds available to the teams.²⁰ Numerous speculative and sensationalized articles appeared in print and on digital media, often lacking evidence. Mitra was going to look beyond the sensation and use his skills to make the assessments and determine whether these star players, as the media had dubbed them, were worth their price tags and how wise the teams were in spending their money.

The Quandary

In a T20 format, teams were required to play fast and score as much as possible in each over. A maiden over for a team would often be a decisive action. Batsmen with good performance, typically attributed to their strike rate and batting average, commanded high prices. Performance on the crease was essential for the teams to win, and of late, scores in these games had gone above 200 runs in some cases. In such high-stakes games, batsmen commanded a high value. It was usually these types of players who were dubbed star players, enjoyed higher salaries, and had a greater brand value.

Players were usually measured on a number of performance indicators (see Exhibit 5), such as strike rate, runs scored, and number of fifties, and player rankings were based on the number of runs scored in the IPL season and other batting statistics.²¹ The top players received special awards and cash prizes. Their top performance also earned them higher bids during auctions. Batsmen were also highly valued, and bids were placed depending on their playing position—for example, openers, middle order, and finishers—similar to other sports like football and baseball. As a season commenced, the performance of these players came to the fore and often their comparatively large salaries would be scrutinized. Sports gurus often debated this on television, justifying money spent on players and branding them overpaid or underpaid.

Details of the 2019 bids for the 60 players up for auction were publicly available. The players included batsmen, bowlers, and all-rounders, and most of them had been part of the league for a while and performance statistics were available.²² Teams usually relied on batsmen to score highly to give the rival team a high target to chase. Over the years, the number of 200-plus scores in IPL matches had grown. Batsmen with high strike rates and high runs in the T20 format were preferred, and the match outcomes were often skewed toward them.

Mitra's article would focus on these much-hyped batsmen and the bids they had garnered over the 2019 season. Unlike the often-sensationalized articles that relied more on sentiment, Mitra would present hard facts in his article while analyzing the performance and pay of these batsmen. During his time as a market research professional, he had used a number of tools and techniques in his work. Some were relatively simple but provided interesting conclusions.

Of the players up for auction, 70 had batted in at least five innings. By generating a General Batting Performance Index, Mitra could rank the top 10 players according to their performance. However, he wanted to look beyond the rankings; he wanted to characterize the players further by grouping them. Looking at salaries for an entire group of players would provide a better justification for the final bids they had acquired.

²⁰ "IPL 2019: Who Will Crack the Code in this Edition of Indian Premier League," *The Times of India*, March 23, 2019, <https://timesofindia.indiatimes.com/sports/cricket/ipl/top-stories/ipl-2019-who-will-crack-the-code-in-this-edition-of-indian-premier-league/articleshow/68532533.cms>.

²¹ "Most Runs," Indian Premier League, accessed September 16, 2021, <https://www.iplt20.com/stats/2018/most-runs>.

²² "Complete List of VIVO IPL 2019 Player Auction," Indian Premier League, accessed October 22, 2021, <https://www.iplt20.com/news/149676/vivo-ipl-2019-player-auction-list-announced>.

CONCLUSION

Following the end of the season, Mitra felt the player rankings carried by various sources were naive in their assessments. Teams also needed to take a deeper look at what they spent, and on which type of player. He believed that the bids on some of the players were exorbitant and not indicative of their performance in the 2019 season, and that these decisions were affecting the teams' performance during the tournament.

Mitra had the data he needed for 70 players. What remained was to use the right techniques to analyze them and construct well-rounded, logical arguments for his article. Because he was writing an end-of-season article of the 2019 IPL, Mitra could not speculate. The analysis had to be correct and the arguments convincing. Once the article was published, the comments would not be forgiving.

EXHIBIT 1: CRICKET TERMINOLOGY

Term	Description
All-rounder	A batsman who can also bowl.
Bails	Two small wooden cylinder-like pieces balanced at the top of three vertical stumps on either side of the pitch. A batsman is considered out if the bails are dislodged by a legal delivery of the ball.
Batsman	A player who uses a cricket bat to strike the ball being delivered and scores runs.
Bowling	The act of propelling the ball towards the wicket defended by a batsman.
Bowler	A player delivering the cricket ball to the striking batsman with the objective of getting the batsman out.
Boundary	Outer limit of the playing area on a cricket ground. Balls rolling over the boundary count as four runs while those hit over the boundary count as six runs.
Byes	When a legal delivery passes the batsman without touching his bat or his body and the wicket keeper fails to catch the ball, any runs completed during the period are credited as 'byes'.
Catch	When a fielder catches a ball hit by the batsman without the ball contacting the ground. The striking batsman is then considered to be out.
Century	A score of 100 runs by a batsman in one innings.
Crease	An area demarcated by white lines that defines the zone within which the batsman and bowler operate.
Duck	When a batsman is out without scoring a run.
Declaration	When a captain decides to close an innings while he still has wickets in hand (i.e., batsmen still remaining to bat).
Delivery	The act of bowling by a bowler.
Extras	Runs added to a team's total not created by the batsman (e.g., byes, leg-byes, no ball, wide ball).
Extra-Legal Delivery	A legal delivery the bowler must make to compensate for illegal deliveries like no ball, wide ball in an over.
Fielder	A member of the bowling team who is positioned at various places on the ground to stop the ball from reaching the boundary and return it to the bowler at the pitch.
Fifty	Fifty runs in a single innings.
Fours	Four runs are awarded to the batsman when he hits the ball along the ground to the boundary line.
Half-century	A score of 50 runs by a batsman in an innings.

EXHIBIT 1 (CONTINUED)

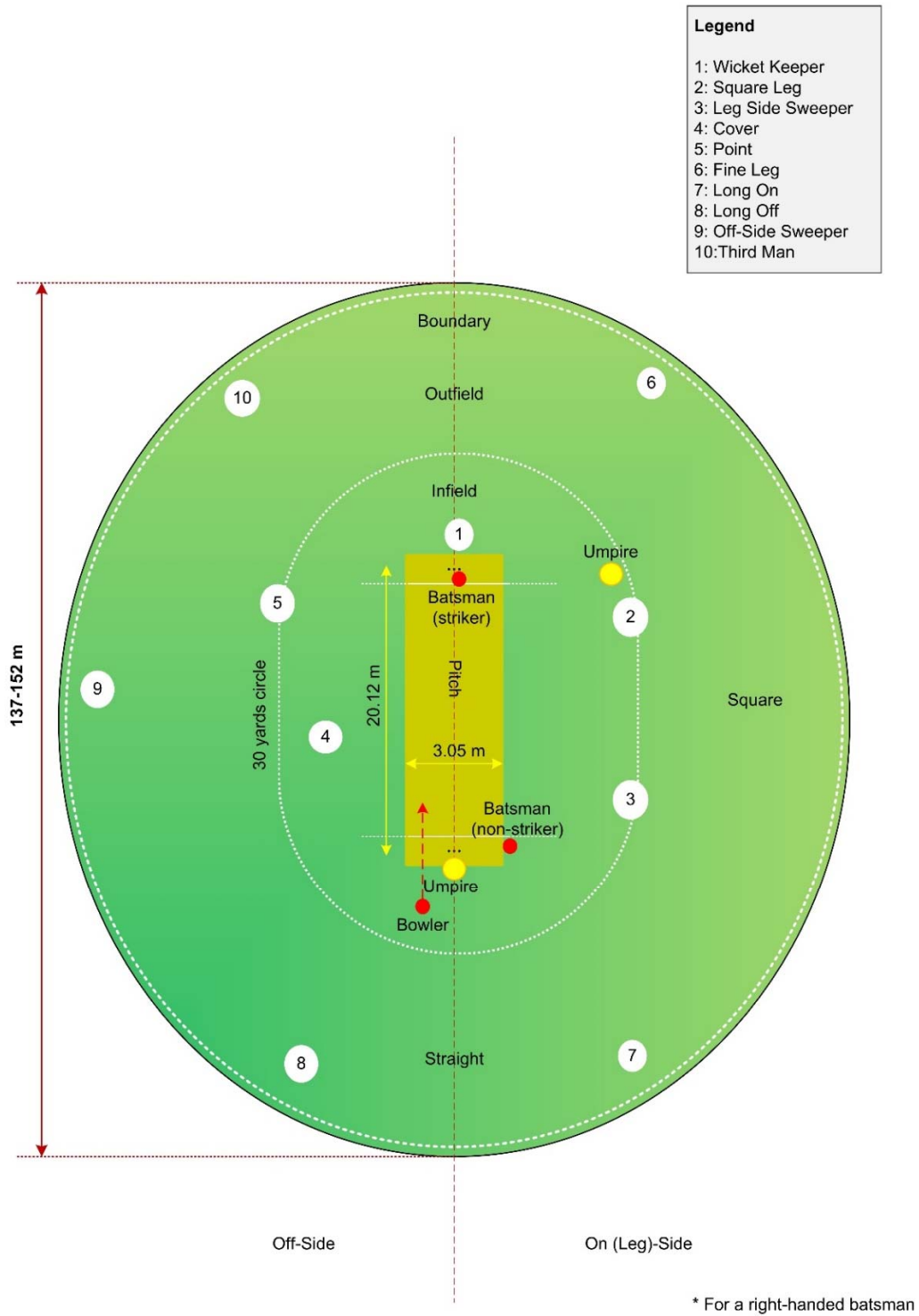
Howzat	"How's that?" An appeal by the fielding side to the umpire asking for dismissal of a batsman.
Innings	Time period of batting by a team. This depends on the format being played. 50 overs for ODI, 20 overs for Twenty20. However this can be cut short if the batting team concedes all its wickets.
LBW	Leg before wicket. Method of dismissal credited to the bowler. When a batsman fails to play the delivery and the ball strikes his leg, which is just in front of the wicket. It is up to the umpire to decide whether the batsman is out or not.
Leg Byes	When a legal delivery misses the bat but touches the batsman's body, any runs completed are credited as 'leg byes'.
Maiden over	An over in which no run is scored by the batsman.
No ball	An illegal delivery requiring the bowler to bowl an extra-legal delivery while a run is added to the score.
Non-striker	A batsman waiting at the bowler's end of the crease.
ODI	One-day international. A cricket format played with 50 legal overs for each innings.
Out	When a batsman is considered dismissed or out.
Over	Six legal deliveries complete one over.
Pitch	A specially prepared area between the two sets of stumps, which is 5 feet wide and 22 yards long.
Run	Unit of scoring.
Sixes	Six runs awarded to the batsman when he hits the ball in the air and it crosses the boundary line before coming into contact with the ground.
Striker	The batsman facing the bowler.
Stumps	Three wooden sticks on which the bails rest.
Test match	A contest of two innings per side over five days between two full members of the ICC. A team usually bats until it has either run out of wickets or the captain declares the innings.
Twenty20	Also called T20. A cricket format played with 20 legal overs for each innings.
Umpire	The individual officiating the game and ensuring that rules and regulations are followed. The umpire uses various signals to indicate certain events during the game. There are usually three umpires in all formats of international cricket.
Wickets	Three wooden stumps with bails on top. Two sets of wickets are pitched opposite and parallel to each other, 22 yards apart.

EXHIBIT 1 (CONTINUED)

Wicket keeper	The player from the bowling team who stands behind the striking batsman in case the batsman misses the delivery.
Wide Ball	A ball high over or wide of the wicket. It must be signalled by the umpire as wide, and a run is added to the opposing team's score by way of a penalty.
Yorker	A delivery just near the bat or batsman's toes, whereby the batsman must act fast to stop it or the ball will pass underneath the bat and may hit the wickets

Note: ICC = International Cricket Council.
Source: Created by the authors.

EXHIBIT 2: A TYPICAL CRICKET GROUND AND FIELDING POSITIONS



Note: m = metres

Source: Created by the authors.

EXHIBIT 3: INDIAN PREMIER LEAGUE TEAMS FOR 2019 SEASON

Team Name	Home	Owner(s)
Chennai Super Kings	Chennai	India Cements Ltd.
Delhi Capitals	New Delhi	GMR Group, JSW Group
Kolkata Knight Riders	Kolkata	Shah Rukh Khan, Juhi Chawla, Jay Mehta
Mumbai Indians	Mumbai	Reliance Industries
Kings XI Punjab	Chandigarh	Ness Wadia, Preity Zinta, Mohit Burman, Karan Paul
Rajasthan Royals	Jaipur	Manoj Badale
Royal Challengers Bangalore	Bengaluru	United Spirits
Sunrisers Hyderabad	Hyderabad	Kalanithi Maran

Source: "Home Page," Indian Premier League, accessed October 1, 2021, <https://www.iplt20.com>.

EXHIBIT 4: INDIAN PREMIER LEAGUE AUCTION SNAPSHOT FOR 2019 SEASON

Player's Name	Player's Position	Winning Bid (in ₹ million)	Winning Team
Jaydev Unadkat	Bowler	84	Rajasthan Royals
Varun Chakravathy	All-rounder	84	Kings XI Punjab
Sam Curran	All-rounder	72	Kings XI Punjab
Colin Ingram	Batsman	64	Delhi Capitals
Carlos Brathwaite	All-rounder	50	Kolkata Knight Riders
Axar Rajesh Patel	All-rounder	50	Delhi Capitals
Mohit Sharma	Bowler	50	Chennai Super Kings
Shivam Dube	All-rounder	50	Royal Challengers Bangalore

Note: ₹ = INR = Indian rupee.

Source: "Home Page," Indian Premier League, accessed October 1, 2021, <https://www.iplt20.com>.

EXHIBIT 5: DATA DESCRIPTION

Parameter	Description
Player	Name of IPL player
Team	Name of IPL team
Runs scored	Total runs scored by a player
Batting average	The total number of runs a batsman has scored divided by the total number of times he has been called out in IPL 2019; higher values indicate a stronger performance
Strike rate	The number of runs scored per 100 balls faced by a batsman in IPL 2019; higher values indicate a stronger performance
Number of fours	The total number of boundaries (equivalent to four runs) scored in IPL 2019; higher values indicate a stronger performance
Number of sixes	The total number of sixes scored in IPL 2019; higher values indicate a stronger performance
Number of fifties	Total number of times a player has scored more than 50 runs while batting in IPL 2019
Number of hundreds	Total number of times a player has scored more than a hundred runs while batting in IPL 2019

Note: IPL = Indian Premier League.

Source: Created by the authors.