

Original Article

The Impact of Analytics in Sports: An Examination of Practice and Potential

¹Kailla J. Robinson, ²Peter Wui, ³Kamlesh Tiwari

^{1,2,3}School of Business and Management, University of Arkansas at Pine Bluff, Arkansas, USA.

Received Date: 25 June 2023

Revised Date: 30 June 2023

Accepted Date: 02 July 2023

Published Date: 10 July 2023

Abstract: *The role of analytics in sports has seen a dramatic increase in the past decade, transforming the way games are played and understood. This study explores the application and effects of analytics in various sports fields, with a specific focus on college sports, professional sports, and youth club sports. The paper comprises a literature review, interviews with professionals in the sports field, and a subsequent analysis of their experiences with analytics. The findings reveal a nuanced and diverse view of analytics, showing its influence on strategic planning, player recruitment, game performance, and injury prevention. Despite some criticism, the overall perception of analytics is positive, suggesting a significant potential for further application and integration in the sports industry. The study underlines the need for continued investigation and experimentation, particularly with new data collection technologies. In conclusion, analytics not only supports strategic decision-making but also enhances the understanding and appreciation of sports among athletes, coaches, and fans.*

Keywords: *Diverse View of Analytics, Practice, Potential.*

I. INTRODUCTION

Personal experience with college sports transcends mere participation; it's about the strategic execution of the game. It's easy to judge a player's effectiveness or identify their frequent mistakes, but there's a more profound layer to this analysis. Increasingly, coaches and team personnel are resorting to performance statistics, marking a trend that spans professional, collegiate, and even youth club sports. These statistics reveal what strategies and which players are benefiting the team, thereby hastening and sharpening the game's analytical aspect. Sports analytics have enhanced our critical approach to formulating a winning strategy, identifying injury risks, and understanding the game's flow.

Consider Mike Lopez (2022), a statistician with a deep passion for football and a strong grasp of statistics. His expertise enabled him to secure the position of Director of Football Data and Analytics at the National Football League (NFL). In his article, Lopez describes his daily responsibilities, which include scrutinizing on-field tendencies of players and coaches. His team also assesses various metrics related to game excitement, fairness, player equity, health, safety, officiating, and game pace. As the game continues to evolve, Lopez and his team are enthusiastic about their potential to innovate the sport's future.

Numerous professional sports have embraced data analytics, acknowledging its impact on game outcomes, particularly when incorporated into preparation strategies. The world of college sports is now beginning to harness the power of analytics. Sports like basketball and football are pioneers in this endeavor, but the question remains: can other sports also reap benefits from this technological tool?

II. LITERATURE REVIEW

Analytics, with its multifaceted capabilities, has emerged as an influential tool in various aspects of sports, offering insights to improve player performance through advanced technology. It has revolutionized not only the game itself, but also administrative functions like management, marketing, and social media, all benefiting from big data analytics. Despite initial resistance to the influx of "nerds" with their numbers and averages in the sports domain, it is now widely accepted across multiple sports, as shown in Greenbaum's 2018 research (Greenbaum, 2018).

Peter Dizkies, in his article 'How statistical analytics has changed sports', attributes the Golden Gate Warriors' triumphant 2015 season to their high percentage in 3-point shots, discovered through analytics. However, he also observes that over-reliance on analytics may lead to unmet expectations if pre-game strategies don't play out as predicted, exemplified by the NBA's 76ers, an analytically assembled team that failed to achieve a winning record (Dizkies, 2016).

Sports analytics has faced considerable criticism, as depicted in the book 'Moneyball'. The story revolves around the Oakland A's, who built a team based on statistical data, receiving significant backlash from both inside and outside the organization. The trend towards an analytical game plan, despite its detractors, has had considerable merits (Harris, 2021).



As technology advances, new data collection methodologies have revolutionized the application of analytics in sports. Researchers at the University of Kansas, in their quest to investigate basketball Dunk Kinetics, utilized tools like monitors, apps, and sensors to capture real-time data and draw immediate analysis, further attesting to the positive influence of technology in sports (Cabarkapa, 2020).

The use of analytics in assessing playing stats has also seen significant advancements. 'Moneyball' paints a vivid picture of this evolution, detailing how the Oakland A's employed a program called sabermetrics to become a successful team despite having the smallest payroll in MLB. The application of sabermetrics led to strategic emphasis on creating walks and reaching the first base instead of conventional strategies like hit-and-run or aggressive base running (Lewis, 2013).

In his article, 'General Managers and the Importance of Using analytics', Dr. Rocco Porreca expanded on the 'Moneyball' theory. He opined that with the proper use of technology, the 'Moneyball' concept could be applied to other sports like Hockey and Soccer. However, the introduction of sensor technology in Hockey and predictive analytics in Soccer are still in their experimental stages, indicating a need for further investigation and experimentation (Porreca, 2016).

III. METHODOLOGY AND DATA

The objective of this study is to stimulate discussion around the application of analytics across various sports and their distinct facets. An initial literature review yielded three key findings:

1. The opinion on the effectiveness of analytics in sports is polarized, with arguments favoring both its benefits and potential harm.
 2. Many coaches are using analytics to exploit players' strengths in specific game situations to achieve favorable outcomes.
 3. Technological advancements have significantly transformed the rate and precision of data collection for analysis.
- However, to further delve into the real-world impact of analytics in professional sports, a qualitative research approach involving interviews will be employed.

This study will involve interviews with a Major League Baseball scout and a girls club volleyball coach to gather real-time insights into how they utilize analytics in their daily practices, from scouting potential players to developing existing ones. They will also share their thoughts on the utility of analytics in sports. Questions will include:

- How do analytics influence your recruitment process and day-to-day activities?
- Do you rely solely on analytics, or do you also consider other factors?
- Have there been instances when the analytics provided inaccurate predictions?
- Does your organization employ analytics in areas other than scouting?

Data will be collected through in-person, voice-recorded interviews, which will then be transcribed for further analysis. The data gathered from the interviews is depicted in Table 1.

Questions	S. P. of Baseball Recruiter	K. L. of Volleyball Coach
1. What roles do analytics play in your recruiting and everyday work?	In my profession, analytics are utilized daily for varied purposes. These include examining statistics, making strategic adjustments, and ultimately ensuring a successful season. When scouting potential players, I primarily analyze statistics from the past two years, focusing on metrics like At Bats (AB), Runs Batted In (RBI), Batting Averages (BA), and On-Base percentage (OBP).	While I use a simpler approach to analytics, it's crucial for recruiting new players each year and during the season for self-evaluation and player development.
2. Does your team solely use analytics, or do they use outside factors?	While analytics significantly contribute to our selection process, we also consider players' characters. We seek passionate players who align with our organization's values. Although we value physicality and athleticism, we prioritize statistical performance since we can enhance physical attributes through our conditioning program.	In addition to analytics, I consider attitudes and other factors that could affect team dynamics, especially given the young age of my team. However, statistical analytics remain a cornerstone of our decision-making process.
3. Have the numbers ever been wrong?	Certainly, numbers have occasionally misrepresented a player's actual performance. Various factors can alter a player's performance, including injuries and psychological pressure from transitioning into the major leagues. We attempt to mitigate such situations by providing support, including sports psychologists, but ultimately, we must prioritize our business interests.	Since we're aiming for consistency with a young team, sometimes statistically derived strategies don't deliver the expected outcomes.
4. Does your organization use analytics in any other part of the game outside of scouting?	We utilize analytics beyond scouting to optimize batting and pitching reliefs, aiming for the strongest lineups.	We primarily use analytics for stats and assist players transitioning to college by sharing their statistics with interested colleges. We also utilize stats for one-on-one meetings, helping players identify their strengths and weaknesses.
5. Any other comments on sports analytics?	Sports analytics have transformed the game, providing detailed, objective insights that inform our decisions as an organization.	I view analytics as an invaluable tool at any level of sports. Its accessibility and ongoing advancements will significantly enhance the sports experience for coaches, players, and fans alike.

Table 1. Interview Questions and Response

IV. ANALYSIS AND COMPARISON

The interviews conducted with S. A., a professional baseball scout, and K. L., a coach for a girl's club volleyball team, sought to explore the role of analytics in their respective fields. While many similarities emerged, several disparities were also observed, potentially due to differences in professional levels, highlighting the diverse applications of analytics in sports.

S. A. utilizes analytics extensively in his professional activities, evaluating athletes' statistics to determine their suitability for the team. He mentioned that analytics aren't limited to recruitment but extend to game strategy and other areas, such as therapy sessions and general athlete wellbeing within the professional baseball environment.

K. L., although working on a more fundamental level, incorporates analytics in her coaching strategy and player recruitment process, much like S. A.. She reviews high school statistics of potential players, which helps inform her team selection decisions for the upcoming season. However, she finds analytics most beneficial during the season. Post-game data is collected, analyzed, and then used to plan future strategies, as well as to provide feedback to her athletes.

These interviews highlight the significant role of statistical analysis in sports, a sentiment echoed in the literature review. Emphasis on numbers rather than physical appearances or abilities when forming teams aligns with the 'Moneyball' theory identified in the reviewed literature.

Notably, the literature highlighted the technological advancements aiding data collection, such as chest-worn sensors for tracking athletic performance, sports watches, performance cameras, and in-game sensor equipment. This technology has heightened precision in sports and offered a more granular view of in-game actions, thus elevating the sports experience.

Despite its prominence in literature, technology didn't feature heavily in the interviews. If this study were to be repeated, interviewing a sports statistician or a representative from a company specializing in sports technology would enrich the research, providing a more comprehensive understanding of analytics in sports.

V. CONCLUSIONS

In wrapping up this report, the research substantiates the value that analytics brings to sports from the perspectives of athletes, coaches, administrators, referees, and perhaps even fans. Sports have long been a medium of connection and emotion, creating bonds and eliciting feelings that often take us by surprise. The incorporation of analytics in games, whether it's football, baseball, basketball, or volleyball, only amplifies the depth of these experiences.

Analytics offer a numerical narrative, supplementing our visual impressions with quantifiable data. This numerical support helps us interpret the game beyond surface observations and down to intricate details. Consider the impassioned debates on the best NBA player of all time – Kobe, LeBron, Jordan, Pippen – it's invariably the stats that become the ultimate arbitrator, right? Or think about an underestimated baseball team with a limited budget that manages to score playoff appearances and set records against all odds; here too, analytics come to the fore.

Rather than undermining the sports we love, analytics enhances our comprehension by breaking down the 'why' behind each play. It's not a threat to the essence of sports but a tool that enhances our understanding and appreciation of the game.

VI. REFERENCES

- [1] Cabarkapa, D. (2020, May 6). A study on the validity of a 3-D marker less motion capture system in assessing basketball dunk kinetics. *The Sport Journal*. Retrieved from <https://thesportjournal.org/article/validity-of-3-d-markerless-motion-capture-system-for-assessing-basketball-dunk-kinetics/>
- [2] Dizikes, P. (2016). The influence of statistical analytics in sports. *USA Today Magazine*, 144(2852), 46-47.
- [3] Greenbaum, D. (2018). Critiquing the use of big data analytics in sports. *American Journal of Bioethics*, 18(6), 32-33. <https://doi-org.uapblibrary.idm.oclc.org/10.1080/15265161.2018.1459953>
- [4] Harris, J. C. (2021, June 17). Critique on the Bucks' reliance on new-age analytics over common sense. *New York Amsterdam News*, 40.
- [5] Lewis, M. (2013). *Moneyball: The unfair art of winning in sports*. W.W. Norton.
- [6] Lopez, M. (2022). Encouraging interest in statistics through sports analytics and data storytelling. *Amstat News*, 541, 18-19.
- [7] Porreca, R. P. (2016, August 17). The significance of analytics in the role of general managers. *The Sport Journal*. Retrieved from <https://thesportjournal.org/article/general-managers-and-the-importance-of-using-analytics/>
- [8] Zuccolotto, P., Manisera, M., & Kenett, R. (2017). The BDSports Project: Big data analytics in sports. *Electronic Journal of Applied Statistical Analysis*, 10(3), 1-2. Retrieved from <http://bodai.unibs.it/BDSports>.