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Big Data Analytics: The Latest Game Changer

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ABSTRACT

Big Data Analytics plays a crucial role in today's world and is expected to grow rapidly in the foreseeable future. This research essay explores the impact of big data analytics on cricket, a high-level sport rich in tradition. The complications and complexities that emerge when integrating big data analytics into the world of cricket are addressed using the International Cricket Council (ICC), as a real-life example. The importance of ICT Governance and Knowledge Management pertaining to this matter is highlighted as well.

INTRODUCTION AND CONTEXT

Big data comprises of extremely large and intricate datasets that are challenging to regulate, process, and evaluate using conventional data processing techniques. Big data has five main qualities: volume, velocity, variety, value, and veracity. "**Big data analytics** defines the use of advanced analytical techniques to deal with very large and diverse datasets that include structured, semi-structured, and unstructured data from various sources" (Big Data Analytics | IBM Official Website). It ultimately contributes to enhanced business intelligence, modelling and prediction of future outcomes, and faster and better decision-making. Data security, data privacy, and misinterpretation are several notable issues associated with big data analytics.

The rapid rate of technological advancement in modern times has had a significant impact on how organizations and individuals have utilized big data analytics to effectively influence their planning and decision-making processes. This has also been evident in the realm of sports, particularly modern-day cricket, where big data analytics has enabled teams to acquire a competitive edge over the opposition and has been massively influential in the fan engagement aspect as well. "The data and analytics in sports market was $2.58 billion in 2021 and is expected to grow massively to $16.5 billion by 2030" (Jacques du Preez | Intellinexus 2022). The **International Cricket Council (ICC),** as the main governing body of cricket, has integrated big data analytics in various aspects of the sport. Fan engagement, match analysis, performance analysis and content creation are several areas where it has been utilized effectively by the ICC. Apart from the ICC, many other organizations and teams in the cricketing world have reaped significant benefits from incorporating big data analytics into their arsenal.

However, there are several challenges that emerge when incorporating and executing a data-driven approach in a sport with rich tradition. The human element playing a significant role in the outcome of a cricket match, complicates the situation even further. Therefore, while adopting big data analytics into cricket, it is essential to consider each of these aspects. Nonetheless, research indicates that there are several areas that have potential for improvement. The essay touches upon how effective big data analytics has proven to be by comprehensively reviewing the benefits and complications of embedding it into the sport.

INFORMATION SYSTEMS MANAGEMENT ISSUE

The integration of big data analytics into the domain of cricket has proven to be a tall order due to the proliferation of data in modern-day cricket. The generation of cricket related data at a rapid rate has created a necessity for stringent quality standards and data evaluation. An upsurge in cricket matches globally, backed by a thriving broadcasting industry, produces massive amounts of data, with the inclusion of video footage from international, franchise and domestic cricket. This hefty amount of data demands meticulous collection, storage and analysis, contributing to the complexity.

Data security and privacy is one of the most common concerns regarding big data analytics in today's world. In the context of cricket, a rival team may acquire insider knowledge regarding their opponent, granting them an unfair advantage on the field. "While in-game performance data can be obtained by observation, athlete training and lifestyle data is harder for an outside party to get hold of" (Bernard Marr | Forbes 2017). Leakage of private information such as athlete training routines can be exploited in a sport like cricket, where teams could implement specific strategies to deal with specific players and get ahead in the game. Moreover, in franchise cricket such as the IPL, rival teams could have unfair access to key information on athletes, which may be exploited in relation to player transfers, granting them an upper hand over opponent teams. Therefore, appropriate focus is required on maintaining data privacy among teams competing at the highest level, simply because the stakes are high. **Misinterpretation and relevancy** issues may also transpire when dealing with large amounts of data with high complexity. To be more specific, information gathered in a game of cricket can be incomprehensible to the average analyst who doesn't have adequate knowledge on the sport. This may lead to incorrect judgements when data driven decision making is implemented.

More importantly, a **cultural shift** is essential in order to embrace the data-driven approach in sports. "As depicted in Moneyball, the use of data and analytics has encountered headwinds and degrees of resistance over the years, largely due to the cultural change that it entails" (Randy Bean | Forbes 2023). Although **Moneyball** refers to a data-driven approach in baseball team management, the reluctancy to change from conventional methods can be seen in cricket as well.

Managers, coaches and players could be reluctant to use data-driven strategies in favor of traditional methods. Therefore, it is essential that appropriate education is provided on the advantages of big data analytics, along with real life examples of success stories on individuals who have taken a data-driven decision-making approach in the recent past.

Regardless of all these factors discussed above, at the end of the day a sport is played by human beings. Big data analytics frequently disregard the human aspects in sport. Factors such as player motivation, timing and luck can significantly influence the outcome of a game, but can be challenging to quantify and measure. Furthermore, coaches and players may not always trust data insights leading to a reluctance towards data-driven decision making (Data Overload | 2023). Therefore, when decisions are made and strategies are implemented, the **intangible factors** stated above should be considered, as they may be overlooked in the realm of big data analytics.

DISCUSSION AND ARGUMENT

The International Cricket Council (**ICC**) is the international governing body of cricket, responsible for administrating and piloting the sport, in addition to conducting all ICC events. The **fan engagement** aspect of big data analytics was on full display during the recently concluded ICC Cricket World Cup 2023. The ICC utilized 40 years of historical World Cup data to anticipate outcomes and enhance the viewing experience. The primary objective was to employ big analytics to deliver real-time and captivating statistics to the viewers in a story-telling format. The complication in this context is that data-driven insights have the potential to be biased, mainly because intangible factors enter the equation, leading to biased match prediction and unfair player analysis. Therefore, it is essential that the ICC ensures that the insights provided are impartial and unprejudiced. Dealing with extensive player data consisting of statistics, personal information, and medical records, increases the potential of violating athletes' privacy. Certain players may also prefer to stay out of the spotlight, therefore it's crucial that the ICC has explicit consent in the context of content creation, and also strict policies that ensure that the data security and privacy of athletes is kept intact.

During the ICC Cricket World Cup last year, it was evident that coaches and analysts thoroughly examined a wide range of data available, to uncover patterns and trends, assisting them in making data-driven decisions throughout the tournament. Furthermore, data analytics supports teams in monitoring their own performance and while also highlighting areas of improvement. Regardless

of all the advantages big data analytics possess, the process of embracing it comes with its own set of complications and challenges.

Increasing overall performance of a player using insights obtained through big data analytics, can be only be successful if the player applies it on the big stage. Although coaches and analysts provide the necessary guidance, the responsibility of executing it on the field falls onto the player. **"Do players trust data insights? Not as much as analysts and coaches might want" (Cameron Ponsonby | ESPN Cricinfo 2021).** Several highlighted aspects are:

- **Data and Instinct**

  Not just cricket, but when any sport is taken into consideration, it's observed that each and every athlete has their own distinctive way of approaching competition. Cricket as we all know, is and always will be, fundamentally a game of instincts. We have witnessed multiple occasions where players have solely relied upon instincts and pulled off outstanding victories. But if we closely examine a situation, it is not impossible to find a point where it could've all gone wrong in that game. This is where data analytics comes into play. With the collaborative effort of coaches, analysts and players, a world where instincts could be enhanced using data-driven insights, is not beyond reach.

- **The data insight backfires**

  Given the unpredictable nature of the game, it's likely to have instances where data-driven predictions go wrong. If a player relies on data insights during a game and things fail to go

his way, it might create a situation where that player might refrain from adopting data-driven strategies in the future.

- **Different players process data differently**

    Every player is unique in their own way. Therefore, when data insights are presented to athletes, relevancy and differentiability are crucial factors to consider. Individuals have distinctive thinking patterns. "The challenge for teams is tailoring that black-and-white information to a sea of individuals who come in grey" (Cameron Ponsonby | ESPN Cricinfo 2021).

In order to successfully adopt the data-driven culture into the team, it's essential that captains and coaches buy in on the strategy before everyone else. Sequentially, it will make it easier to pass down the data insights and embed the data-driven approach in other players.

CONCLUSION

Big Data Analytics has profoundly altered the way cricket is played in modern times. The central component of the game, the **human element**, has now been enhanced by a thorough, data-driven approach that assists in maximizing each player's potential and improving the overall performance of a team. Athletes are now able to utilize their inherent skills such as talent, passion and instinct much more effectively, thanks to big data analytics.

While big data analytics has substantially impacted cricket, several challenges and complexities arise when fully incorporating it into the game. A significant issue is that big data analytics often overlook certain aspects such as player motivation, injuries, and team dynamics. Therefore, it is imperative to strike a balance between data-driven insights and the intrinsic human elements that define the sport.

In order to ensure that big data analytics further consolidates its position in cricket, individuals in authority should consider shifting their focus towards youth and academy level cricket as well. This initiative intends to introduce the data-driven approach to the **next generation of athletes** at a young age, in order to ensure that utilizing data-driven strategies at the highest level does not become unchartered waters.

Moreover, it is essential to pay attention to the issue of **data security and privacy**. Consent mechanisms and strict policies must be implemented in order to safeguard sensitive information about players. Whether it's player analysis or fan engagement, it is imperative that the ICC has strict ethical guidelines that ensure that certain boundaries are never crossed. The ICC should also thoroughly ensure that any data insights shared regarding players and teams are impartial and legitimate.

As cricket evolves, big data analytics will continue to play a vital role in molding the game and providing an engaging experience for both athletes and fans. The report reinforces the need for a balanced and strategically controlled integration of big data analytics into cricket, acknowledging its groundbreaking potential while preserving the traditions and individuality that has made cricket a beloved global sport.

CRITICAL REFLECTIONS

In order to ensure the successful integration of big data analytics into cricket, it is essential that fields such as **ICT Governance** and **Knowledge Management** are incorporated effectively. ICT Governance refers to a framework of guidelines and procedures that ensure that an organization's IT operations are aligned with its objectives. Several challenges and complications that emerge with incorporating big data analytics into cricket can be mitigated by the effective use of ICT governance. As mentioned previously, big data analytics had major data security and privacy concerns. Proper emphasis on implementing strict policies with the aim of safeguarding the confidentiality of sensitive information regarding athletes and ensuring that consent is received at all times, would significantly reduce the data security and privacy issues associated. The governance procedures in effect should also verify the accuracy of the insights delivered, and also take accountability when integrity issues emerge. It is also essential that policies are in place to address any prejudices that may develop when data-driven decisions are taken.

Knowledge Management comprises of procedures that focus on increasing awareness, delivering insights, promoting education, as well as encouraging creativity and collaboration. Certainly, big data analytics has proven to be effective in obtaining key insights on team strategies and player performance. It is essential that knowledge management is efficiently utilized to ensure that the information gathered is properly conveyed among key parties such as players, coaches and analysts in order to ensure that these data-driven actions are flawlessly executed in the field. Furthermore, knowledge management plays a crucial role in the cultural shift necessary to ensure the successful incorporation of big data analytics into cricket. Coaches, players and analysts must be enlightened on the benefits of data-driven decisions with the support of awareness and education initiatives, in order to kickstart the cultural shift under discussion. The awareness initiatives can also be implemented to embed the data-driven amongst youngsters at youth and academy level. Knowledge management can also facilitate collecting, analyzing and storing the large amounts of cricket related data, and also serve towards interpreting the data acquired in an applicable manner given the dynamic and evolving nature of the game.

The ICC itself provides a real-life example on the manner in which ICT governance and knowledge management is utilized to uphold the integrity of the game. "The ICC, too, plays a significant role

in protecting the spirit and integrity of the game through the ICC Code of Conduct, the efforts of our Anti-Corruption Unit (ACU), our Anti-Doping programme and our commitment to ensuring racism has no place in our sport" (ICC Official Website). Raising awareness among athletes, coaching staff, and the management on the level of integrity expected when the game is played, documenting the code of conduct and other regulations, data security and risk management, as well as monitoring closely for potential breaches in the code of conduct are a few out the of many instances where ICT governance and knowledge management has been effectively employed by the ICC.

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