



# **Analytics: A New Game Changer in Sports Industry**

**Uma G<sup>1</sup> & Karthick Balaje G E<sup>2</sup>**

1.Assistant Professor; 2.B Sc Statistics  
Department of Statistics, PSG College of Arts & Science,  
Coimbatore, TamilNadu India.

[amug072000@gmail.com](mailto:amug072000@gmail.com)

## **ABSTRACT**

In recent years, a trending word 'Big Data' and 'Analytics' heard in each and every field of study especially in the applications and conjoining the terms with fields like Finance Analytics, Business Analytics, Risk Analytics, Data Analytics and so on. In such way, sports is also taken its journey, to have a scientific way of studying and analyzing the nature of tackling the game by the players' performance and started in using the new digital technological tools to bring out a lane with 'Analytical View', known to be "Sports Analytics.

Sports are associated with numerous games having huge amounts of information based on the past, which cannot be analyzed in a meaningful way. In this data tech world, due to expansion and innovation, social media shows the players performance of the game in each and every angle that has inflated everyone from players to the viewers in and around 360 degrees. This article offers a pristine view of the exploring of statistical analysis in the emerging field of sports through analytics. The state of this study is to get a clear picture of Statistics and its subfields in the area of sports. This discussion also paves way for the intensification of Sports and Analytics (especially a Statistician) to integrate for the interdisciplinary approach in the upcoming decade and also view about the screen behind magic of sports analytics. So lets inchoate an overview on Sports Analytics with Statistics.

**Key Words** : *Analytics, Sports Analytics , Pristine View, Statistics, Growth Rate.*

## **INTRODUCTION:**

India is the second largest populated country comprising nearly 18% of the world population with a great tradition of sports. India is home to variety of sports since from Vedic Era and is greatly influenced in 18<sup>th</sup> and 19<sup>th</sup> century during the presence of Britishers in India. The board game Chess was originated in

India with the initial name as “Chaturanga”. During 20<sup>th</sup> century British officers excelled at its ‘History of Sports in India’. Also in 20<sup>th</sup> century, Kabaddi, Snooker, Martial Arts, Polo, Snakes and Ladder, Chess, Cards and other games gained huge popularity across broader of outside India. The appearance and face of sports started its change and modifications in this time period.

There are so many sports and games which are played by players all over the world. Sports and Games have been widely recognized as an essential ingredient of human resource development. Sport is no longer sheer play which is spontaneous involvement in an activity where the source of pleasure in participation rather than the outcome. Active participation in competitive sports not only builds a healthy body but also a healthy mind. Players need to have a competitive streak and yet at the same time, it is important to handle loses in the right manner too. True sportsperson do not believe in quitting, they will fight until their last breathe to make sure that they have it in them to handle the different adversities. There are a lot of case studies of various players and a team who battled the adversities and came out on top. There was a need to prepare the players mentally too. This inchoate a new era of analysis by crunching the data, which will alleviate the player’s mentality and wisdom towards their respective game.

Over these years, a variety of data capturing devices and technologies , have become available in sports industry .These innovations paved the way for the sports industry to influence those data with analytics .So, those studies suggest a data driven way of approach to both on-field and off-field analytics. Sports analytics is a field that applies data analysis technologies to analyze various components of the sports industry, such as player performance, business performance, tackling the game in different ways, recruitment and more....

The rest of the paper is organized as follows. Section 2 presents a pristine view of the use of analytics in sports and its types. Section 3 includes the technologies and languages used in sports analytics and their needs. Section 4 involves about their needs. Section 4 involves about concealed appearance of the analytics in sports. It is followed by the future and growth of sports analytics with conclusion.

## 2)ANALYTICS IN SPORTS:

Sports analytics is generally split up into 1) On field analytics and 2) Off field analytics.

- 1) **On field analytics** deals with improving the performance of the players and team .It digs deep into aspects such as players’ fitness and game tactics. This analytics have helped the players presciently by the means of tactics or decisions.
- 2) **Off field analytics** deals with the business side of sports .This is an another way of implementing Business intelligence onto sports i.e., off-field analytics essentially uses data to help the rights holders to take decisions such as 1)what would lead to higher growth and increase in this profit 2)Planning about issuance funds for recruiting players in auction etc.,

Let’s dig deep onto the ON-FIELD ANALYTICS. On field analytics, includes both descriptive and predictive analytics within it.

Descriptive Sports Analytics is about summarizing the sports data in the form of single value such as average speed of throwing ball in the cricket team. Descriptive Statistics includes measures of central tendencies, measures of dispersions, correlations and as such. A bivariate method such as correlation helps to analyze the relationship between two variables such as height and weight of sports person, age and performance score, analyzing scores in matches etc. Also diagnosing analytics such as regression methods help to assess the cause and effect relationship between the two variables with height and weight, age and speed, also able to estimate the unknown value of the variable. This might sound like a simple concept but it's a very powerful one in previous decades for the assessment of the players especially in the selection process.

In recent years with the advent of digital technologies, analysis is taken its transition to analytics. During previous decades, the nature of data or information is in a prescribed or uniform format where the descriptive and diagnostic analytics were used. Due to the emergence of Big Data with huge volume, variety, velocity and veracity, the analytics has taken a new avatar leading to predictive analytics and prescriptive analytics. Predictive analytics include different types of econometric and statistical techniques the ranges from machine learning models, classification, linear and multivariate regression and other techniques. This analytics is indispensable now-a-days because it reveals the match outcome, how to plan a strategy, betting and even in social marketing. This prescient information makes a sports analyst a connoisseur in amidst the players and coaches. Now let's look into the tools and programming languages used to process this analytics.

### 3) Tools and Programming Languages:

One has to know primarily, how to work with data -identify data sources , gather data, organize and prepare them for analysis ie., *descriptive* (“What happened”), *diagnostic* (“Why did it happen”), *Predictive*( “What will happen”), (*Prescriptive* (“What should we do”) and *Cognitive Analytics*(Combining of AI, ML DL etc for performance of certain tasks). It is our job to learn from data and implement models and analytics that work .This includes a confluence of both programming and statistical knowledge. For practicing sports analyst, one must be technically sound with Python or R programming languages. These tools and models paved way for debilitating the conventional descriptive analysis and establishing the predictive analysis, nowadays.

#### **Python:**

- 1) Building data pipelines to collect or transform data from data bases. For example web scraping ,ETL.
- 2) Data manipulation and pre-processing to clean data.
- 3) Perform data science methods to gain powerful insights.

#### **R:**

- 1) Data manipulation and pre-processing to clean data
- 2) Perform data science methods to gain powerful insights.

**Tableau, Power BI:**

- 1) To communicate with management, players and coaches. Sports Analyst leverage creating visualization to explain their insights in a fast and effective manner.

**CLOUD AND IOT:**

Data bases and analytics information are distributed across many computers in clusters and cloud .We also carry smallest of computers in Pockets, Wearables, watches and other data collection devices allowed . A sports analyst needs to understand how to leverage the power of cloud and IOT devices like wearable, watches for this analysis.

**DATABASES (SQL and NOSQL):**

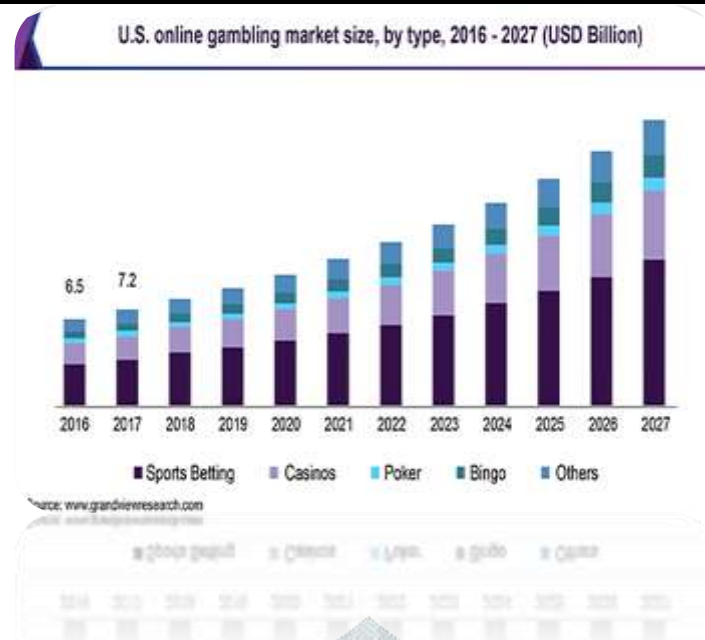
Sports analysts employ NOSQL, since it stores spreadsheets and relational databases. They must know to gather and make use of information, everyday. They should understand data base and object-oriented programming.

**STATISTICAL KNOWLEDGE:**

One of the most often used predictive technique is Regression and Classification .This look for relationship between variables using contingency table and categorical data analysis. It also includes multivariate regression which includes multi-variables. Statistical knowledge of time series is also essential, to work with the past sales to predict future, nothing overall trend in data. Sports big data can bring tremendous changes in the sports industry. Prediction is an important research aspect of sports big data applications. Nowadays the volume of structured and unstructured data is huge in the sports industry, machine learning techniques is used to predict the performance of athletes. Bayesian network model, Naïve Bayes, artificial neural network and decision tree algorithms are used for prediction. Supporting Vector Machine algorithm is used to predict the athlete's performance and showed the predictive accuracy of new model is more reliable than the current predictive model.

**4) CONCEALED APPEARANCE OF SPORTS ANALYTICS:**

Sports analytics have had significant impact on the field of play but sports analytics also contributed to the growing industry of sports gambling which accounts for approximately 13% of the global gambling industry. Many gamblers are attracted to sports gambling because of the plethora of information and analytics that are at their disposal when making decisions. With the popularity of sports gambling, came the development of a number of sports betting services. Sports betting services are provided by companies, such as William Hill, bet 365, betfair, Unibet and many more through their website and in many cases betting shops. A clear visualization of the growth of sports betting in the gambling market if it follows the trend from (2016-2027) is given,



## 5) FUTURE AND GROWTH OF SPORTS ANALYTICS:

The sports analytics market was valued at USD 1.05 billion (783) in 2020 and it is expected to reach USD 5.15 billion (3812) by 2026 and it grows at a CAGR of 30.13%.

This will lead to the development of sophisticated structure for crunching numbers related with sports and ensure presciently the results, win-toss records and evaluate the opponent's history to determine the outcome of a future sporting event. In coming years there is going to be several changes such as from simple statistic evaluation to model-based evaluation, from simple statistic analysis to data-driven performance prediction of athletes, from social network analysis to knowledge graph analysis and from explicit sports features to implicit sports features. Predicting the performance of players and teams can be carried out using analytics and is going to be a rising star of sports platform in coming years.

## CONCLUSION:

Analytics has completely disrupted the way, organization go about with their business by using the one commodity: Data! Data is what runs the show today making business as data economy. And it uses analytics to use, to produce infinite ways to provide individuals, groups, or organizations with insights. Every day data is towering around us and it is necessary to gain knowledge in statistical analytics becomes an integral part of sports management for the effective utilization of the data. Thus it is evident that frequency of research in sports analytics is consistently increasing as we could gather from the increasing frequency of such studies in coming years. The technology is emerging rapidly and sports industry will be utilizing it more efficiently in coming years. Therefore SPORTS ANALYTICS is not an extra player but a game changer by using the technology efficiently and having the best future sports industry will soon be a reality. A sport analytics community inspires new researchers and bridges the gap between the sports industry with statistics for the betterment and benefiting all sides from players, coaches, umpires and team to enhance professionalism and make the sport more enjoyable than before.

## References:

**Blundell, J.D.** Numerical Algorithms for Predicting Sport Results, available online

**Cordes V., & Olfman L. (2016):** Sport Analytics: Predicting Athletic Performance with a Genetic Algorithm. Twenty-second Americas Conference on Information Systems, San Diego.

**Fernandez J. (2016):** From Training to Match Performance: An Exploratory and Predictive Analysis on F.C. Barcelona GPS Data. Doctoral Thesis. University at Polit cnica de Catalunya

**Kapadia, K., Abdel-Jaber, H., Thabtah, F., Hadi, W. (2019):** Sport analytics for cricket game results using machine learning: An experimental study. Applied Computing and Informatics, <https://doi.org/10.1016/j.aci.2019.11.006>

**Rein, R. and Memmert, D. (2016):** Big data and tactical analysis in elite soccer: future challenges and opportunities for sport science 5(1):1410

**V. Cordes, L. Olfman(2016):** Sports analytics: predicting athletic performance with a genetic algorithm, In: Twenty-second Americas Conference on Information Systems, San Diego, USA, 2016

**Y. Ishikawa, I. Fujishiro, Tidegrapher(2018):** visual analytics of tactical situations for rugby matches, Visual Inform. 2 (2018), 60–70

**D.L. Searcy, J.T. Mentzer(2003):**, A framework for conducting and evaluating research, J. Account. Lit. 22 (2003), 130–167.

**Titan-Sensor (2019):** Real-time GPS tracking [Online], Available: [https:// www. titansensor. Com / titan-realtime-gps/](https://www.titansensor.com/titan-realtime-gps/) [Accessed: Sep 22 2019]

**Thomas, G.; Gade, R.; Moeslund, T. B.; Carr, P.; and Hilton, A (2017):** Computer vision for sports: Current applications and research topics. Computer Vision and Image Understanding 159:3–18

**Liu, F., Shi, Y. and Najjar, L. (2017).** Application of design of experiment method for sports result prediction. Procedia computer science, 122, pp. 720-726.

**Waller, M., A. and Fawcett, S.,E. (2013):** Data Science, Predictive Analytics, and Big Data: A Revolution That Will Transform Supply Chain Design and Management. Journal of Business Logistics, Vol. 34(2), pp. 77-84

<https://www.atlantis-press.com/journals/itmr/125944285/view>

<https://statsbylopez.com/2017/01/15/whats-it-like-to-work-in-sports-analytics/>

<https://mode.com/analytics-dispatch/sports-analytics-articles>

<https://medium.com/the-sports-scientist/top-10-technologies-for-sports-analytics-c093105daeda>