



Beyond Moneyball: Data-Mining the Premier League

The numbers are coming in thick and fast but can big data and advanced analytics influence a team's performance in the Premier League?

Since the 1950s, when retired RAF pilot Charles Reep's roughly-researched analytics led to the long-ball strategy, the football community has been enthralled by statistics. Today Premier League teams and their followers are being inundated with data as high-tech cameras capture every pass, dribble, free kick or touch of the ball while monitoring players' xy coordinates every tenth of a second throughout the 90-minute match.

Clubs are employing full-time data analysts (Manchester City has ten for the first team alone) to dissect this morass of information as "behind the scenes number-grinding" drives clubs' decisions on the buying and selling of players. It's also becoming more influential - although managers may be reluctant to admit it - in the creation of team strategy.

With sponsorship, media rights and the clubs themselves now multi-million dollar industries, is data-mining changing the way the game is played?

Nothing close to its potential yet, according to Nils Rudi, INSEAD Professor of Technology and Operations Management, but it's only a matter of time.

Looking at grains of sand

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"There's excellent data coming in but what's not so good is the shallow way in which it is being used," says Rudi. The difficulty, it seems, is getting contextual information out of the plethora of raw statistics.

"It's like analysing a city by looking at its grains of sand. It's not so much about GETTING advanced or rich data, it's about making sense of it, analysing it and communicating that analysis in an implementable way, that is the real crux."

Rudi's latest research through the Abu Dhabi-based INSEAD Advanced Sports Analysis Initiative (IASIA) is intent on giving context to the wealth of information collected from Premier League matches by identifying and tracking patterns of play and players using advanced algorithms.

With the collaboration of Amisco Prozone, the leading provider of Pro-Football data and its camera system tracking the x and y coordinates of every player in all Premier League games, Rudi and his team are creating models that will help clubs use these statistics to increase their chances of winning matches by rating players on much more than how well they kick, tackle, dodge and run.

Beyond Moneyball

“We’re trying to create meaningful measures,” Rudi explains.

These can be from a quite micro level looking at, for example, whether players take the risk they should or do what’s safe.

“Consider, for example, when a player has a ball and makes a pass. Does he make a pass that will make himself look good and have a 90-100 percent chance of success but will leave the player he passed it to in a very risky position. Or will he take a chance and make a riskier pass which if unsuccessful would leave him looking bad but is, in fact, a better decision for the team.”

“On a higher level, the patterns look at what combination of players work well together, what type of players are more effective against specific opponents, what type of tactics are more likely to win goals.”

If using numbers gives one team an edge, even just one point, it’s big money and then everyone will end up having to do it, says Rudi.

Baseball tactics

Baseball has been using quantitative techniques for decades and it is being increasingly used in the fast flowing game of basketball. The fact that football is much more dynamic and has 22 players on the ground at once means while it’s possible, the analytics involved are a lot more complex.

“With baseball, most data can be recorded by someone watching the game, the plays are short and turning it into data is quite easy. For football, which is a very fluid game, it is a lot more complex. Most of the data being coded today is saying something about who has the ball. But, when you think that there are 22 players on the field, and on average a player will have the ball just 4.5 percent of the time, there’s a lot of information which is being missed. It’s very important to look not just at what’s happening to the ball but what players are doing when they don’t have the ball.”

Even expert football enthusiasts struggle to follow four or five players during a match, and that’s where computers come in. The computer can take the coded information and follow players tracking and comparing patterns throughout the game.

Information gleaned can be also be used to create a winning team, identifying not just who to buy and sell but when trades should be made.

Research with impact

Rudi’s research began in 2010 using data off the

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internet to write what he thought would be a single paper on in-play prediction. “Then I started thinking about what was happening on-field and what data we could get. When I saw the type of data that was coming out I looked at what we could do with it and realised we could do research which really had some impact.”

While some Premier League clubs are seriously considering analytics to improve performance there are still many sceptics. Tottenham Hotspur’s recently sacked manager André Villas-Boas has been scathing of the practice.

“I don’t use it because I don’t believe in it,” he told media. “The mind and how the player feels is much more important for us, rather than statistical data.”

This kind of thinking, says Rudi is outdated.

“People have a natural tendency to be sceptical of things they don’t master themselves. To say things like a computer can’t measure the hearts and minds of players is missing the point. I don’t think computers will replace a manager in the future but I wouldn’t be surprised if, one day, computers became *as important* as the manager. Getting clubs to recognise this may be a slow process.”



Nils Rudi is a Professor of Technology and Operations Management at INSEAD.

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