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[ANALYTICS]

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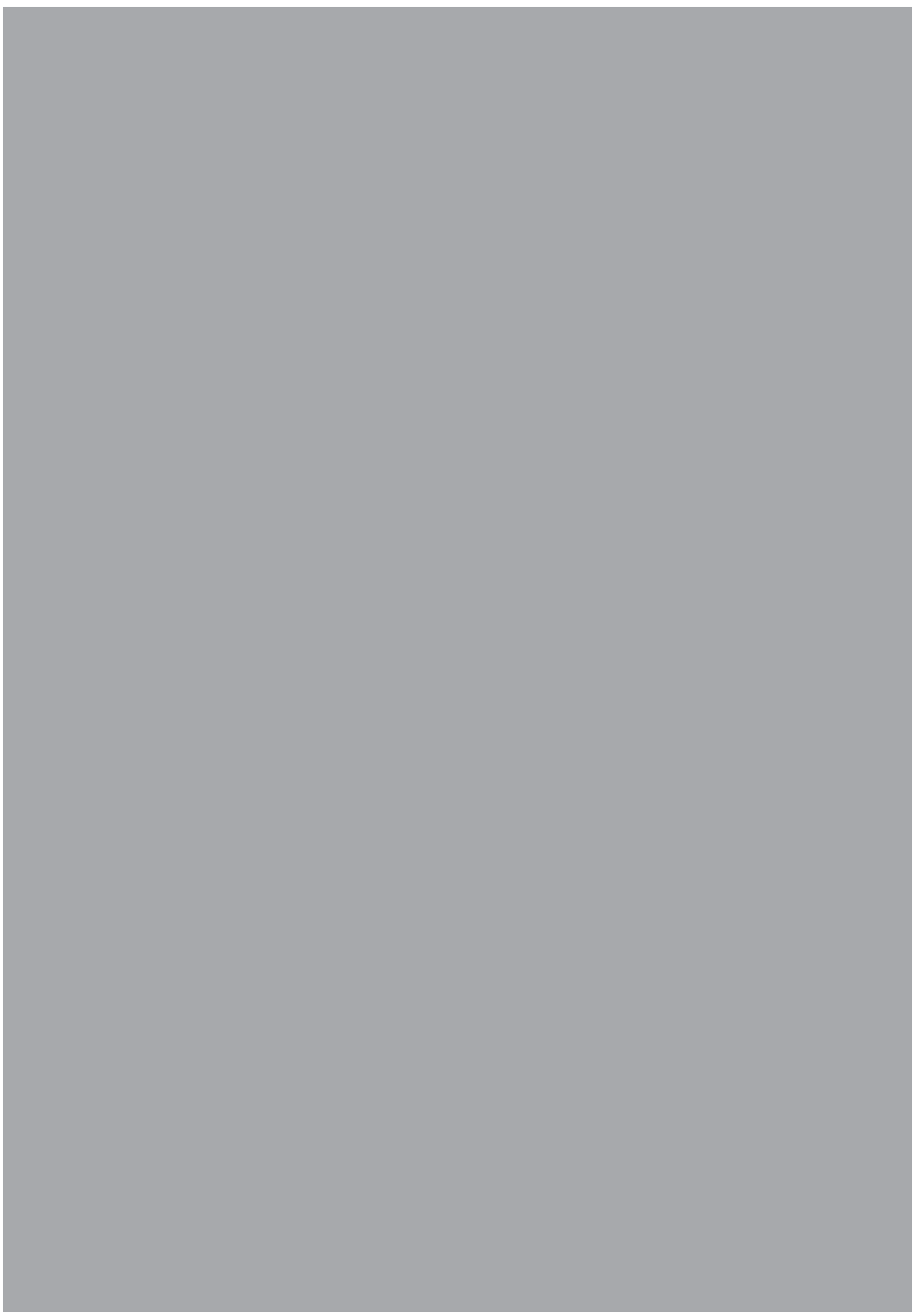
BY THOMAS H. DAVENPORT

Sports analytics are all the rage now. The *Moneyball* story about the Oakland A's use of analytics has made its way into the collective consciousness, and the appetite for more knowledge about the field has steadily increased year by year. The MIT Sloan Sports Analytics Conference, for example, has grown from about 175 attendees in its first year in 2007 to more than 2,000 in 2014. Called the "Super Bowl of sports analytics" and "TED talks in cleats," the conference has catalyzed academics, professional and college teams, and the press to focus much more heavily on analytics to understand various aspects of sports performance and business. Almost every professional baseball team now has at least one professional quantitative analyst on staff, and many basketball, football and soccer teams do, too. Even some high school teams now employ quantitative analysts.

In general, however, sports teams are still lagging behind businesses in their use of analytics. For one thing, even the most successful pro teams are still relatively small businesses that can't feasibly employ hundreds of analysts like a large bank or retailer can. Also, many old-line coaches, managers and executives don't trust or understand sophisticated sports analytics. And, as far as its application on real teams is concerned, the discipline is still in its infancy. The *Moneyball* story about the



Oakland A's took place in 2002, when sports analytics was quite new. In contrast, the first analytics group I have found in businesses dates from 1954 at United Parcel Service (UPS).

Despite this, businesses can still learn much from the use of analytics in the sports world. I recently interviewed more than 30 representatives of teams, sports analytics vendors and consultants for a report on the state of the art in sports analytics. (See "Further Reading.") I focused on three different areas of activity, each of which is growing rapidly. In order of decreasing prevalence, they are: team and player performance analytics, sports business analytics, and health and injury prevention analytics. In this article, I describe five key lessons from that research that almost any business could adopt.

1. Align leadership at multiple levels. In sports, key decisions — which players to acquire, how much to pay them, and which strategies to adopt for better athletic and business performance — must be made and overseen at multiple levels. As a result, alignment along different management levels is crucial.

Consider the Dallas Mavericks, a team in the National Basketball Association (NBA). Owner Mark Cuban and coach Rick Carlisle are strong supporters and users of analytics, and they've hired the well-known analyst Roland Beech, who actually sits on the bench during games. After the Mavericks won the NBA Championship in 2011, Cuban, a former Internet entrepreneur, commented to ESPN that, "Roland was a key part to all this. I give a lot of credit to Coach Carlisle for putting Roland on the bench and interfacing with him, and making sure we understood exactly what was going on: knowing what lineups work, what the issues were in terms of play calls and training."

The business equivalent to the Mavericks would be for CEOs, middle managers and analytical specialists to be working closely together and consulting frequently with each other on key decisions. A few companies like Procter & Gamble have placed "embedded" analysts from a centralized analytical group in close proximity to executives (in effect, placing them on the bench with the coach), but, in business, that is far more the exception than the rule.

2. Focus on the human dimension. Sports teams realize that their players are both their most important and expensive resources. (Businesses might mouth the same sentiments, but they don't act on them in the same fashion.) Professional sports teams focus on the human dimension of performance in a variety of ways.

First, they address individual-level game performance by monitoring points scored, rebounds gathered, batting averages and other increasingly sophisticated measures of both offensive and defensive performance. Indeed, analysts employed by teams (and quantitative-minded fans) are constantly inventing new performance metrics, some involving video and location-based tools such as GPS and Wi-Fi. Second, teams are beginning to assess not just individual performance, but performance in context. In basketball, for instance, analysts can determine how a team performs with or without a particular player. This is called "plus/minus" analysis. So, even if a particular player doesn't generate impressive individual statistics, he may still be invaluable in a game if the team tends to perform much better when he's playing. And it's also possible to assess a team's performance with and without combinations of players. Shane Battier, who now plays for the Miami Heat, is a notable plus/minus hero: His team simply plays better when he's on the court.

FURTHER READING

▶T.H. Davenport, "Analytics in Sports: The New Science of Winning," white paper available with registration at www.sas.com/sportsreport.

In most businesses, analytics have typically focused on operational or marketing issues and not on the human dimension of performance. Even when companies do employ human resource analytics, their approaches are not as sophisticated as those of sports teams, and thus far they have been applied only to individuals. But assessing employees by investigating group performance with or without a particular person's presence could be a valuable technique. The effectiveness of a large company's B2B sales teams, for example, could be evaluated across different team compositions for various customers to identify the "Shane Battiers" in the sales organization. Teams in retail stores or bank branches could also be analyzed with such plus/minus approaches.

3. Exploit video and locational data. In Major League Soccer (MLS), players wear a GPS-based locational device that captures all movements around the field. In the NBA, six cameras in the ceiling of each arena capture all movements of the players and ball. All Major League Baseball (MLB) stadiums have cameras that track every pitch, and many teams also track every hit and fielding play with video cameras. Armed with such data, the New York Yankees — latecomers to *Moneyball*-style analytics usage, but now aggressive adopters — can now predict which players would likely succeed in Yankee Stadium. After analyzing the trajectory of the fly balls hit by Atlanta Braves catcher Brian McCann, for instance, the team determined that many of them would have been home runs at the Yankees' home field, and the Yankees signed him to a five-year, $85-million contract.

Businesses are likewise beginning to make use of video and GPS-based location data. Transport companies such as United Parcel Service (UPS) and Schneider National, for example, are already reaping

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substantial savings from optimizing their routes based on such information. And retailers, banks and lodging companies are beginning to analyze videos of customer lines in order to minimize waiting times to improve customer satisfaction. But such efforts are only scratching the surface of possibilities. Retailers could, for example, analyze video to determine what customers shop for before they buy and what promotions catch their attention. In such ways, video could give "bricks-and-mortar" stores the kind of detailed information online retailers have.

Of course, working within an ecosystem often means sharing ideas, and there's a trade-off between the benefits of broad adoption among competitors and gaining competitive advantage through exclusive early adoption. Now that entire leagues such as the NBA, MLB and MLS have adopted new data technologies, the vendors of those technologies can help the individual teams by producing standardized and customized reports. (Fan access to many of these reports also helps build interest in those sports.) Even then, teams that were early adopters feel that they can maintain an advantage even after broad adoption. The Houston Rockets, for example, were among the earliest teams to adopt cameras in their arena. Daryl Morey, the team's general manager, admits that other teams have now caught up after the league-wide adoption of arena cameras (and he appreciates now being able to get data from all teams and games). But he still feels that the Rockets have an edge because they have more analysts, experience and motivation in using the data.

If, for instance, the most successful sales professionals tend to spend at least 10% of their time on lead generation, then average and low performers could adjust their daily work routines accordingly.

4. Work within a broader ecosystem. Professional sports teams are relatively small businesses, with much of their revenue going toward player salaries, leaving just nominal funds for any data and analytics projects. As a result, teams often need to work within a broader ecosystem of data, software and services providers.

The key in these partnerships is to draw as much as possible from the partner while maintaining key internal capabilities. At the Orlando Magic, for example, the analytics and strategy function has established a close relationship with a software vendor for analytical software and services, but the team's eight analysts maintain expertise on such topics as basketball and business operations, dynamic ticket pricing, fan promotions, digital strategy and so forth. The Magic organization has also learned a great deal from its partnership with the Walt Disney Co. — which has a strong analytics group in Orlando — for joint promotions to residents and visitors in the area.

Working in a broader analytic ecosystem might be particularly important for small to medium-sized businesses, but it is also relevant to large companies. There are just too many different techniques, types of data and other aspects of analytics to exploit, and even the largest corporation can't excel on its own. Procter & Gamble, for example, has built close partnerships with several key vendors of data and analytical software and services. Together, P&G and its vendor partners have codeveloped "business sphere" rooms for reviewing and acting on data and analyses; there are now more than 50 such rooms in different P&G facilities. The company has also shared its approaches to analytics with other leading companies like BP, Boeing, Disney, General Electric and FedEx. Both the vendors and the peer companies meet at an annual conference P&G calls "Goldmine."

5. Support "analytical amateurs." Some professional athletes have begun to analyze their own performance in depth using public or team data and reports. Specifically, a number of soccer and football players have become assiduous reviewers of their video and GPS data, although the most frequent users have been professional baseball players, particularly pitchers.

Consider Brandon McCarthy, who currently plays for the Arizona Diamondbacks. The 30-year-old pitcher was previously with the Texas Rangers, where in 2009 he had a bit of an analytical conversion. Before then, few would have labeled McCarthy a statistical geek; he was drafted out of high school and never went to college. But during a three-month rehab for a shoulder injury, McCarthy began studying his data relative to more successful pitchers. His particular focus was on the Fielding Independent Pitching (FIP) metric and the ratio of ground balls to fly balls. He realized that his pitching style led to too many fly balls, which created more than twice the expected value of runs than ground balls. Thus, according to *ESPN Magazine*, he began to work on a two-seam fastball, which induces grounders at a higher rate. McCarthy's performance improved dramatically: For the 2011 season, he had the lowest FIP for a starting pitcher in the American League. He was throwing substantially fewer pitches, and hitters were hitting fewer fly balls. Although the numbers of such "analytical amateurs" in professional sports are not yet huge, several players like McCarthy have made substantial improvements in their performance with the help of analytics.

Business managers and professionals may not have as much data available on their performance as professional athletes do, but

they could still benefit from becoming analytical amateurs. Many companies have evaluation and compensation models with measurement along particular criteria. Motivated employees could keep track of their own scores on these measures and use that information to improve their performance. Analytics-minded salespeople and managers could, for example, use the extensive data from customer relationship management (CRM) and sales management systems to assess and improve their performance. If, for instance, the most successful sales professionals tend to spend at least 10% of their time on lead generation, then average and low performers could adjust their daily work routines accordingly to ensure that this important task isn't given short shrift.

PROFESSIONAL SPORTS TEAMS and leagues have emulated businesses' analytical approaches in various ways, including identifying and rewarding the best customers (typically season-ticket holders) and optimizing ticket prices (a practice that airlines started more than two decades ago). But now, as sports analytics becomes increasingly sophisticated, companies can, in turn, learn much from the successful analytical teams like the Boston Red Sox, Dallas Mavericks and San Francisco 49ers. Indeed, in the past, many managers would use sports metaphors in a figurative sense ("We need to swing for the fences on this project"); today the lessons from the sports world have become far more literal — and analytical.

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