

ANALYSIS OF DECISION MAKING PROCESS IN MONEYBALL: THE ART OF WINNING AN UNFAIR GAME

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ABSTRACT

Billy Beanes's success in using data-driven decision making in baseball industry is wonderfully written by Michael Lewis in Moneyball. As a general manager in baseball team that were in the bottom position of the league from the financial side to acquire the players, Beane, along with his partner, explored the use of data in choosing the team's player. They figured out how to determine the worth of every player. The process was not smooth, due to the condition of baseball industry that was not common with using advanced statistic in acquiring players. Many teams still use the old paradigm that rely on experts' judgments, intuition, or experience in decision making process. Moneyball approached that using data-driven decision making gave excellent result for Beane's team. The team won 20 games sequentially in the 2002 season and also spent the lowest cost per win than other teams. This paper attempts to review the principles of Moneyball – The Art of Winning an Unfair Game as a process of decision making and gives what we can learn from the story in order to win the games, the unfair games.

Keywords: decision making, data management, sport industry

ABSTRAK

Buku Moneyball yang ditulis oleh Michael Lewis menggambarkan bagaimana kesuksesan Billy Beanes seorang general manager suatu tim dalam menggunakan proses pengambilan keputusan berbasis data di dalam industri baseball di Amerika. Dalam usahanya untuk memenangkan posisi terbaik di dalam liga, Beanes dan rekannya menggunakan data sebagai dasar pertimbangan pemilihan pemain. Karena proses pengambilan keputusan yang tidak biasa, Beanes mendapat tentangan dari banyak pihak dalam industri baseball. Walaupun begitu, pada tahun 2002 tim yang ditangani oleh Beanes memenangkan 20 pertandingan secara berturut-turut. Artikel ini bertujuan untuk mengkaji ulang prinsip dari Moneyball yang digunakan oleh Beanes dan rekannya dalam melakukan pengambilan keputusan.

Kata kunci: pengambilan keputusan, manajemen data, industri olahraga

INTRODUCTION

Moneyball is the best-selling book written by Michael Lewis. It is based on true story about Billy Beane, the baseball team general manager. His team, Oakland Athletics, was one of the poorest teams in baseball league in USA. In 2002 season, the Oakland Athletics had payrolls of \$40 million, while the New York Yankees, the richest team, had payroll of \$126 million. In baseball industry, there is a huge gap between the rich and poor team than other professional sport industry (Lewis, 2003). This gap made a significant difference when a team wants to buy players, only the rich team can afford the best players. When the rich teams can afford the best players, they will have best formation that can give high opportunity to win the games. How about the poor teams? They have to think hard in spending their budget.

As the general manager, Billy Beane suffered from crisis in his team. The performance was getting worse and Billy tried to find a way to improve the performance by re-formulating the team formation. Started at the opening season, when every team has to decide about their players; buying new player, selling existing players, or trading-off players with other teams. The situation became harder when there was a tight limitation, money.

In 2002, Billy Beane realized that there was something wrong in process of acquiring players. He needed better decision making process when the team wants to acquire players. At the time, most of the baseball team used quite same decision making process, the process of deciding which player to hire is based on experts' judgments, i.e.; coach, talent scout, retired player, etc.

Billy Beane came up with radical action; he changed the method of acquiring talents, no more decision based on experts' judgments, experiences, or intuition. He, along with his assistant, Paul DePodesta, used statistical data to analyze and gave value on the players which he wanted to choose for the team. The results was beyond expectation, the team he created by the new method could give big win, even though the team consisted of low-paid players.

Nowadays, Moneyball is no longer a success story about manager of baseball team, many practitioners, even scholars try to know more about the concept of Moneyball and implement it outside sport industry. Overall, the underlying point of Moneyball story is about decision making; how did one of the poorest teams in baseball win so many games? How did they decide which player they buy, sell, or trade-off? This paper attempts to review the principles of Moneyball – The Art of Winning an Unfair Game as process of decision making and gives what we can learn from the story in order to win the games, *the unfair games*.

Baseball is one of the biggest sport industries, especially in U.S. This game's object is to hit a runs, and those who have the most runs of all nine periods called as winner. A team scored a run when a player hits the ball and then running to a base safely, and continuing to counter clockwise as the next base and get back to original base. This game also defined by outs and innings not by time. (Blackburn & Valerdi, 2007). There is a general manager behind every team, the tasks of general manager are composing strategies, evaluating players as the talent and assembling a successful team. The general managers are attempted to seek for methods to maintain and gain their talent better than their rival team within their financial capability, this condition almost similar with an organization which desired to exceed their competitors. (Blackburn & Valerdi, 2007).

Salary limit has no boundary in the players market in baseball industry, every team can buy players they want with no limitation. Teams with huge funding will easily buy good and high quality players, hence will win more games. Cullen, Mayer & Lattesa (2009) explained about the two paradigms of baseball; the traditional paradigm and the new one.

There are four beliefs which envision The Traditional Paradigm . First, the talent of a player is usually appraised by asking the talent seeker look at the individual directly in person. This is happened because it is believed that the talent seeker have the ability to judge whether the talent is potential or not. Second, the collected statistics are more than adequate. The statistics are used as complementary not main point in decision making process. Third, in game situation, decisions should be made according to “The Book”—an unwritten compilation of baseball wisdom learned from insider experiences. Whether these customs stand up to empirical scrutiny is of no concern. Fourth, Beyond “The Book”, managerial decision can be determined through intuition. Actually, baseball industry has collected many data related to games and players. However, most of the officials resisted the attempts to determine the statistical evidence as their decision’s guidance.

Through years, baseball was viewed for a sport which guided by wise traditios and expertise. However, there is a new paradigm aroused in which embraced science as the part of the guidance for the game. The major figure within this paradigm has been Bill James. Bill James gave three big contributions in baseball decision making process. Firstly, Saber metrics which is the analysis using objective evidence in baseball, this method mostly use statistic measure in the game activity. Secondly, sociology of the interesting; Bill James’s strategy to embraced the old wisdom and show that those wisdom are incorrect. Finally, Baseball Abstract: Featuring 18 Categories of Statistical Information That You Just Cannot Find Anywhere Else; this information shows that James’s analyses proved that the traditional and old wisdom has led some of the decision into an irrational practices in the industry. In fact, what Bill James found is not easily accepted by baseball officials since James did not have any background or experience in baseball as a player, coach, or expert.

Moneyball tells the journey of Billy Beane, a former major league baseball player who turned into a team’s general manager. Beane faced problem with his team due to financial constraint. A problem appeared in term of selecting players, who will be kept, who will be sold, and who will be approached. Beane had to face the same problem over years; he hated the fact that so many teams would spend so much money on potential or high-quality players. He knew that his team only had small budget and how little bargaining power he had, but he understands how he had to find a way to win. This is why it is called unfair games, because the players (baseball teams) in same competition have different resource (budget). Most other baseball teams proclaimed that to compete with teams like New York Yankees is very difficult because of how much money that the team possess. However, Beane called that was nonsense. If this were true, than the team with the most money would always win but in fact there are teams which spend much money and still get many lose. In this case Beane challenge himself, how do his team win with so little money? (Hickman, 2010). From that moment, Beane decided to conduct an experiment in his new paradigm. What would happen if the team’s decisions were based on scientific data?

By having Paul DePodesta, young Harvard graduate, who surround himself with numbers and statistics, Beane started to change process of decision making in scouting players. Using sabermetric approach, he used data-driven decision making in scouting players, no longer using experts’ judgments as main consideration. At first, what Beane prepared was not accepted by team’s scouts, advisors, and managerial because of the way he did was out of common practices in baseball industry at the time. Due to financial constraint, Beane successfully found undervalued players that can play for his team with low salary but actually have good-hidden quality as a result of data calculation using formula. By this way, he did not need to compete with rich teams to get the players.

The result of Beane works was amazing; his team won 20 games sequent in the 2002 season. Using a formula, his team was able to understand what type of players to select in order to hits as many runs as they needed based on data from the years before (Hickman, 2010). The team also spent the lowest cost per win than other teams. All of the excellent result came from data-driven decision making.

Table 1 The Cost of Wins Major League Baseball Teams, 1997-2005

Team	Rank Order in Cost Per Win	Mean Cost Per Win in Dollars
Oakland Athletics	1	423,053
Minnesota Twins	2	439,174
Washington Nationals	3	443,448
Pittsburg Pirates	4	464,791
Florida Marlins	5	492,227
Kansas City Royals	6	515,703
Milwaukee Brewers	7	524,978
Tampa Bay Devil Rays	8	574,833
Cincinnati Reds	9	598,161
San Diego Padres	10	604,784
Chicago White Sox	11	604,998
Houston Astros	12	659,983
Detroit Tigers	13	676,336
Toronto Blue Jays	14	678,538
San Francisco Giants	15	702,021
Philadelphia Phillies	16	714,701
Cleveland Indians	17	728,524
Los Angeles Angels	18	732,408
St. Louis Cardinals	19	767,009
Colorado Rockies	20	770,079
Seattle Mariners	21	787,687
Chicago Cubs	22	862,166
Baltimore Orioles	23	899,322
Arizona Diamondbacks	24	889,973
Texas Rangers	25	930,985
Atlanta Braves	26	960,637
Los Angeles Dodgers	27	969,097
New York Mets	28	998,087
Boston Red Sox	29	1,005,667
New York Yankees	30	1,221,173

Source: Cullen, F., Myer, A., and Latessa, E. (2009)

METHOD

From the story, this paper will focus on reviewing the concept of moneyball approach by Billy Beane. It will focus on three points; defining problem, data-driven decision making, and data-driven Vs intuition.

In the other hands, since this paper's objective is to reviewing the moneyball principles the methodology being used is only reviewing the principles through Lewis's book and relating it with another related literatures.

RESULTS AND DISCUSSION

In the book written about a meeting when Billy Beane with some talent scouts talking about their players, many *star player* left the team due to higher salary from other team. This condition was seen as a problem because without any star player, the team did not have a chance to win a game. Billy Beane explained to talent scouts that they focused on the wrong problem. Beane said, "*You're focusing on the wrong problem! The reason why the previous star player left was because we couldn't afford him and what you are telling me now is that we need to go and build a new team with another star player we can't afford?*"

"The real problem is that we are a much smaller ball club with limited resources; therefore, we have to build a team of good players that we can work with." However, the team didn't agree with how he

sees the problem. From this situation, defining problem is important thing. In this case, laziness is the greatest danger in formulating a decision problem. It's easy to state the problem in the most obvious way, in the way that we usually recovered the problem, but the easy way isn't necessarily the best way. Thus, we need to get out of the box and be creative to make sure we found the problem right. (Hammond, Kenney, & Raiffa, 1999) In this case, Beane successfully turned problem into opportunity. Hammond, Kenney, and Raiffa (1999) stated that "no matter how bad a situation seems, ask yourself: *What can I gain from this situation? What are the opportunities here?*"

The morale of the Moneyball story is that the decision based on the data driven has better outcomes than those with conventional wisdom. There is research that proves that companies that rely heavily on data analysis are likely to outperform others (Riedel, 2012). In fact, data itself has not any ability to change anything. From this case, in order to be impactful data need to be analyzed properly thus it can gain the competitiveness and even market share (Brynjolfsson, 2010).

Like what Billy Beane did, he realized that it was possible to gather data from baseball industry. Many data are collected since years ago, but there was no good practice in using those kinds of data. Started by using saber metric approach and having partner in statistics to elaborate data, Beane successfully made excellent result.

Despite the fact that data-driven decision making positively impacts the bottom line, few companies have switched to this form of decision making. Most companies still base decisions on management experience and intuition. Most companies use HiPPO-driven decision making. HiPPO stands for "the highest paid person's opinion". This is like what happen in Billy Beane's team, most of decision making process was based on experience and intuition. Actually, this is not totally wrong, but the problem is, the team members trapped in decision trap; estimating and forecasting trap (Hammond, et al 2003), when they are being overly influenced by vivid memories when estimating about the players' performance.

There is a problem in data-driven decision making which called as dirty-data curse. In some organizations, the problem may not be about the lack of data but to understand or to know which data are clean and trustworthy is the huge challenge. (Harris, 2007).

In this Moneyball approach, it seems that data-driven is the power of decision making over non data-driven, i.e. intuition. Data-driven decision making became the first consideration in decision making. *Is intuition totally useless in decision making? Does intuition lead to wrong decision making?* Kahneman and Tversky (1982) depict intuitive judgments as the absence of analytical methods usage in reasoning some matters. Unfortunately, this method often led into negative outcomes especially when false assumptions or logic is being used as the basis of reasoning (Sadler-Smith & Sparrow, 2007).

Khatru and Ng explained that intuition is part of all decision, even those based on the most real facts. Thus, in summary intuition does not include as irrational process. This is happened because intuition comes up based on a person's understanding of the situation which resulted from his or her experience.

In the other hands, there are some extend situation where intuitive approach can help to choose the decision, such as: (1) when the condition demand a rapid response thus fully rational analysis approach could not be executed. (2) when there is a change in a fast pace that should be overcome. (3) when the problem that the company faced is unstructured. (4) when the rules are hard to comprehend or ambiguous. (5) when we deal with ambiguous yet conflicting information (6) There is no previous example.

In addition, decision makers have various kinds of situations need to be faced, these situations may have different scale availability of data. Some situations might have reliable and clear data, while some others might have unreliable, dirty and even scattered information to be used. However, even though the decision maker unable to articulate the pattern, most of them are still able to use their experience and knowledge (Sutton, 2009).

From this explanation, actually it is quite clear that in baseball decision making, the use of data driven decision making is needed. Because of the availability of reliable and accurate data. But it is not about data *versus* intuition; but it becomes data *with* intuition.

From Moneyball approach, this paper summarizes some lesson learned related to decision making process. From the Moneyball, we learn that right defining problem will give accurate answer. Billy Beane kept saying “We are not asking the right questions!”, because in fact, it is true, we have not tried that hard to find the real problem, not only the seen-thing but also the hidden-thing. By keep asking ourselves, it is a way to build creative thinking in order to find the right questions or problems. Asking different questions is on way to get different answers, and different questions can lead to different results, the better one.

Billy Beane realized that his team’s money is not much as their rivals. He thought that if they did what their rival did, they would lose every time, because they were doing it with three times more money than they were. The lesson learned from this decision is if we are doing what everyone else doing, we will get what everyone else is getting. Beane said, “If they zig, I zag.” In this case, even if the risk were still occurred but when it is managed through a deep data analysis it will increase the robustness of the decision making.

We can assume that Billy Beane is generally patient, however this man has no hesitation to create a huge move when he feels it’s time for it. It is in line with Hammond, et al (1999), when explaining wise decision maker regarding developing plan attack; we have to be willing to stop, reassess, and reformulate our plan.

CONCLUSION

Moneyball proofed that data-driven decision making gives good performance and result. To do data-driven decision making, the important thing to be concerned about is the availability of data and there is no dirty data. Data-driven decision making is not the best over intuition, but both of them will be a good combination in order to get robust decision making, because intuition is part of all decision, even those based on the most concrete, hard facts. In practice, the use of data-driven decision making should be implemented more than now. All organizations have to start to collect and keep their data to be used as a based in decision making process.

From Moneyball approaches, we get lesson learned related to decision making process, they are: (1) redefining problem, (2) if they zig, I zag, (3) know when to quit, wait and dynamic. The learned lesson will sharpen the process of decision making in order to get robust and excellent result, like the big win of The Oakland Athletics in baseball league.

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