

2025

STUDENT CASE COMPETITION



The Association of
Accountants and
Financial Professionals
in Business



NBA PLAYER ACQUISITION: Cost-Benefit Analysis & Visualizations

Use data to identify players who will round out your team's roster and better your chances of bringing home an NBA championship ring.

By Gavin Dowell and Margaret Shackell, Ph.D., CMA, CPA

THE STUDENT CASE COMPETITION

is sponsored annually by IMA to provide an opportunity for students to interpret, analyze, evaluate, synthesize, and communicate a solution to a management accounting problem.

Congratulations: The year is 2023, and you've just landed your dream job at one of the 30 National Basketball Association (NBA) franchises after graduating with your accounting degree.

The team you've joined didn't make it past the first round of the playoffs last year, but your new manager has big plans to improve the team's performance this coming season.

"We missed out on capping off our playoff success last year with a finals championship, but with a sensible player acquisition strategy, I'm confident we can reach that pinnacle this year or the next," says Janell Mount, your manager, who brought you on board because of your experience in visualizations.

"I'm glad we've got you to help us identify weaknesses and areas for talent acquisition," she says. "We have a lot of work to do—so let's get to it!"

Background and Company Description

Professional sports have always been very competitive—and have only become more so with the rise of Big Data. Since the 2003 publication of *Moneyball*, Michael Lewis' book about the Oakland Athletics' use of data in professional baseball, professional sports teams have been actively looking to use data to gain competitive advantages.

The team you're working for is one of 30 NBA franchises (which team you choose is up to you). The team's goal each year? To win the NBA championship, of course. (You can read more about the history and playoff history of your team in Appendix A.)

Having the right players makes a championship win more likely. Each team can have a maximum of 15 players on their roster at a given time. Thirteen of those players can be active in any one game, so a few players can make a big difference.

The team makes money from ticket sales, sales of luxury suites, arena naming rights, local television and radio contracts, merchandise sales, advertising and sponsorship, and league-wide media deals.

According to Sports Illustrated, costs for operating the franchise include:

- team staff costs (coaches, basketball operations staff, and medical staff)
- team non-staff costs (e.g., chartering planes, practice facility, hotels, catering, uniforms)
- business operating expenses (e.g., debt service, marketing, legal, accounting, human resources, executive salaries, rent, insurance)
- player salaries (Note: There is a salary floor and salary cap. To avoid that complication, we're assuming there is "Cap Room" on your team. If you want to find the current cap situation and factor that in, it is above and beyond the case.)

Successful large-market teams also pay a luxury tax and revenue share with less profitable small-market teams, which are defined as those with a market area of less than 2.5 million TV households.

Table 1 shows an average financial statement for a small-market team and a large-market team:

**TABLE 1: NATIONAL BASKETBALL ASSOCIATION
AVERAGE TEAM PROFITABILITY STATEMENTS (IN MILLIONS)**

ITEM	SMALL MARKET		LARGE MARKET	
REVENUE	\$228.000		\$339.850	
COSTS				
Player Salaries	\$91.862	58%	\$123.733	52%
Business Operating Expenses	\$25.341	16%	\$42.831	18%
Team Non-staff Costs	\$23.757	15%	\$28.554	12%
Luxury Tax	-	-	\$14.277	6%
Revenue Sharing	-	-	\$11.897	5%
Team Staff Costs	\$15.838	10%	\$14.277	6%
Other	\$1.584	1%	\$2.379	1%
TOTAL EXPENSES	\$158.383	100%	\$237.948	100%
PROFIT	\$69.617	-	\$101.902	-

You've spent the last two days with the team training and onboarding. You got a polo shirt with the team logo that you're going to proudly wear out this weekend. Your lifelong dream has been to work for an NBA team, so you're living the dream. You're excited to review the team statistics and uncover areas of need. You watched a lot of games last year, and you think you know the gaps, but it will be interesting to back that up with analysis.

Your Assignment

Your job is to efficiently use the resources your team has available to acquire the best players who will round out your team. To do this, you need to prepare visualizations that allow the organization to find those players, ideally at affordable rates.

After you've done that, you will review individual player statistics and find a player (or players) who will fill your team's needs. You have some ideas of who would be a good fit, but you know you need to back that up with analysis.

To help you do this, you've been given a database of all the players in the league with their current salary, any salaries they're contracted to earn in the upcoming years (see NBA player data), and stats for the past season (see data dictionary).

Use this information to prepare a presentation to give to your team's general manager. In your presentation, recommend between one and three players that she should work to add to your team during this offseason (ignoring the salary cap).

In your presentation, make your case for why that player—or those players—would be an asset to your team, and how they would help the team fill current gaps.

Data Available

There are the traditional player statistics, such as points, steals, and turnovers. Using your visualization software, you can calculate other statistics, like shooting percentages.

A good first step is to compare your team to the other teams in the league on metrics that are important for success. In preparation for this, you think you might want to listen to a couple of NBA-related podcasts that talk about critical success factors for teams.

You know that teams win games by scoring the most points. This is easier to do when they:

- don't turn the ball over
- block shots by the other team
- play as a team and assist each other
- rebound misses
- make more of the shots they take

Players foul out of a game when they commit six fouls. If they foul a player on the other team while he's shooting, the fouled player will get to take two free throws (if he missed the shot) or one (if he made the shot). When a player is fouled and gets to shoot from the free throw line, a basket is worth one point. During play, when a player makes a basket inside the three-point line, that's worth two points. When they shoot outside that line, that's worth three points.

You loved playing basketball in high school, and you reflect back on all the rules and the strategy that your coach taught you. Take shots! Make shots! Protect the ball. Rebound!

NOTE: In the past, students have recommended a player who is shooting 100% because their team needs to increase scoring. They didn't look and notice that player was 1 for 1!! That's not going to help with scoring. Always think carefully about your analysis and recommendations.

Approach the Assignment with an Analytics Mindset

You snap back to reality from reliving your glory days. You need to focus on how to do the best analysis. As part of your onboarding, you learned that the organization has developed a focus on an analytics mindset. Your training included an overview of how they approach unstructured decision problems. You review those notes now:

- 1 Ask the right questions.** You know that you want to find players who will fill in gaps on your team—and for a low cost. You come up with three important questions to answer:
 - a. What are your team's gaps? You can find that out by answering, "Where does this team rank on important statistics?"
 - b. Who are the players who are currently successful on those metrics? You will have to look at many players on multiple dimensions to find players who would be a good fit.
 - c. What would you have to pay them to get them onto our team?

2 Extract, transform, and load the data. You've been given a large data set. Load it into your visualization

software program. Review the data dictionary. Be sure you understand the variables. Is the data set complete? Do the data make sense? What should you do with missing values? Is there other data you can obtain to add to the data set?

3 Apply appropriate analytical techniques. Execute calculations and comparisons. Prepare worksheets with the statistics of note and put them in dashboards as appropriate.

4 Interpret and share the results. Combine the worksheets and dashboards into a linear and comprehensible story (or stories). Use annotations to assist the general manager in understanding your results and analysis.

- a. Reminder: The first slide of your presentation should provide an overview of your recommended player additions. It shouldn't be a mystery novel—lead with your recommendations.
- b. The second slide should share your agenda.
- c. Subsequent slides should show all the analysis you've done to support your recommendations.
- d. The last slide is your conclusion, and should summarize your recommendations.

Discussion

After reviewing your notes, you circle back to talk with Janell to be sure you know exactly what she is looking for. She says that a small team can be greatly impacted by a few key players. She thinks the team currently has a great core, but she is looking to add **one to three players to fill gaps on your current team.**

She has an idea what the gaps are (also from watching the games last year), but she wants to see where the team stacks up compared to other teams. She says that she might be biased regarding which statistics really matter to winning.

She goes on to explain that the team has personnel scouts who evaluate players that can be acquired through trades or free agency. The players those scouts have been recommending all have really high salaries and are being pursued by many other teams. She thinks that we can “find some hidden gems” by doing things a little differently.

“That’s what you’re here for,” she reminds you. “With your data analytics background, you can pore over the stats and find someone that will be a great addition to

the team. Just like Brad Pitt did.” When you give her a questioning look, she says, “You know, in the movie Moneyball!” Oh, right—you nod in understanding.

After Janell leaves your office, you pack up for the day. Your plan is to go home and watch Moneyball, and plan which famous actor is going to portray you when the story of your team’s glorious ascent to the NBA championship on the back of your data analytics skills is made into a movie. Tomorrow, that story begins.

You nod off to sleep thinking about your new job. You’re going to compare your team to the other teams in the league and see where they have strengths and weaknesses. After that, you’ll analyze players for their strengths and find a few who have strengths that will overcome team weaknesses—and can do so at a reasonable salary. Your last waking thought is, “I’m going to get paid for this?”

DOWNLOAD AND USE THE FOLLOWING FILES TO HELP YOU COMPLETE THE CASE:

[NBA Player Data](#)

[NBA Data Dictionary](#)

[NBA Team Locations](#)

ABOUT THE AUTHORS

Gavin Dowell is studying for his bachelor of science degree in accounting at the Kelley School of Business at Indiana University.

Margaret B. Shackell, Ph.D., CMA, CPA, is an associate professor of accounting and senior director of graduate business programs at Ithaca College. She’s a member of IMA’s Finger Lakes Chapter. You can reach Margaret at (607) 229-2530 or shackell@ithaca.edu.

APPENDIX A: DESCRIPTIVE DETAILS, HISTORY, AND PLAYOFF HISTORY OF TEAMS (TO END OF 2022-23 SEASON)

TEAM NAME	CONFERENCE & DIVISION	ORIGIN DATE	NUMBER OF NBA CHAMPIONSHIPS	SIZE OF MARKET	RECENT HISTORY TO PLAYOFFS END OF 2023 SEASON
Philadelphia 76ers	Eastern; Atlantic	1946	3	2.997M	The Sixers have finished top six in the Eastern Conference for six straight years. They have yet to convert that to playoff success, losing in the first two rounds all of those years.
Boston Celtics	Eastern; Atlantic	1946	17	2.490M	The Celtics have been dominant for many years now. They have the longest active playoff streak and have made the Conference Finals or better three out of the last four years.
New York Knicks	Eastern; Atlantic	1946	2	7.453M	The Knicks were 47-35. While they have been middle to bottom of the pack for a while, things are starting to look up.
Brooklyn Nets	Eastern; Atlantic	1967	0	7.453M	The Nets finished 45-37. The future is trending down for the Nets after trading 3 superstars within a year, they do not have a very bright future.
Toronto Raptors	Eastern; Atlantic	1993	1	n/a	Since winning the championship in 2019, the Raptors have quickly spiraled to the bottom of the league. In 2023, the Raptors missed the playoffs for the second time in three years.
Milwaukee Bucks	Eastern; Central	1968	2	922k	The Bucks have the second-longest active playoff appearance streak in the NBA, with one of those resulting in a championship. After trading for Damian Lillard this offseason, they are one of the top teams in the league.
Chicago Bulls	Eastern; Central	1966	6	3.472M	The Bulls finished tenth in the East and lost in the second round of the play-in tournament. They missed the playoffs for the fifth time in six seasons.
Cleveland Cavaliers	Eastern; Central	1970	1	1.512M	After a few rough years, the Cavs are back to being a top team in the Eastern Conference. They finished fourth in the East last year but were upset in the first round.

Indiana Pacers	Eastern; Central	1967	0	1.183M	The Pacers have missed the playoffs for three straight seasons. After trading for Tyrese Haliburton and Pascal Siakam, they have a bright future.
Detroit Pistons	Eastern; Central	1941	3	1.863M	Detroit has been the worst team in the Eastern Conference for a few years now. They averaged only 20 wins per season for the last four years.
Atlanta Hawks	Eastern; Southeast	1946	1	2.649M	The Hawks finished with a 41-41 record, putting them eighth in the Eastern Conference. They lost in the first round to the Celtics.
Miami Heat	Eastern; Southeast	1988	3	1.693M	Miami has been one of the most successful playoff teams in the East for years. They have made the finals twice in four seasons, losing both times.
Charlotte Hornets	Eastern; Southeast	1988	0	1.291M	The Hornets are one of the worst teams in the league. They have missed the playoffs a league-leading seven straight times, with no sign of that changing anytime soon.
Orlando Magic	Eastern; Southeast	1989	0	1.731M	Orlando finished thirteenth in the East. They had the Rookie of the Year Paolo Banchero this season.
Washington Wizards	Eastern; Southeast	1961	1	2.566M	The Wizards finished twelfth in the East and traded their two best players after the season.
Utah Jazz	Western; Northwest	1974	0	1.100M	The Jazz missed the playoffs for the first time since the 2015-16 season. Finishing twelfth in the West, they're looking to rebuild in the next couple years.
Denver Nuggets	Western; Northwest	1967	1	1.798M	The Nuggets finished first in the Western Conference and went on to win the NBA Finals. They had a dominant playoff run, going 16-4 through the four rounds.
Oklahoma-City Thunder	Western; Northwest	1967	1	755k	After a couple of down years, the Thunder have begun to trend upwards again. They have lot of young talent and are making a push to the Western Conference playoffs.
Minnesota Timberwolves	Western; Northwest	1989	0	1.887M	The Timberwolves have made the playoffs for the last two years. Finishing seventh and eighth in the West those years, they are looking to bring themselves to the top of the West.

Portland Trail Blazers	Western; Northwest	1970	1	1.315M	The Blazers ended 2023 thirteenth in the West, missing the playoffs for back-to-back years. After trading star Damian Lillard in the offseason, they have entered a full rebuild.
Los Angeles Clippers	Western; Pacific	1970	0	5.735M	The Clippers were the fifth seed in the West and lost in the first round to the Phoenix Suns.
Sacramento Kings	Western; Pacific	1923	1	1.459M	The Kings finished third in the West, breaking their historic 16-season playoff drought. They lost in seven games to the Warriors.
Los Angeles Lakers	Western; Pacific	1947	17	5.735M	After missing the playoffs the year before, the Lakers bounced back and made it to the Western Conference Finals before losing to Denver.
Phoenix Suns	Western; Pacific	1968	0	2.158M	The Suns have now made three straight playoffs. After trading for Kevin Durant, they're making a push to win it all for the first time.
Golden State Warriors	Western; Pacific	1946	7	2.653M	The Warriors finished sixth in the West, and advanced to the second round of the playoffs, where they were eliminated by the Lakers.
Memphis Grizzlies	Western; Southwest	1995	0	620k	The Grizzlies had a great regular season, finishing 51-31, second in the West. They were upset in the first round of the playoffs by the Lakers.
Dallas Mavericks	Western; Southwest	1980	1	2.963M	After losing in the Western Conference finals the year before, the Mavericks missed the playoffs entirely in 2023.
New Orleans Pelicans	Western; Southwest	1988	0	664k	The Pelicans missed the playoffs for the fourth time in five years after finishing ninth in the West.
Houston Rockets	Western; Southwest	1967	2	2.570M	The Rockets finished fourteenth in the West, after finishing dead last the prior two years. They signed a couple veterans in the offseason and will look to improve their finish.
San Antonio Spurs	Western; Southwest	1967	5	1.031M	The Spurs have missed the playoffs for four straight years after having made a record 22 straight. They finished last in the West and drafted Victor Wembanyama with the first pick.

APPENDIX B: BACKGROUND ON BASKETBALL AND THE NATIONAL BASKETBALL ASSOCIATION (NBA)

To get the most out of this case, there are a few pieces of context that might be helpful, especially for those not familiar with basketball.

Basketball: It's not really necessary to know much about basketball itself to get the point of the assignment, but if you're interested in learning more, visit [Breakthrough Basketball](#).

The key ideas that are helpful for this case are as follows:

- Shooting the ball into the hoop: Each shot is called an **attempt**. Players are differentially successful. The highest success rate, on average, is uncontested from the foul line (called **free throws**). The second-highest success rate is inside the three-point arc, with shots worth two points. Finally, outside the arc, shots are worth three points each. This area has a much lower shooting percentage. Field goal attempts include both two-point and three-point shots.
- When a player misses a shot, either the player's team or the opposing team can capture the ball. This is called a **rebound**. If the opposing team gets it, it is called a **defensive rebound**, and they will advance it the length of the court to hopefully score. If the shooter's team gets it, it is called an **offensive rebound**, and the team will try to put it up again, either instantly, or through a play (a series of passes and moves).
- Players with the ball must dribble (the ball must be bouncing to the floor and back to their hand) while moving. If they don't, the other team gets the ball. This is called a **turnover**. There are other ways to turn the ball over: knocking it out of bounds, passing it errantly, or "double dribbling." Turnovers are basically unforced errors.
- The opposite of turnovers are **steals**. The team defending takes the ball from an offensive player, forcing an error. The player who forces the error is credited with a steal.
- When a player is shooting, generally from the two-point area, but not exclusively, the defending team can block the shot. That means getting a hand on the ball before it gets into the basket.
- The best team play includes excellent passing, which leads to baskets. These excellent passes are credited to

the players who make them as **assists**, if the excellent pass leads to a successful basket.

- Hitting the opposing team is frowned upon and, to some degree, penalized. The penalty is called a **foul**. If a player commits too many fouls in a game (six in the NBA), he fouls out. If a team commits too many fouls, the other team gets to shoot **free throws**, shot attempts that are uncontested. If a player fouls while the opponent is shooting a basket, even if there are not many team fouls, the opponent will get to shoot free throws: two if the player missed the shot, or one they made it.
- Positions: Generally, there are two larger players who play **forward** (closer to the basket, planning on scoring from two-point range): a **power forward** and a **small forward**. There are two smaller players who play guard (farther from the basket, often doing much of the ball handling, and scoring from three-point range): **point guard** and **shooting guard**. The final player, usually the tallest, is called the **center**. He plays in the middle, guarding the hoop closely on defense, and shooting from "the paint" (the part inside the free-throw area) on offense. These positions are generalizations, and there are many defensive and offensive schemes that move the players around. In addition, some teams have started playing "small ball" without a true center. Positions are listed in the data, and may matter somewhat for playing time. Some players have more than one position.

The National Basketball Association: The top men's professional basketball league is called The National Basketball Association, or NBA. The teams in the NBA are divided into two leagues (East and West). Teams are located in cities across the United States, with one team in Canada (Toronto Raptors).

Player Acquisition:

Teams in the NBA acquire players in three ways:

1 The amateur draft: Each June, teams take turns selecting from among the amateur players aged 19 and over from U.S. colleges, U.S. high schools, and some international opportunities (with some exceptions not worth discussing here). Once a player is selected, he can only sign with the team that selected him. This selection process is especially important for those teams that are

financially disadvantaged, since signing top veteran players is difficult for them. The order of the draft is determined by a lottery. Teams who perform poorly in a season have a higher chance of being selected early in the draft lottery, and therefore having a higher draft pick.

2 Free agency: Once a player's contract ends, he is free to sign with another team. This is where small-market teams are at the biggest disadvantage. Some of the

players that you recommend will be available through free agency. If other teams also want them, then their salaries could go up substantially from what they are currently paid.

3 Trades: Players can be traded from one team to another. Some of the players you recommend will only be available to be traded because they're in a contract with their current teams.

MORE INFORMATION CAN BE FOUND FOR EACH TEAM AT:

[Britannica: NBA Teams](#)

[Basketball Reference: List of all the NBA & ABA Teams](#)

[Wikipedia: NBA Teams](#)

[NBA Hoops Online: NBA Team Roots](#)

[NBA: Official Site](#)

[NBA: Teams and Rosters](#)[Competition: NBA Team Locations](#)