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The impact of team performance on NBA team merchandise sales

Introduction

The National Basketball Association (NBA) is the premier basketball league in the world, featuring 30 teams across the United States and Canada. As the fourth most popular sports league globally, the NBA boasts billions of fans worldwide, contributing significantly to its revenue through merchandise sales. Merchandise revenue is influenced by numerous factors, including team performance, which is the focus of this paper. Specifically, we will examine how team performance has impacted merchandise sales over the last 15 seasons.

Founded in 1946, the NBA has grown exponentially due to the sport's popularity, iconic players, and the league's global expansion efforts. Today, basketball is the third-most popular sport globally, trailing only association football and cricket. This growth has transformed the NBA into a global brand, with merchandise sales becoming a major revenue stream. Forbes estimates that the NBA's international merchandise sales exceeded \$3.3 billion in 2020, generated through online and physical stores, licensing deals, and sponsorship agreements. Team performance during a season can significantly influence merchandise sales, potentially generating millions in additional revenue.

Winning teams tend to attract more fan interest, leading to increased merchandise sales. However, defining a "winning team" is subjective. While the Larry O'Brien Trophy,

awarded to the NBA champion, can significantly boost revenue, teams that perform well during the regular season and advance to the postseason may also see a rise in merchandise sales. This paper focuses on regular-season performance, as all 30 franchises participate, compared to only 16 teams in the postseason. Although postseason success often drives merchandise sales, the regular season's 82 games provide a more comprehensive dataset for analysis.

Why is this important?

The sports industry is a major economic driver in the United States, and the NBA plays a significant role in this ecosystem. The league creates jobs across various sectors, including broadcasting, marketing, hospitality, and tourism. Merchandise sales benefit not only the NBA and its teams but also retailers, manufacturers, and other businesses involved in the supply chain. Team performance can influence merchandise sales, which in turn affects the livelihoods of individuals employed in these industries. As the NBA becomes increasingly player-centric, franchises often focus on marketing star players rather than the team as a whole. However, team performance remains a critical factor in a franchise's popularity and financial success. This paper aims to explore this relationship in greater detail.

Literature Review

Case studies where correlations between team performance and merchandise sales are limited and too concise. Not many will include multiple seasons or state a definition of what the researchers believe the winning team is.

A study done by Dalakas and Levin (2005) examined the relationship between team performance and merchandise sales in the NBA using data from the 2000-2001 season. In this study, they found that team performance had a positive impact on merchandise sales, but this was actually strongest for franchises that had not recently won a championship. This study has proven that fans are more likely to buy merchandise when teams are performing well and considered to be championship contenders. This effect could be reduced if teams have recently experienced success. For example, because the Bulls won six championships in the 1990s, merchandise revenue could be high.

Another study done by Harrion Li (2011), a researcher at UC Berkeley, researched how on-court performance affects revenue. He goes in-depth on how it affects merchandise sales and how individual players' jersey sales are affected by how successful the team is. Using datasets from multiple seasons and the program R, Li was able to find a percent increase in merchandise sales for teams that have won the championship. According to data collected and observed, there is an average of a 30% increase in merchandise revenue when the team wins the championship, which decreases by 5-7% every year thereafter to its "average" sales per year if the team does not win a championship in its consecutive year. Li has demonstrated the Monterey value of winning a regular-season and playoff game in terms of merchandise sales. He concluded that winning a regular-season game increases revenue by \$7 million on average, and winning a championship and a playoff game increases revenue by \$11.2 million on average. The dataset and statistical model Li has created using R has proven that there is a relationship between team performance and merchandise sales.

A third study written by Tyler Stanek is a detailed report between the player's performance and the overall team revenue. In this study, Stanek has observed multiple

relationships between what players do on the field and the revenue brought in from the franchises. Stanek observed the 2013–2014 and 2014–2015 seasons and used R to find a correlation between multiple variables. He did observe merchandise sales and team performance using season and playoff data. In the study, he concluded that team performance is a major factor in merchandise sales. In the 2013-2014 season, he found that when a team wins a home game, the revenue will increase by around 2.2 million, and in the 2014-2015 season, it increased by 2.4 million. The reason for this is that many fans would buy a jersey online when a player had a good game or when they were watching it live at home. This paper observes a lot of data and is very broad due to the fact that it is discussing multiple variables. It does a spectacular job finding out a prediction as to how much a game would increase or decrease revenue, but only uses data from two years.

A fourth study has shown how team performance affects merchandise sales in India. This is interesting because many case studies do not use data from countries like India, where basketball is not even in their top five most popular sports. Bhattacharya (2018). The study done by Hore and Bhattacharya (2018) was part of a marketing project to grow the popularity of the NBA in India. The project used AI to find out what increases the popularity of the NBA in India. In the paper, Hore discusses how team success plays a big role in determining what team the fans in India like. In America, location plays an important role in determining which team a fan likes most, but since all teams are in different countries, fans in India mostly like the teams that have the best play or that are winning. In 2017, the most popular team in India was the Golden State Warriors, who won multiple championships in the 2010s and had the previous MVP in Steph Curry.

Overall, the literature shows that team performance is an important factor in NBA team merchandise sales. Teams that are successful on the court, particularly in the playoffs, have higher merchandise sales. Furthermore, team popularity and brand recognition can significantly impact products sold.

Empirical Model

To estimate the relationship between team performance and merchandise sales, we use the following linear regression model:

$$\text{Team Merchandise Sales} = a + B1(\text{Season Team Performance}) + B2(\text{All-Stars}) + B3(\text{Median State Income}) + B4(\text{Fan Attendance Average}) + u$$

- Team Merchandise Sales: Merchandise revenue per season, rounded to the nearest million.
- Season Team Performance: Win-loss percentage during the regular season.
- All-Stars: Number of All-Star players on the team.
- Median State Income: Median household income of the state where the franchise is located, adjusted for inflation.
- Fan Attendance Average: Average number of fans attending home games

Data

- **Merchandise Sales:** Data was sourced from RunRepeat, a research firm specializing in athletic shoes.
- **Season Performance:** Win-loss percentages were obtained from Team Ranking, a sports betting application.

- **All-Stars:** Data on All-Star players was collected from the NBA and JustAllStar.com.
- **Median State Income:** Data was sourced from the U.S. Census Bureau.
- **Fan Attendance:** Data was obtained from ESPN.

Table 1.

Variable	Mean (st.dev)	Min value	Max value
Merchandise sales per 1,000,000	257.2 (23.2)	432	179
Team season performance	.498 (.1444)	.207	.793
Median state income	71535.90 (10207.56)	48151	98675
All stars	1 (.843)	0	4
Fan average attendance	14627.17 (6388.76)	0	20,881

Table 1 above shows a wide variance in merchandise sales, from 179 per million for the Indiana Pacers to 432 per million for the New York Knicks, with an average of 257.2 per million. Team season performance also has wide variable with a high of .793 from the Houston Rockets and a low of .207 from the New York knicks with an average of .498

Empirical Results

The data shown in Table 2 shows that the hypothesis that team season performance and merchandise sales are positively correlated seems to be incorrect. According to the data, a higher season team performance leads to lower merchandising revenue. When season team performance

increases by one percentage, it seems that merchandise sales decrease by 99 per million. This could be because p value is less than .01 showing that the null hypothesis is rejected

regress merchaisingrevenue seasonteamperformance medianincome_state ofallstars favavgattendance						
Source	SS	df	MS	Number of obs	=	150
Model	55744.0205	4	13936.0051	F(4, 145)	=	4.06
Residual	497627.073	145	3431.91085	Prob > F	=	0.0038
				R-squared	=	0.1007
				Adj R-squared	=	0.0759
Total	553371.093	149	3713.89996	Root MSE	=	58.583

merchaisingrevenue	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
easonteamperformance	-99.90636	46.50374	-2.15	0.033	-191.8191	-7.993607
medianincome_state	.0012963	.0004409	2.94	0.004	.0004248	.0021678
ofallstars	21.09575	8.022906	2.63	0.009	5.238804	36.9527
favavgattendance	-.0001216	.0007648	-0.16	0.874	-.0016331	.00139
_cons	197.4286	38.28949	5.16	0.000	121.751	273.1063

This model demonstrates that season-team performance does not have as significant an impact on increasing merchandising revenue for NBA franchises as other variables. The model indicates that the number of all-stars on a team is a major variable in increasing merchandise sales, with a positive correlation of 21 per million dollars in sales per all-star. Additionally, median income shows a small positive correlation to merchandise sales, suggesting that the middle and upper classes may be more invested in the NBA than the lower class. However, average fan attendance shows a negative correlation to merchandise sales, possibly due to teams losing multiple games, which may cause fans to spend less money on merchandise.

Conclusion and Policy Implications

These findings suggest that NBA franchises should prioritize acquiring star players, as All-Stars have a significant positive impact on merchandise sales. While regular-season

performance does not appear to drive merchandise revenue, postseason success—as highlighted in previous studies—remains a critical factor.

One limitation of this study is the use of median state income as a proxy for fan purchasing power. More localized data, such as mean income in the city or county where the franchise is located, would provide a more accurate measure. Additionally, incorporating variables like broadcast viewership and international fan demographics could improve the model's accuracy.

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