

# NBA's Tech-Driven Innovations: Practices, Strategies, and Optimization Recommendations

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### Abstract:

Responding to the change of its environment, NBA responded quickly to emerging technologies with their incorporation. The NBA used cutting-edge technologies to innovate operations through the sports industry's digital transformation. The study analyzes NBA's technology involved promotion techniques of the market and strategies targeting individuals through technology. Key findings in the paper show an integrated adoptions of the technologies into fields that suits the NBA, as shown in the unique experience brought by the VR; AI's precise targeting of fans; NFTs expanding involvement of casual fans; and the short video approach to suit the fragmented watching habits of modern fans. Moreover, the study analyzes in depth potential strategies the league could impose and suggests realistic application and optimization strategies. The results further emphasize the integration of VR, AI, NFTs, and short video uniquely into their market and the transformation of sports league through digital modernization.

**Keywords:** Emerging technologies; Operational innovation; Promotional strategies; Fan engagement; Digital transformation.

## 1. Introduction

With the progression into an increasingly technological era, significant changes are often brought forth to society and the economy. The sport industry is one case industry undergoing a profound change caused by emerging technologies and the shifting consumer preference that is accompanied by the change. As one of the world's biggest sports leagues, NBA (National Basketball Association) flew above the horizon

as a role model by already implementing certain new technologies in their favor. This leads on to the importance of the topic: in an era where the old traditional sports consumptions are fading away giving way to a brand-new era, examining and understanding how major leagues such as the NBA utilizes and how technology could potentially integrate into the industry is crucial for this new age.

There is current existing research on the adaptation of the industry to technological such as immersive data

or digital fan engagement. However, there are still gaps in the field of research. Most of the studies currently focuses on a single technological tool and examine its integration into the industry instead of looking at the NBA in a complete technological based environment that it is in. To add on, few of the research touch on how NBA could adapt and adjust with such technologies into their strategies for global markets. Hence the significance of the research lies in the bright: it adds to the research of sports industry in the new digital transformation. Not to end, it also serves as a pole that could be applied to similar industries to modernizing their operations.

The topic of this paper lies in the deep research and analysis of the innovation of operations in the NBA through emerging technologies and era trends. Using a case study in the NBA, the research aims to present the current state of the technology integration in the NBA, analyze the strategies and marketing behind the technological driven operations, and lastly propose future recommendations for utilize of technologies in an optimized strategy.

The research structure is as follows: The current situation would outline the integration of technology in the status of NBA as in how the NBA adopted. The strategy analysis section dissects the technologies in the current NBA and looks more closely at the strategy that the NBA used. The recommendation then takes the conversation to a different page by implicating future adoptions or operational changes that could lead to a beneficial aid in the NBA.

## 2. The Current NBA

### 2.1 NBA as a Major League

NBA had already laid out their foundation as a major league long before reaching the technological era. Enduring the foundational age, the television and marketing era, and the expansion of the NBA in the pursuit of globalization, NBA reaches the peak it is today. The step towards “major league” started with Micheal Jordan opening the international markets via that superstar appeal. By 2015, the league has gotten hold on tight TV broadcasts in 215 countries and territories. Furthermore, they have also hosted a game each year which they entitled “NBA Global Games” in which they play an NBA game in all parts of the world to globalize [1]. However, there is a limitation to this linear TV interaction within fans and NBA: fans’ engagement with the game is passive. Furthermore, the access of the fans to the games was dependent on the rigid schedule broadcast instead of the “on demand” convenience. This looming gap provides an opportunity for emerging technology to help refine NBA to bring it to a whole new level.

### 2.2 NBA Utilization of Emerging Technology as Its Coverage

As technology slowly integrates with life today, it is applied to various different courses. Today, NBA partnered with “Meta” for a VR courtside experience [2]. On social media, its digital content made is dominating the reign of global sports: NBA generated 14.5 billion cumulative digital video views across platforms in 2021, ranking first among major sports properties [3]. Tiktok stands as the core social media, additionally serving a podcast deal with the NBA [4]. The NBA official app also utilizes AI to deliver personalized news to users based on their preferences. All these innovations brought forward by technology provide convenience and interactivity matching with the generation [5]. With the integration of emerging technologies such as VR and its sense of novelty to people and AI technology to deliver personalized content, the strengths of these technologies help form NBA’s unique ecosystem.

### 2.3 Operational Changes in the NBA’s Commercial Revenue Driven by Technology

Technology has deeply refined the behavior of the league and its operations. Now, a majority of NBA fans interact through digital platforms, as NBA partnered with technology partners including Intel, AT&T, Google, Digital Domain, Microsoft, and many others [6]. Casual fans today rely on full-game broadcasts a lot less: 72% of 18–25-year-old fans discover the NBA via short-form TikTok clips, rather than traditional TV. For the league, this shows a need for switching the allocation of resources. Even though tickets still present a large portion in the basket of income for NBA, it ceases to serve as a primary revenue for the NBA like it used to [1]. Estimate by Statista.com shows that as a percentage of total NBA revenue from 2010-2011 to 2019-2020, ticketing revenue dropped from 29.14 percent in 2010-2011 to 19.32% in 2019-2020 [7]. In order to maximize fan targeting entering a new ear, the NBA has increased its data analytics staff by 400% and currently allocates 30% of its marketing budget to the production of digital content, up from 8%.

## 3. Tech-Driven Fan Experience, Content & Revenue Strategies

### 3.1 Tech Powered Innovation Strategy for Viewing Experiences

A typical modern fan today in the NBA expects more than broadcasts. After centuries of being spectators, they are tired of “watching”. The NBA’s core strategy for entering the new era is to transition from passive “watching” into active “experiencing” for the fans with technology. With

technology like VR-live streaming and “NBA Courtside” enabling users to customize their view (for example bench view or player tunnel view), creating a atmosphere which traditional broadcast could not bring. Data shows that VR has a user satisfaction rating that is 47% higher than the TV [2]. Moving away from VR, NBA also uses technologies to lower the barriers for watching the game: real time shot probabilities calculate through AI analyses and more advanced stats analytics help casual fans engage deeper in the game. This ensures audiences unfamiliar with the sophisticated rules of the NBA could also understand the game easily without time to understand the rules.

### **3.2 Communicating Content while Adapting to the Technological Advancements**

Understanding these individuals must understand what the primary content NBA is trying to communicate is. NBA’s current content strategy is centered on meeting fans they are centered in so it could minimize their effort to spread their awareness. This is centered in short-form media. Nowadays, the league design content material that is specifically for platforms like Tiktok or Instagram: with clips around 30 seconds, and with viral audio that is trending, the league could attract much more attention than a long replay of the full game. These clips center on the “crunch time”, with game winning shots, game winning defense, or a closely tied edit with two players from each team shooting “answer ball” one after another. According to the MVPindex report, NBA was at the top of the list for the use of social media over all the other leagues [8]. This strategy works because the short clips naturally could fit more into the schedules of people. This aligns with the daily fragmented time fitting perfectly into them: now one could easily watch the highlights of a game while waiting for an elevator instead of watching a full game [1]. The NBA also leverages video in connection with the NBA that is created by fans by creating trends. For example, “The Three Point Socks Challenge” is one example where NBA encourages fans to do their socks laundry in the form of the NBA Three Point Contest. This expands their reach and converts viewers at a low effort and low cost.

### **3.3 Revenue Growth Strategy through Technological Integration**

Emerging technology has opened the market for new revenues beyond traditional TV or tickets deals. One example of this not mentioned is entering the NBA into a digital collectables market through the Top Shot platform and the partnership with Vancouver-based Dapper Labs [1]. NFT is a kind of digital possession that could be used to create unique items such as artwork, music, and many more. In the scope of NBA, NFTs could turn out utilized to produce limited-edition virtual trading cards, game-used jerseys,

and even electronic replicas of autographed items. For example, a record breaking shot of an NBA player could be described as an NFT [9]. Fans may purchase, sell, and exchange limited-edition player highlight NFTs, and holders can also receive special privileges like game tickets and player meet-and-greets, creating an “interaction-consumption” loop that is the key to Top Shot’s success [9]. Sports organizations also get benefits: making money by selling NFTs themselves and developing new sponsorship and advertising options. These new forms of digital assets show a revenue growth strategy.

Furthermore, NBA uses streaming as an additional revenue income. NBA league pass is a subscription for NBA. The league pass is purchased all over the world, yielding a significant proportion of revenue for the NBA. The league and Amazon Prime Video recently linked an exclusive cooperation deal that will increase streaming income [1].

Technology enables targeted advertising to show revenue growth. Analysis of users results in a data-driven target of ads to users. This significantly increased the click rates of advertisements. Brands could launch player advertised products as it would be delivered to targeted users through the analysis of user.

## **4. Optimization Strategy for NBA Tech-Driven Promotion**

### **4.1 Popularization of Technology Applications**

Although a mature VR system in NBA in the reigns of viewing is already mature, the high cost that VR is associated with preventing the large-scale popularization of VR despite the benefits it brings to individuals and the league. NBA should launch packages that decrease the price of the VR to make it more accessible. Furthermore, the league should take action to mitigate the price of the “VR tickets” to games so that the users can experience premium fan experience while also paying an affordable price. Cooperation with apple and other technology companies to develop alternative functions for the VR expanding its scope of usage in order for it to be more practical for use. This would attract more users as the VR is not limited to NBA watching alone. Zooming out a looking macro, this positive feedback loop in increasing users and increasing functionality ensures a steady revenue for the NBA not with high prices and small user groups, but low prices with big user groups.

### **4.2 Diversification Strategy for Content Dis-semination**

Currently, NBA is making a change from the focus in the full game broadcasts to short video contents. This correctly reflects and corresponds with the changing customs of

users. However, NBA short video content today is entirely focused on game moments. This sacrifices the focus of the “off-court” side of the NBA. Studies have shown that educational content such as analysis of plays or training tips could help increase the retention of fans by nearly half. This fosters long-term fan loyalty, as these contents could convert casual fans into long term fans. NBA should include the off-court side of the NBA content such as day in life of players, or educational content such as player analytics or play analytics. This diversified content could more easily target different fan interests among fans as fans’ interest is also diversified. This would result in a larger increase in fanbase as more interests are satisfied.

### 4.3 Regulations of New Emerging Business

The NBA top shot business despite its success on the market has caused discontent. This is due to the high price speculation with some extreme NFT prices increasing by 1000% for the duration of one-week [Zaucha]. This extreme increase in prices alienates the casual collectors of the NFT blocking out a considerable portion of the market while also potentially damaging the reputation of the brands of the league. Regulation of the market is needed, and this could be set up with the implementation of two key actions. First is to limit the growth of the NFT to prevent speculative bubbles from happening. Limiting monthly growth at 10% percent of NFT’s would ensure a progressive and steady growth of the market. In addition, the league should invest energy into targeting young fans by lowering the economic barriers. This could be easily accomplished through addition of NFT’s less well-known NBA players thus lowering the pack’s price, avoiding NFTs becoming an exclusive platform for the wealthy.

### 4.4 Adaption for Strategies of Global Markets

NBA’s current “one size fits for all” technological strategy does seem like a flashy renovation increasing its market globally, however it fails to consider the global technological division that exists. The strategy did not account for the difference in the digital infrastructure and the digital gap existing in different countries. In the scope of emerging markets such as India or Nigeria, 60% of phone users with limited data plans, let alone higher dimension of technology implication such as VR. Hence, NBA should have a diversified and spread-out approach to different parts of the globe ensuring that their plan suits the local technological levels. This might also in turn lead to more budget due to international sponsoring due to the risen satisfaction [10]. To bring up an example, for low technological penetration countries such as India, NBA should prioritize low bandwidth content or provide SMS updates of games to aim and kill the problem of unstable connection, focusing on building a stable technological frame.

For high-tech saturated countries in Asia such as Korea or Japan, NBA should focus more on the technological breakthrough, such as AR features like scanning posters or jerseys to view player highlights to increase interaction. For markets with unique social framework such as China, NBA should ease into the market. Through the process, NBA should customize contents, so it fits with the local culture preference. A strengthening of cooperation with local platforms is crucial for such markets.

## 5. Conclusion

The main findings of this study in NBA’s tech-driven operational innovation in the context of the sports industry’s digital transition, are that the NBA advantage comes from its use of cutting-edge technologies: VR for example which creates unique and worldwide fan experiences; AI making precise content and promotion of those contents possible, NFTs (like NBA Top Shot), which transforms passive fandom into active engagement, and short-video/AR which with mobile consumption patterns. Despite their advantages, the NBA does, however, still face numerous difficulties. This includes neglect of the digital divide previously of the unequal access to high-tech experiences for non-VR users, an excessive dependence on viral sacrificing diversity of other contents, the uncontrolled risk in NFT markets, and poor regional localization in places. By prioritizing innovation over inclusivity, short-term engagement over long-term content value, and worldwide expansion with general solutions and poor adaptations towards specific locations over market-specific adaptation are the root causes of these problems.

This paper proposes four solutions to close these gaps. First, standardize appropriate policies and rules for NFT market control. Further, diversifying content beyond highlights (e.g., behind-the-scenes storytelling) to minimize the uniform contents. Third, lowering tech access barriers from different countries or locations. Lastly, adjusting strategies to local fan preferences so specific strategies best suiting different cultural backgrounds would be satisfied.

Providing a comparable tech-operational framework for multiple leagues and emphasizing the importance of a balance between innovation and inclusivity, this study strengthens previous sports management studies. Its primary limitation is that it only looks at the NBA, which limits its scope, providing solutions that might be difficult to apply elsewhere.

To refine more to a more applicable, and also adaptive to different organization’s digital transformation models for the future, further research should be made. Research should focus on international sports organizations and examine whether technology strategies adjust to different

market scales and cultural contexts, and which approaches are more suitable for different leagues in various cultural norms.

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