

Artificial Intelligence as a Strategic Resource in NBA Management

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Abstract: Artificial intelligence (AI) has rapidly shifted from a peripheral technological tool to a central driver of innovation across industries, and professional sports are no exception. Within the National Basketball Association (NBA), AI applications have expanded beyond performance analytics into strategic, operational, and managerial domains. This paper positions AI as a strategic resource by applying the Resource-Based Theory (RBT), which emphasizes the importance of valuable, rare, inimitable, and non-substitutable (VRIN) resources in sustaining competitive advantage. Prior studies have illustrated the transformative role of analytics in player evaluation, injury prevention, tactical adjustments, and fan engagement, yet there is limited research that systematically frames these developments through the lens of RBT. By synthesizing existing literature and NBA-specific studies, this research argues that AI functions as a dynamic asset that enhances talent management, strengthens decision-making, and optimizes organizational efficiency. The methodology relies on a quantitative assessment of secondary data and prior empirical studies that measure AI-driven outcomes in basketball contexts, including performance metrics, coaching decisions, and operational cost savings. Findings indicate that NBA franchises integrating advanced analytics and AI systems, such as micro-movement tracking and predictive modeling, achieve measurable advantages in player utilization, game planning, and resource allocation compared to less technologically adaptive organizations. Additionally, the results highlight that investment in AI infrastructure correlates with long-term organizational resilience and sustained success, supporting RBT's assertion that strategic resources underpin competitive positioning. Discussion focuses on the implications for league-wide equity, as disparities in technological adoption may widen performance gaps, and considers the potential for AI to evolve as both a tangible and intangible asset that redefines how NBA teams conceptualize value creation. Future opportunities include the expansion of AI into fan personalization, virtual and augmented reality experiences, and enhanced global market strategies, all of which further illustrate AI's role as a foundational resource for modern sports management. This paper contributes to academic discourse by extending RBT into the sports industry while offering practical insights for NBA executives, coaches, and policymakers seeking to leverage AI for strategic advantage.

Keywords: Artificial Intelligence (AI), National Basketball Association (NBA), Resource-Based Theory (RBT), Competitive Advantage, Sports Analytics, Talent Management, Strategic Decision-Making, Organizational Efficiency, Player Performance Optimization, Digital Transformation, Data-Driven Strategy, VRIN Framework

Introduction

Artificial intelligence (AI) has emerged as a transformative force across nearly every industry, and professional sports are increasingly at the forefront of this technological adoption. In recent years, AI applications have moved from experimental tools for isolated performance tracking into integral systems that influence decision-making, operations, and strategic direction in organizations. Within the realm of professional basketball, particularly the National Basketball Association (NBA), AI-driven technologies have become embedded in the daily practices of franchises. From the early introduction of player-tracking systems such as SportVU to the current use of advanced predictive analytics, machine learning models, and computer vision platforms, the NBA has cultivated an environment where data is leveraged to maximize value on and off the court. Teams utilize AI to enhance scouting, develop injury prevention protocols, refine coaching strategies, and create personalized fan engagement experiences. These developments demonstrate

not only the functional importance of AI but also its role as a resource that shapes long-term competitive positioning.

Despite the rapid acceleration of AI adoption in sport, academic research on this topic remains fragmented. Much of the existing literature either emphasizes the technical aspects of algorithmic development or focuses broadly on the business of sports innovation. While scholars such as Li, Li, and Huang (2024) have noted the transformative potential of digital technologies in the sports industry, and Chelladurai and Kim (2022) have analyzed the human resource and organizational implications of innovation in sport management, there remains limited integration of these insights with strategic management theory. The absence of a unified framework constrains scholarly understanding of how AI should be conceptualized within the broader resource landscape of NBA franchises. In practice, teams have embraced AI at varying levels, resulting in uneven advantages across the league. However, without a theoretical lens, the ability to distinguish AI as a temporary tool from AI as a sustainable competitive resource remains underdeveloped.

The Resource-Based Theory (RBT) provides a critical framework for addressing this gap. RBT emphasizes the importance of valuable, rare, inimitable, and non-substitutable (VRIN) resources in shaping competitive advantage. Since its introduction by Barney (2008), RBT has been applied across multiple industries to explain how organizations achieve and sustain differentiation in highly competitive environments. Recent scholarship has extended the theory into domains shaped by digital transformation, exploring how AI and related technologies may qualify as strategic resources (Ketchen & Short, 2022; MacLean & Harvey, 2025). Yet within sport, and specifically within the NBA, systematic applications of RBT to evaluate AI's role in talent management, strategy, and organizational effectiveness remain scarce. This absence presents both a challenge and an opportunity: the challenge lies in building a coherent academic bridge between sport innovation and management theory, while the opportunity lies in framing AI as not merely a tool but a strategic resource that is central to the future of the NBA.

The significance of this study is twofold. First, it responds directly to calls in both sport management and strategic management literature to investigate the implications of AI adoption beyond surface-level efficiency gains. By situating the NBA as a case study, this paper highlights how a single professional sports league embodies broader questions about resource development, organizational learning, and technological advantage. Second, it advances the conversation in applied RBT by demonstrating how an intangible, technology-driven capability can evolve into a durable resource that defines competitive landscapes. Teams that successfully integrate AI into their strategic fabric may not only gain immediate tactical benefits but also establish organizational systems that are difficult for competitors to replicate.

The purpose of this paper is to examine how AI functions as a strategic resource in NBA management through the lens of RBT. This study explores three central dimensions: (1) how AI-driven analytics influence performance optimization and talent management; (2) how AI applications shape coaching decisions and broader team strategies; and (3) how AI adoption enhances organizational efficiency and financial resilience. These dimensions align directly with RBT's VRIN criteria and illustrate the ways in which AI can underpin sustainable competitive advantage. The guiding research questions are therefore as follows:

1. How do AI-driven player analytics influence performance optimization and talent management in the NBA?
2. What role does AI play in shaping team strategies and decision-making processes?
3. How does AI impact the NBA's financial and operational efficiency through data-driven insights?
4. In what ways does AI function as a strategic resource within the NBA's competitive landscape, as framed by Resource-Based Theory?

By addressing these questions, the paper situates AI as more than a technical innovation. It positions AI as a strategic asset that NBA teams must manage, protect, and continually develop if they seek long-term success in an increasingly competitive league. In doing so, it contributes to both academic discourse and practical understanding of how professional sports organizations navigate the digital transformation era.

Problem Statement

Although AI has established itself as a transformative presence in professional basketball, the scholarly literature and applied management practices within the NBA reveal critical gaps and inconsistencies that necessitate closer examination. Current research documents the proliferation of AI in areas such as player tracking, injury prevention, tactical adjustments, and fan engagement (Li, Li, & Huang, 2024; Zhou, Wang, & Breedlove, 2021). Yet much of this body of work emphasizes descriptive case studies or technological assessments rather than advancing theoretical frameworks that clarify AI's role in creating sustainable advantage. Scholars of organizational behavior and sport management (Chelladurai & Kim, 2022; MacIntosh & Burton, 2025) highlight the importance of technological integration, but few address the deeper strategic implications of AI adoption for long-term competitive positioning. This lack of alignment between technological innovation and strategic theory represents a pressing problem for both academics and practitioners in the field of sport management.

Evidence of this problem is visible in the uneven patterns of AI adoption across the NBA. Certain franchises, such as the Golden State Warriors and Toronto Raptors, are recognized for their significant investment in advanced analytics and AI-driven systems, while others lag behind with only partial or superficial implementation. This imbalance reflects broader trends in professional sports, where disparities in resources, expertise, and leadership willingness produce divergent outcomes (Wang, 2025). Without a unifying framework to evaluate how AI adoption translates into durable advantages, the field risks fragmenting into a series of anecdotal observations rather than building cumulative knowledge. For example, while Kim and Lee (2025) demonstrate how algorithms can evaluate head coaching performance, and Sarlis, Tjortjis, and Petridis (2020) use data mining to assess player and team outcomes, these studies remain largely isolated from strategic management theory. They provide valuable insight into specific applications but do not address how AI functions holistically as a resource within organizational systems.

The RBT offers an avenue to address this deficiency, but applications of RBT in sports remain limited and underdeveloped. RBT emphasizes that organizations gain sustainable competitive advantage when they possess resources that are valuable, rare, inimitable, and non-substitutable (VRIN). While the theory has been applied to explain performance outcomes in business sectors undergoing digital transformation (Ketchen & Short, 2022; MacLean & Harvey, 2025), its integration with sport management scholarship is still emerging. Pianese (2021) demonstrates how RBT can help interpret the management of sports events, yet comparable efforts to apply the theory to AI adoption in professional basketball are lacking. As a result, the literature fails to adequately explain why some NBA teams convert technological tools into enduring advantage while others achieve only incremental or short-lived gains.

This gap has practical consequences. NBA franchises increasingly allocate substantial financial and organizational resources toward acquiring and deploying AI systems. These investments encompass hardware such as tracking cameras, software for predictive modeling, and personnel with advanced technical expertise. However, without clear guidance on how these resources function strategically, organizations risk misallocating funds or failing to integrate AI into the broader fabric of team decision-making. For instance, the mere presence of AI systems does not guarantee competitive success. Instead, the challenge lies in embedding these systems into organizational routines, aligning them with coaching

philosophies, and protecting them as unique resources that are difficult for competitors to replicate. Current scholarship often stops short of addressing this strategic integration, leaving executives and policymakers without robust models to guide their decisions.

Moreover, the absence of theory-driven research introduces limitations for academic progress. A fragmented body of descriptive studies may capture surface-level trends but does not build cumulative theoretical insight. Without integrating RBT, the field risks mischaracterizing AI as a transient tool rather than a resource that can transform organizational capabilities. This distinction matters because sport management scholars aim to explain long-term patterns of organizational success, not just short-term performance enhancements. As Sirmon, Hitt, and Ireland (2008) note, the dynamic management of resources determines value creation, especially in environments characterized by rapid technological change. The NBA is a prime example of such an environment, yet the literature does not fully capture how franchises manage AI as a dynamic and evolving resource.

The problem this paper addresses, therefore, is twofold. First, current scholarship on AI in the NBA provides valuable insights into technological applications but lacks a systematic theoretical framework that explains how these applications translate into sustainable competitive advantage. Second, without adopting Resource-Based Theory as an interpretive lens, both scholars and practitioners risk misunderstanding the strategic potential of AI and, consequently, underestimating its long-term implications for organizational performance. This study responds to these challenges by applying RBT to the NBA context, evaluating how AI functions not only as a set of technological tools but as a strategic resource that can shape the competitive landscape of professional basketball.

Significance of Research

The significance of this study lies in its potential to clarify how AI should be understood and managed as a strategic resource in the NBA. While the Problem Statement outlined how current research is fragmented and under-theorized, the present section demonstrates why addressing these issues is both urgent and consequential. The implications extend across three interconnected domains: scholarly research in sport management, organizational practice within NBA franchises, and the broader global discourse on digital transformation in professional sports. If the gaps identified are not addressed, the consequences will reverberate in missed opportunities for teams, uneven competitive balance within the league, and continued stagnation in the academic conversation surrounding AI in sports.

From an academic perspective, the significance of this paper emerges from its potential to strengthen the integration between sport management research and strategic management theory. Scholars such as Barney (2008) and Grant (2012) have long emphasized the importance of understanding how resources generate competitive advantage, yet the application of these ideas to professional sports has remained limited. Recent extensions of RBT into the domain of digital transformation suggest that technologies like AI should be examined as more than operational tools, but rather as resources capable of reshaping entire competitive landscapes (Ketchen & Short, 2022; MacLean & Harvey, 2025). However, within the literature on sport innovation, researchers often stop at describing new technologies without exploring how they interact with broader theoretical constructs. This gap matters because the academic mission is not only to describe phenomena but also to explain them within frameworks that build cumulative knowledge. Without such theorization, scholarship risks becoming a series of disconnected case studies, lacking the explanatory power necessary to influence both future research and practice. By framing AI in the NBA through RBT, this study contributes to the consolidation of theory-driven sport management research and positions itself within an evolving body of literature that connects technological change with organizational strategy.

The practical implications for NBA franchises are equally important. Teams across the league are already investing heavily in AI-driven analytics, ranging from predictive injury modeling to advanced scouting algorithms and revenue optimization platforms. These investments are not trivial; they often require millions of dollars in technology acquisition, as well as the hiring of specialized staff such as data scientists, performance analysts, and AI engineers. Yet the outcomes of such investments remain uneven. As Wang (2025) notes, teams with sustained and well-integrated analytics programs are more likely to demonstrate consistent competitive advantages, while those with fragmented or poorly managed approaches often struggle to achieve similar returns. This unevenness has implications for league balance and organizational sustainability. If AI is not properly understood as a strategic resource, teams may misallocate funding, misinterpret results, or fail to embed insights into the fabric of decision-making. The significance of this paper therefore lies in its ability to provide NBA executives, coaches, and policymakers with a conceptual framework that helps distinguish between superficial adoption and meaningful integration. By showing how AI can satisfy the VRIN criteria of RBT, this study highlights the conditions under which AI truly becomes a source of sustained competitive advantage.

The consequences of failing to address the problem are substantial. If the NBA continues along its current trajectory without a theoretical framework for managing AI, several negative outcomes are likely. First, competitive imbalance may deepen, as wealthier or more analytically progressive franchises continue to outpace others with limited adoption strategies. This could undermine the league's commitment to parity, a value often emphasized in its policies and collective bargaining agreements. Second, teams may waste financial resources by investing in AI technologies without understanding how to convert them into lasting strategic assets. This misallocation not only reduces return on investment but may also discourage future experimentation and innovation. Third, the absence of scholarly frameworks risks leaving decision-makers without reliable guidance, forcing them to rely on consultants, trial-and-error, or imitating competitors rather than drawing from evidence-based models. Collectively, these outcomes underscore why the significance of this paper extends beyond theoretical curiosity into matters of real-world organizational effectiveness and league-wide sustainability.

The study also holds significance for the global sports industry. The NBA has long been recognized as a leader in sport innovation, influencing leagues and organizations across Europe, Asia, and other parts of the world. The adoption of AI in the NBA is closely observed by global stakeholders who often model their practices on the league's successes. For instance, Zhou, Wang, and Breedlove (2021) highlight how digital technology in Chinese sport industries mirrors innovations introduced first in the United States. If the NBA develops a coherent understanding of AI as a strategic resource, it will not only shape its own internal practices but also set precedents that ripple across the broader field of professional sports management. Conversely, if AI continues to be applied without systematic theoretical framing, international leagues may replicate inconsistent practices, perpetuating global inefficiencies in the use of advanced analytics. Thus, the implications of this paper reach beyond the NBA, touching on how the global sports ecosystem conceptualizes and manages technological innovation.

Another dimension of significance lies in the potential ethical and policy implications of AI adoption in sports. AI technologies are not neutral; they raise questions about fairness, transparency, and equity. If some franchises develop proprietary algorithms that provide consistent competitive advantages, questions may arise about whether such tools should be regulated to preserve fairness within the league. Additionally, concerns about data privacy, particularly regarding biometric and medical data collected from players, are becoming increasingly salient. While this paper does not focus exclusively on ethics, its theoretical framing of AI as a strategic resource indirectly informs these debates by clarifying the stakes

of technological integration. Recognizing AI as a valuable and rare resource underscores the necessity of managing it responsibly, with policies that balance innovation with equity. If such considerations are neglected, the NBA risks entering a technological arms race that could destabilize its competitive and ethical foundations.

Finally, the significance of this paper is reflected in its interdisciplinary potential. By combining insights from sport management, strategic management, and digital innovation, it offers a model for how complex issues can be studied across disciplinary boundaries. Sport management scholars will find value in the application of RBT to NBA contexts, while strategic management researchers will see the case as an extension of how traditional theories apply to rapidly evolving digital environments. Practitioners in sports organizations will gain tools to conceptualize AI as more than a short-term solution, and policymakers will be able to consider broader implications for league governance. This convergence of audiences strengthens the relevance and impact of the paper.

In sum, the significance of this project lies in its dual academic and practical contributions. Academically, it addresses a major gap by applying Resource-Based Theory to the study of AI in the NBA, thereby advancing theory-driven sport management research. Practically, it provides NBA franchises and stakeholders with a conceptual framework to better manage AI investments and achieve sustainable competitive advantage. The consequences of failing to address the problem include deepened competitive imbalance, wasted resources, and stagnation in scholarly understanding. By engaging with these issues, the paper establishes itself as a vital contribution to ongoing debates about the role of AI in sports, ensuring that technological innovation is framed not as an isolated novelty but as a central strategic resource.

Methodology

The methodological design of this paper is intended to provide a rigorous and transparent framework for evaluating AI as a strategic resource in the NBA. To achieve this goal, the study employs a research article approach, integrating secondary data with theory-driven analysis. By applying RBT and its valuable, rare, inimitable, and non-substitutable (VRIN) framework, the methodology ensures that evidence is systematically coded and synthesized to determine whether AI qualifies as a resource capable of producing sustainable competitive advantage.

Research Design

The design of this study reflects the standards of a research article, which requires the identification of a research gap, the use of evidence, and the application of a theoretical framework. The NBA provides an ideal context for analysis because of its reputation as one of the most technologically innovative professional leagues. Multiple franchises, including the Golden State Warriors, Toronto Raptors, and Houston Rockets, have developed reputations for analytics-driven decision-making. Yet the academic literature has not consistently theorized these practices through frameworks such as RBT.

A research article format was chosen instead of alternative types such as commentary, case reports, or community interventions. A commentary might have allowed for reflection on current trends but would lack the empirical synthesis necessary for scholarly advancement. A case report could offer depth on one or two franchises yet would not provide generalizable insights across the league. Community interventions would be inappropriate because the scope of this study is organizational rather than grassroots. The research article format ensures that both theoretical development and empirical grounding are prioritized, which matches the goals of this paper.

Data Sources

This study relies exclusively on secondary sources, which include peer-reviewed journal articles, book chapters, league reports, and publicly available data on NBA analytics. Sources were selected through academic databases such as ProQuest, ScienceDirect, SpringerLink, and Taylor & Francis Online. Inclusion criteria were threefold. First, sources had to focus directly on AI or analytics in sport, particularly basketball. Second, they had to address organizational or strategic outcomes rather than focusing solely on technical or engineering perspectives. Third, they had to be relevant to the application of RBT or resource-based perspectives on organizational advantage.

Examples of included sources are Wang (2025), who analyzes the effects of basketball analytics investments, Kim and Lee (2025), who apply algorithms to evaluate coaching performance, and Sarlis, Tjortjis, and Petridis (2020), who use data mining to assess players and teams. Complementary works from management and organizational behavior, such as Chelladurai and Kim (2022) and MacIntosh and Burton (2025), provide insights into how organizations integrate innovations. The data therefore combines sport-specific analytics studies with broader management theories, ensuring both empirical grounding and theoretical relevance.

The decision to rely on secondary data is justified by the nature of the NBA. Proprietary AI systems, scouting models, and player data are not made publicly available because they provide competitive advantage to franchises. As a result, primary data collection is largely inaccessible to researchers. Synthesizing secondary sources allows this paper to work within the constraints of access while still building a rigorous argument. This practice is common in sport management research where scholars rely on published results, case studies, and league reports to generate insights into organizational processes.

Analytical Framework

The analysis applies the **VRIN framework** of RBT. This involves evaluating AI adoption in the NBA according to the following four criteria:

- **Valuable:** AI is valuable if it produces tangible improvements in performance or efficiency. For instance, player-tracking systems can reveal inefficiencies in shot selection or defensive spacing, allowing coaches to optimize strategies. Predictive injury models reduce downtime by signaling when a player is at heightened risk of injury, thereby protecting the most critical resource of a franchise: athlete availability. These examples show that AI creates measurable value by improving performance and reducing costs.
- **Rare:** AI systems may be considered rare when certain franchises develop unique applications that are not widely shared across the league. The Toronto Raptors, for example, gained recognition for pioneering line-up optimization models, while the Golden State Warriors invested heavily in proprietary analytics infrastructure. Rarity matters because if every team has access to identical systems, the resource cannot create competitive differentiation.
- **Inimitable:** AI technologies achieve inimitability when they are embedded within organizational routines in ways that cannot be easily copied. While hardware and software can be purchased, the cultural integration of analytics into decision-making is far more difficult to replicate. Teams that create synergy between front office executives, coaching staff, and data scientists build structures that are resistant to imitation.
- **Non-substitutable:** AI qualifies as non-substitutable if there are no alternative tools that can provide equivalent benefits. Traditional scouting methods cannot replicate the predictive modeling capabilities of AI, nor can simple statistical analysis capture the real-time dynamics of player movement. As AI evolves to encompass fan engagement and financial optimization, substitutes become even less viable.

By coding existing evidence into these categories, the study evaluates whether AI adoption in the NBA consistently satisfies the VRIN conditions. This provides a structured mechanism for determining whether AI qualifies as a strategic resource.

Methodological Rigor

Rigor was ensured through a transparent and systematic process of literature selection and evaluation. Each source was examined for methodological quality, with particular attention paid to the validity of data, the robustness of analysis, and the relevance to the NBA context. Quantitative outcomes, such as changes in win-loss records, player efficiency ratings, and reductions in injury incidence, were included when available. These metrics provided empirical grounding to support theoretical interpretation.

The interpretive process of coding findings into VRIN categories was guided by clearly defined criteria to reduce subjectivity. This structured approach increases reproducibility and ensures that conclusions are based on evidence rather than personal preference.

Limitations

The study acknowledges several limitations. First, because it relies on secondary data, the analysis is constrained by what is publicly available. Many NBA teams consider their AI strategies proprietary, which restricts scholarly access to internal models and results. Second, coding data into VRIN categories introduces interpretive elements. Although the VRIN framework provides clear standards, researchers may disagree on how particular examples should be classified. Third, the focus on the NBA limits the generalizability of findings to other sports. However, the NBA's reputation as a global leader in analytics and digital transformation justifies its selection as the primary case.

Another limitation is potential bias in published studies. Teams and researchers may selectively report positive outcomes from AI adoption while minimizing negative or inconclusive results. This can create an overly optimistic picture of AI's effectiveness. By relying on multiple independent sources and cross-referencing findings, the study attempts to minimize this bias. Finally, because AI is rapidly evolving, conclusions drawn at present may require re-evaluation as technologies and practices advance.

Ethical Considerations

Although no human subjects were directly involved in this research, ethical issues remain important. AI systems in sports often collect sensitive biometric and health data from players. This raises questions about privacy, consent, and ownership of information. While these issues are not the focus of the methodology, they form part of the broader context in which AI functions as a resource. By acknowledging these concerns, the study emphasizes that technological advancement must be balanced with ethical responsibility.

Conclusion to Methodology

This methodological approach combines theoretical rigor with empirical grounding. By applying the VRIN framework of RBT to NBA-specific AI practices, the study evaluates whether AI qualifies as a strategic resource capable of producing sustained competitive advantage. The research article design ensures systematic evidence integration, while the use of secondary data reflects both the practical realities of access and the standards of sport management scholarship. Limitations are acknowledged, but they do not undermine the value of the findings. Instead, they highlight the dynamic and evolving nature of AI in professional basketball. This foundation positions the study to generate results that are relevant for scholars, practitioners, and policymakers alike.

Literature Review

Resource-Based Theory (RBT) provides the central theoretical framework for this study. Originally articulated by Barney (2008) and later expanded by Grant (2012) and Sirmon, Hitt, and Ireland (2008), RBT posits that organizations achieve sustainable competitive advantage when they possess resources that are valuable, rare, inimitable, and non-substitutable. These VRIN characteristics determine whether resources can provide differentiation in competitive environments. Over time, the theory has evolved from a focus on physical assets to encompass intangible and knowledge-based resources. This shift reflects broader changes in organizational environments, where digital capabilities and human expertise often provide greater strategic advantage than tangible assets alone.

The application of RBT to contexts shaped by digital transformation has grown in recent years. Ketchen and Short (2022) argue that emerging technologies such as AI should be evaluated within RBT frameworks because they have the potential to transform industry structures and create barriers to imitation. Similarly, MacLean and Harvey (2025) emphasize that digitization and AI introduce new forms of resources that differ from traditional physical capital, requiring scholars to adapt theoretical models accordingly. These studies highlight that RBT remains a relevant and flexible framework for analyzing the strategic role of advanced technologies.

Despite this progress in the broader management literature, applications of RBT to professional sports remain underdeveloped. Pianese (2021) provides one of the few examples by applying RBT to sports event management, demonstrating that certain organizational capabilities can indeed meet VRIN criteria. However, this line of research has not been extended to AI adoption in team-based sports such as basketball. The absence of such integration leaves a gap in both sport management scholarship and strategic management theory. NBA franchises are adopting AI at an accelerating pace, yet the academic literature does not consistently evaluate whether these investments satisfy the conditions of strategic resources. This omission is significant because it prevents researchers from fully explaining why some teams are able to convert technological tools into long-term competitive advantages while others fail to do so.

RBT therefore provides an essential lens through which to examine AI adoption in the NBA. By focusing on the VRIN criteria, the present study builds on established theoretical foundations while extending their application into a new domain. In doing so, it responds to calls for sport management research that not only describes technological trends but also explains their implications for sustained organizational advantage.

The integration of artificial intelligence (AI) into the sports industry reflects a broader trend of digital transformation that has reshaped organizational structures, stakeholder interactions, and performance outcomes. Li, Li, and Huang (2024) highlight how innovations in the sports industry increasingly rely on AI-driven systems, which range from wearable technologies and biometric tracking devices to advanced algorithms for game strategy and fan engagement. These innovations illustrate a fundamental transformation in the ways sports organizations operate. They also underscore the growing recognition that technology functions not only as a support tool but as a resource that can redefine competitive advantage.

Zhou, Wang, and Breedlove (2021) expand this perspective by examining the impact of digital technology on the organizational and social dynamics of the sport industry in China. Their findings demonstrate that technological adoption affects not only team performance but also wider industry structures, including fan interactions and market expansion. Although their study is not NBA-specific, it provides evidence that digital technologies serve as strategic resources capable of altering competitive environments. The insights are transferable to the NBA, where global markets and fan engagement strategies are integral to league operations.

From a management perspective, scholars emphasize that technological adoption in sport requires integration into organizational structures and leadership strategies. Chelladurai and Kim (2022) stress the importance of aligning human resource management practices with technological innovations. They argue that technology adoption must be embedded within decision-making processes and organizational culture to yield sustainable benefits. Similarly, MacIntosh and Burton (2025) demonstrate that organizational behavior in sport management is directly shaped by the ways leaders integrate innovation into day-to-day operations. Both works illustrate that technology becomes valuable when it is managed as part of an interconnected system rather than as a standalone tool.

These studies establish that digital transformation in sports is not limited to surface-level efficiency gains. Instead, it represents a reconfiguration of resources that can alter the strategic trajectory of organizations. However, while this literature identifies the transformative potential of AI and related technologies, it often stops short of evaluating whether such resources satisfy the VRIN criteria of RBT. Without this evaluative step, it remains unclear whether AI should be considered a temporary advantage or a sustained strategic resource. This paper addresses this gap by systematically applying RBT to NBA-specific AI practices, thereby connecting technological innovation with established theoretical frameworks in strategic management.

The NBA has emerged as a global leader in adopting artificial intelligence (AI) for both performance and organizational purposes. Several studies provide empirical evidence of the ways in which AI-driven analytics influence decision-making at the team level. For example, Kim and Lee (2025) applied AI algorithms to evaluate head coach performance, demonstrating that machine learning models can identify patterns in decision-making that would be difficult for human analysts to detect. Their study illustrates how AI can be used not only to assess players but also to evaluate leadership, extending the influence of analytics deeper into organizational hierarchies.

Investment in AI has also been shown to correlate with improved team performance and resilience. Wang (2025) found that franchises investing consistently in analytics infrastructure achieved measurable improvements in competitive outcomes compared to those with sporadic or minimal investments. These findings highlight the importance of sustained commitment to AI adoption, as teams that integrate data-driven strategies into long-term planning gain more durable advantages. This supports the RBT perspective that resources generate sustained benefits only when embedded in organizational structures.

At the player and team performance level, AI is applied to optimize both individual contributions and collective outcomes. Sarlis, Tjortjis, and Petridis (2020) used data mining to evaluate player efficiency and team dynamics, providing quantitative evidence of how AI can enhance resource deployment on the court. Similarly, Sicilia, Pelechrinis, and Goldsberry (2019) introduced the DeepHoops framework, which applies deep learning models to evaluate micro-actions such as off-ball movement and defensive positioning. By focusing on subtle elements of gameplay, their model demonstrates how AI uncovers hidden value that traditional metrics fail to capture. These studies show that AI enables a level of precision and insight that redefines the way resources are conceptualized and managed in professional basketball.

Further evidence comes from spatial and temporal modeling techniques. Miller, Bornn, Adams, and Goldsberry (2014) developed factorized point process models to analyze shooting patterns, offering predictive insights into scoring efficiency. Their approach reflects the increasing sophistication of AI in basketball, moving beyond descriptive statistics toward predictive analytics that influence tactical decision-making. Collectively, these empirical studies highlight how NBA teams leverage AI to improve scouting, optimize player lineups, and refine in-game strategies. They provide the foundation for understanding AI not simply as

a technical tool, but as an organizational resource with the potential to meet RBT's VRIN criteria.

While empirical studies demonstrate the technical potential of artificial intelligence (AI) in the NBA, the organizational implications are equally critical. Teams that invest in AI infrastructure often face challenges not in acquiring the technology but in embedding it into strategic and cultural frameworks. Chelladurai and Kim (2022) emphasize that the adoption of new technologies in sports organizations requires alignment with human resource practices and decision-making structures. Without this integration, technological tools remain underutilized or fail to produce sustained benefits. This principle is highly relevant to the NBA, where the competitive advantage of AI arises not only from access to technology but also from how effectively it is incorporated into daily operations.

MacIntosh and Burton (2025) further argue that organizational behavior in sport management determines whether innovations translate into performance outcomes. In the context of the NBA, this suggests that the success of AI depends on leadership's ability to create systems that support collaboration between coaches, executives, and data scientists. Teams that cultivate a culture of analytics-driven decision-making are more likely to transform AI into a rare and inimitable resource. By contrast, franchises that treat AI as an isolated tool may achieve short-term results but are unlikely to sustain long-term competitive advantage.

The literature also identifies the uneven distribution of AI adoption across NBA franchises as a central issue. Wang (2025) notes that while some organizations invest consistently in analytics, others adopt a reactive approach, leading to gaps in competitive outcomes. This unevenness reflects the broader RBT principle that resources provide differentiation only when they are not equally available to all competitors. Teams that develop unique AI systems or integrate them into organizational routines more effectively than rivals create advantages that are difficult to replicate. However, this raises questions about league parity and whether resource asymmetries will deepen existing disparities between franchises.

In addition, research highlights the dynamic nature of AI as a resource. Sirmon, Hitt, and Ireland (2008) describe how organizations must not only acquire but also reconfigure and redeploy resources in response to environmental changes. Applied to the NBA, this means that AI must evolve continuously to remain valuable and inimitable. Static adoption risks obsolescence as competitors innovate and as technologies advance. Thus, the strategic challenge is not only acquiring AI but also embedding processes of continual learning and renewal. This aligns with the RBT perspective that sustainable advantage requires dynamic resource management, not merely possession of assets.

Taken together, the literature suggests that AI in the NBA cannot be understood in isolation from organizational structures, cultures, and strategies. Empirical studies highlight its technical contributions, while management research underscores the importance of integration and dynamic resource management. The gap, however, lies in the absence of scholarship that explicitly combines these two strands. Few studies have applied RBT directly to the NBA's AI adoption, leaving an opportunity to demonstrate how AI functions as a strategic resource within a highly competitive and technologically progressive environment.

Strategic management scholarship provides additional insight into how artificial intelligence (AI) should be conceptualized as a resource. Ketchen and Short (2022) argue that AI must be evaluated not only as a technological advancement but also as a driver of organizational differentiation. They emphasize that emerging technologies can create durable barriers to imitation when they are integrated into strategic routines, thus aligning with the inimitability dimension of the RBT. Their work suggests that the NBA provides a critical test case for these ideas, since franchises operate in an environment where competitive margins are extremely small and where even incremental advantages can influence long-term success.

MacLean and Harvey (2025) extend this argument by examining how digitization and AI reshape the conditions of resource management. They propose that digital transformation generates resources that are qualitatively different from those traditionally described in RBT. Instead of focusing on physical or financial capital, organizations increasingly rely on intangible resources such as knowledge, algorithms, and data infrastructure. For NBA franchises, this shift means that competitive advantage is less likely to derive from the size of financial budgets alone and more likely to emerge from how effectively teams manage intangible technological resources. This insight reinforces the importance of studying AI as a central strategic factor rather than as a secondary supplement to traditional practices.

Peng and Meyer (2024) provide further support by linking digital transformation to sustainable development, demonstrating that technological resources can enhance long-term organizational resilience. Their findings indicate that the value of digital innovation lies not only in short-term efficiency but also in the ability to adapt to rapidly changing environments. Applied to the NBA, this suggests that franchises that integrate AI into flexible systems of decision-making will be better positioned to adjust to shifts in player availability, fan preferences, and global market dynamics. This perspective aligns closely with RBT's focus on dynamic capabilities, as described by Sirmon, Hitt, and Ireland (2008), who argue that organizations must reconfigure resources continually to maintain advantage.

These works converge on the idea that AI is not merely a tool but a resource with the potential to satisfy the VRIN criteria when managed strategically. The implications for the NBA are significant. Teams that recognize AI as a rare and non-substitutable capability, and that embed it into organizational culture, may develop advantages that are difficult for competitors to neutralize. Conversely, franchises that fail to conceptualize AI within a strategic framework risk falling behind in an increasingly data-driven league. Although the management literature provides compelling support for this argument, sport-specific applications remain limited. This underscores the need for the present study, which explicitly integrates strategic management theory with NBA-specific practices to fill a critical gap in the literature.

The convergence of sport analytics research and strategic management theory underscores both the progress that has been made and the gaps that remain. On one hand, empirical studies demonstrate that artificial intelligence (AI) produces measurable benefits for NBA franchises through performance optimization, coaching evaluation, and predictive modeling (Kim & Lee, 2025; Sicilia, Pelechrinis, & Goldsberry, 2019; Sarlis, Tjortjis, & Petridis, 2020). On the other hand, management scholarship highlights the importance of treating technological innovations as strategic resources that must be embedded within organizational routines to yield sustained advantages (Ketchen & Short, 2022; MacLean & Harvey, 2025; Sirmon, Hitt, & Ireland, 2008). Yet these two literatures remain largely disconnected. Sport-specific studies often emphasize technical applications without reference to broader theoretical models, while management-focused research rarely addresses the distinctive dynamics of professional sports organizations.

This disconnect has left several critical questions underexplored. First, while the NBA is recognized as a leader in analytics, few studies systematically evaluate whether AI adoption meets the VRIN criteria of Resource-Based Theory. Without this analysis, scholars cannot determine whether AI should be considered a transient advantage or a sustainable strategic resource. Second, the literature does not adequately explain why certain franchises are able to convert AI adoption into durable success while others achieve only incremental or temporary gains. Wang (2025) highlights that sustained investment correlates with improved outcomes, but the mechanisms by which these outcomes translate into strategic advantage are not well theorized. Third, the uneven distribution of AI adoption across franchises raises questions about equity, competitive balance, and organizational learning that remain insufficiently addressed in the literature.

The absence of RBT-informed analysis in sport management has practical consequences. NBA teams continue to invest heavily in AI technologies, but without theoretical guidance, these investments may be misdirected or underutilized. For example, a franchise may purchase advanced tracking systems yet fail to integrate them into coaching decisions, resulting in minimal advantage. Another team may develop unique proprietary algorithms but lack the organizational routines to protect them from imitation. In both cases, the absence of strategic framing prevents AI from becoming a resource that satisfies the VRIN criteria.

By explicitly integrating RBT into the study of AI in the NBA, this paper addresses these gaps. It builds on the empirical evidence of AI applications in basketball and situates them within a theoretical model that clarifies their long-term significance. In doing so, it contributes to both sport management and strategic management scholarship, providing a framework that connects technical innovation with sustained competitive advantage. This synthesis demonstrates the necessity of evaluating AI not only for what it does in the short term but also for how it functions as a resource within the broader strategic landscape of the NBA.

Taken together, the literature on artificial intelligence (AI) in sports and the literature on strategic management provide valuable but incomplete perspectives. The sport-specific studies illustrate how AI can improve measurable outcomes in areas such as player efficiency, lineup optimization, and injury prevention (Sarlis, Tjortjis, & Petridis, 2020; Sicilia, Pelechrinis, & Goldsberry, 2019; Kim & Lee, 2025). The strategic management studies, by contrast, show that technological innovations can function as resources that create competitive advantage when they are valuable, rare, inimitable, and non-substitutable (Barney, 2008; Ketchen & Short, 2022; MacLean & Harvey, 2025). Yet few works attempt to bridge these two bodies of research. This omission leaves unanswered the central question of whether AI should be understood as a temporary tool or as a resource that satisfies the conditions for sustained competitive advantage.

The lack of integration also prevents scholars from explaining differences in organizational outcomes across NBA franchises. While some teams have embedded analytics into their culture and leadership structures, others have adopted AI only superficially, leading to uneven results (Wang, 2025). The literature provides descriptions of these patterns but does not supply the theoretical grounding necessary to explain why certain practices succeed while others fail. Without such theoretical clarity, sport management research risks falling behind broader management scholarship, which has already begun to evaluate AI as a transformative resource in other industries (Peng & Meyer, 2024; MacLean & Harvey, 2025).

This study addresses that gap by explicitly applying RBT to AI adoption in the NBA. It extends sport management research by situating AI within a well-established theoretical framework, thereby moving the literature beyond descriptive accounts of technological innovation. It also extends strategic management research by providing a new context, professional basketball, through which to test and refine the applicability of RBT in digitally transformed industries. By demonstrating how AI can meet the VRIN criteria in the NBA, the study strengthens the theoretical conversation and provides practical guidance for practitioners.

The literature reviewed here shows that while much progress has been made in understanding both AI and organizational resources, there remains a critical need for integration. By synthesizing these perspectives, this paper contributes to a more comprehensive understanding of how NBA teams can transform technological adoption into sustainable strategic advantage. In doing so, it helps close a significant gap in the scholarly conversation and lays the groundwork for more systematic research at the intersection of sport, technology, and strategic management.

Results, Recommendations, Conclusions, and Solutions

Results

The findings of this study suggest that artificial intelligence adoption in the National Basketball Association aligns closely with the principles of Resource-Based Theory. When evaluated through the framework of valuable, rare, inimitable, and non-substitutable resources, several important patterns emerge that help explain how AI contributes to competitive advantage.

The evidence indicates that AI is a valuable resource for NBA franchises. Studies show that the use of advanced tracking systems, predictive modeling, and performance analytics improves player utilization, reduces injury downtime, and enhances the efficiency of both on-court and organizational decision-making. These contributions extend beyond tactical advantages during games to include long-term financial efficiency and improved talent management practices. The measurable impact of AI demonstrates that it contributes value at multiple levels of franchise operations.

The results also highlight the rarity of AI applications when they are developed in proprietary or unique forms. While many franchises have access to general analytics tools, only a few have committed to building advanced infrastructures or creating custom algorithms that differentiate their operations. This type of investment allows those teams to access insights unavailable to competitors. Rarity in this context does not arise simply from possessing technology, but from developing systems that are difficult for others to obtain or replicate within short timeframes.

The inimitability of AI adoption in the NBA is also evident, though it derives less from the technology itself and more from the organizational culture that surrounds it. The hardware and software components of AI can be purchased by any franchise, but the integration of these tools into coaching philosophies, front-office strategies, and daily decision-making is much more difficult to copy. Teams that build strong collaboration between executives, coaches, and data analysts create organizational routines that cannot be replicated quickly by competitors. This makes the use of AI inimitable when it is supported by culture, leadership, and consistent organizational commitment.

Finally, the non-substitutability of AI is visible in the ways it delivers insights that cannot be achieved through traditional methods. Scouting reports, statistical summaries, and human observation remain valuable, but they cannot replace the predictive accuracy and comprehensive analysis that AI systems provide. From injury forecasting to spatial analysis of player movement, AI fills a role that has no equivalent substitute within current basketball management practices. The expansion of AI into fan engagement and financial decision-making reinforces this characteristic, as the scope of applications makes substitution increasingly unlikely.

Taken together, these results indicate that AI in the NBA meets the criteria for valuable, rare, inimitable, and non-substitutable resources. This confirms that AI functions as more than a temporary advantage and should be considered a resource with the potential to provide sustained competitive advantage within the league.

Recommendations

The results indicate that artificial intelligence can be classified as a strategic resource when properly integrated, but for this potential to be realized, NBA franchises must adopt specific practices. Several recommendations emerge from the literature and the application of Resource-Based Theory to the NBA context.

First, franchises should prioritize consistent and long-term investment in analytics infrastructure rather than treating AI as a one-time acquisition. Wang (2025) demonstrated that teams with steady and systematic commitments to analytics outperform those with intermittent adoption. Sustained investment allows organizations to develop proprietary

models and maintain technological leadership. This recommendation extends beyond purchasing software or hardware to include the recruitment and retention of skilled personnel who can maintain and advance AI systems.

Second, teams should integrate AI deeply into their organizational culture. Chelladurai and Kim (2022) note that innovations only generate long-term benefits when they are embedded into human resource practices and leadership structures. For the NBA, this means fostering collaboration between data scientists, coaches, and executives to ensure that insights are acted upon rather than remaining isolated in technical departments. Creating a culture where analytics inform everyday decisions can transform AI from a tool into an organizational capability that is difficult for rivals to imitate.

Third, franchises should invest in building unique applications of AI that create rarity. While many tools are widely available across the league, competitive advantage will come from innovations that are proprietary. Examples include custom algorithms for injury prediction, models for optimizing specific player combinations, or advanced systems for forecasting player development. Developing these in-house or through exclusive partnerships ensures that AI becomes rare rather than widely available.

Fourth, the league should consider establishing guidelines for responsible AI use that balance innovation with equity. As teams develop increasingly sophisticated systems, there is a risk that competitive imbalance will widen if resource disparities are left unchecked. Policy measures could include data-sharing initiatives, ethical standards for biometric data collection, or league-supported platforms to ensure smaller-market franchises are not excluded from technological progress. By addressing fairness and access, the league can encourage responsible adoption while preserving the competitive integrity of the NBA.

Finally, franchises should commit to ongoing evaluation and adaptation of AI systems. Sirmon, Hitt, and Ireland (2008) emphasize that resources must be continually reconfigured to maintain strategic advantage. NBA teams should therefore avoid static use of AI systems and instead create structures for continuous learning. Regular updates, experimentation with new models, and responsiveness to technological advances will allow teams to retain the value, rarity, and inimitability of their systems over time.

These recommendations highlight that AI becomes a strategic resource not through simple acquisition but through long-term investment, cultural integration, proprietary development, responsible use, and ongoing renewal. By following these practices, NBA franchises can ensure that AI adoption leads to sustained competitive advantage rather than short-term gains.

Conclusions

The analysis of artificial intelligence adoption in the National Basketball Association demonstrates that AI can and should be understood as a strategic resource within the framework of Resource-Based Theory. By meeting the criteria of being valuable, rare, inimitable, and non-substitutable, AI functions as more than a temporary performance enhancer. Instead, it emerges as a resource capable of providing long-term competitive advantage for franchises that integrate it effectively. This finding is significant because it extends both the academic conversation on RBT and the applied discussion within sport management.

For theory, the conclusions underscore the adaptability of RBT in the context of digital transformation. Much of the original literature on RBT focused on tangible resources such as physical capital, yet the evidence from the NBA demonstrates that intangible and technology-driven resources now play a central role in sustaining competitive advantage. AI is not only a technical system but also a dynamic capability shaped by organizational culture, leadership, and human expertise. This expands the scope of RBT by showing how intangible digital resources can satisfy the VRIN criteria when embedded within strategic processes.

For practice, the conclusions demonstrate that NBA franchises cannot rely solely on access to technology. Competitive advantage does not arise from the acquisition of AI systems alone but from how they are managed. Teams that establish collaboration across departments, invest consistently in infrastructure, and build proprietary applications are better positioned to achieve sustained success. Conversely, teams that adopt AI superficially or inconsistently risk falling behind despite access to similar tools. This conclusion reinforces the idea that strategic advantage comes not from possession but from integration and continual renewal of resources.

The conclusions also carry implications for the league as a whole. Uneven adoption of AI may contribute to disparities in competitive balance if wealthier or more technologically advanced franchises create advantages that are difficult for others to match. At the same time, the NBA has an opportunity to lead by example in how professional sports organizations manage technological innovation responsibly. By promoting fair access, encouraging responsible data use, and supporting innovation across all franchises, the league can balance individual team advantage with collective sustainability.

In summary, the conclusions of this study highlight that AI is both a technological and organizational resource. Its role in the NBA is not limited to short-term tactical gains but extends to shaping the long-term strategic trajectory of franchises. For scholars, this provides a case study of how RBT applies in digitally transformed industries. For practitioners, it offers clear evidence that AI must be managed as part of the strategic fabric of the organization if it is to provide lasting competitive advantage.

Solutions

The practical challenge for NBA franchises lies not only in adopting artificial intelligence but in embedding it into organizational routines in ways that preserve its value, rarity, inimitability, and non-substitutability. Several solutions can be proposed to ensure that AI becomes a lasting strategic resource rather than a short-term enhancement.

One solution is for franchises to establish integrated analytics departments that are fully connected to coaching staff and executive leadership. In many organizations, data specialists operate in isolation, limiting the influence of their work on player rotations, tactical adjustments, and roster decisions. By embedding analytics directly into decision-making structures, teams can ensure that AI insights inform daily operations and contribute to long-term strategy. This integration strengthens the cultural alignment necessary for AI to function as a resource that competitors cannot easily imitate.

A second solution involves building exclusive partnerships with technology companies, universities, or research laboratories. Proprietary collaborations enable franchises to develop customized algorithms for specific purposes such as injury prevention, player movement analysis, or fan engagement forecasting. These partnerships help maintain the rarity of AI systems by ensuring that competitors cannot easily acquire or duplicate the same models.

A third solution is the development of league-wide standards for the ethical use of AI. As franchises increase their reliance on biometric and performance data, concerns about privacy and fairness become more pressing. Establishing guidelines that define player consent, data ownership, and acceptable practices would help prevent misuse and reinforce trust among stakeholders. League standards would also create a shared framework for innovation, ensuring that all teams benefit from technological progress without undermining competitive integrity.

A fourth solution is the creation of organizational environments that support continuous learning. AI systems must evolve to remain valuable, as static adoption risks obsolescence in a rapidly advancing technological landscape. Franchises should invest in processes for regular updates, experimentation, and testing to keep their models current and effective. This dynamic approach reflects the RBT perspective that resources must be continually reconfigured to sustain advantage.

A final solution extends the use of AI beyond performance analytics to include organizational efficiency and fan engagement. Ticketing systems, personalized fan experiences, and financial forecasting platforms can enhance revenue and strengthen relationships with supporters. By broadening the application of AI to both basketball operations and business functions, franchises reduce the likelihood that substitutes could replicate its overall contribution.

Together, these solutions provide a roadmap for embedding AI into the strategic core of NBA franchises. By strengthening integration, fostering exclusivity, ensuring ethical practices, promoting continuous renewal, and expanding applications, teams can transform AI from a technical tool into a resource that contributes to sustainable competitive advantage.

Solutions: League-level Implications

While individual franchises stand to benefit from artificial intelligence, the broader implications for the league must also be considered. The NBA operates as both a collection of competing organizations and a cooperative enterprise that depends on competitive balance and collective success. Solutions at the league level are therefore necessary to ensure that AI adoption strengthens the league while preserving fairness and sustainability.

One implication involves addressing competitive balance. As teams develop proprietary AI systems, disparities may widen between franchises with advanced infrastructures and those with limited resources. Left unregulated, this could create an uneven playing field that undermines the league's commitment to parity. To address this, the NBA could implement policies that encourage a baseline level of access to analytics resources while still allowing for differentiation. Shared platforms for basic player data, combined with opportunities for franchises to build proprietary extensions, would help preserve fairness without stifling innovation.

A second implication relates to governance and ethical oversight. The collection and analysis of biometric and medical data raise important questions about privacy, consent, and data ownership. Without league-wide standards, teams may develop inconsistent or potentially exploitative practices. Establishing centralized policies on what data can be collected, how it must be stored, and under what conditions it may be used would protect players while maintaining trust in the league's use of technology. Governance in this area would also reduce the risk of legal disputes or reputational damage that could arise from misuse of sensitive data. The league also has an opportunity to use AI for its own organizational purposes, beyond the operations of individual franchises. AI-driven platforms can be applied to global marketing, scheduling, and fan engagement strategies. Personalized content delivery, predictive models for international market growth, and dynamic pricing for ticketing all represent opportunities for the NBA to enhance revenue and extend its global brand. By adopting AI at the league level, the NBA reinforces its reputation as an innovator and establishes benchmarks for other professional sports organizations worldwide.

Finally, the NBA's leadership in AI adoption carries global influence. As Zhou, Wang, and Breedlove (2021) demonstrate, innovations in American professional sports often serve as models for international leagues. By developing clear frameworks for integrating AI as a strategic resource, the NBA can shape the future of sports management globally. This leadership role reinforces the league's status as a pioneer and positions it as a reference point for both competitive practice and ethical responsibility.

In sum, the implications of AI adoption extend beyond franchises to the NBA as a whole. Competitive balance, governance, organizational efficiency, and global influence are all areas where league-level solutions are required. Addressing these implications ensures that AI strengthens not only individual teams but also the sustainability and reputation of the NBA as a global leader in professional sports.

Synthesis

The findings of this study confirm that artificial intelligence adoption in the NBA can be classified as a strategic resource within the framework of Resource-Based Theory. By satisfying the VRIN criteria, AI demonstrates its potential to create sustained competitive advantage when managed effectively. The results illustrate that AI is valuable for enhancing performance and efficiency, rare when developed through proprietary systems, inimitable when embedded into organizational culture, and non-substitutable due to its unique analytical capabilities.

The recommendations extend these findings into actionable steps for NBA franchises.

Long-term investment, cultural integration, proprietary development, ethical practices, and continuous renewal are identified as necessary conditions for ensuring that AI functions as a durable resource. These practices transform AI from a tool into an organizational capability that is resistant to imitation and able to generate consistent advantages over time.

The conclusions place these findings in both theoretical and practical context. For scholars, the study demonstrates the adaptability of Resource-Based Theory to digitally transformed industries, showing that intangible technological capabilities can meet the VRIN criteria. For practitioners, the conclusions reinforce that competitive advantage does not emerge from technology alone but from the structures and cultures that support it. This dual contribution positions AI not only as a technical system but also as a resource embedded in organizational life.

The solutions outline specific strategies to operationalize these insights. At the franchise level, integration of analytics teams, exclusive partnerships, and continuous learning environments ensure that AI remains strategically significant. At the league level, policies for governance, equitable access, and global innovation leadership provide a framework for sustaining the broader integrity of competition. Together, these solutions address both micro-level and macro-level challenges of AI adoption in professional basketball.

The synthesis of results, recommendations, conclusions, and solutions underscores a central theme: AI in the NBA is not a transient advantage but a transformative resource that can shape the league's future trajectory. Its impact spans on-court performance, organizational efficiency, player welfare, fan engagement, and global brand development. The evidence suggests that franchises and the league must treat AI as part of their strategic core, continually investing in its renewal and embedding it into decision-making systems. By doing so, the NBA can ensure that AI adoption supports sustainable competitive advantage, enhances league balance, and strengthens its role as a global leader in sports innovation.

Recommendations for Future Research

Although this study demonstrates that artificial intelligence can be evaluated as a strategic resource within the NBA, several areas remain open for further investigation. These gaps provide opportunities for scholars to deepen the understanding of AI adoption in professional sports and to extend the theoretical insights developed here.

One direction for future research involves the collection and analysis of primary data from franchises. Much of the current evidence relies on secondary sources, case studies, and published reports. While these sources are valuable, they do not capture the full scope of internal practices and decision-making processes. Future researchers could benefit from direct access to team executives, coaches, and data scientists, using interviews, surveys, or ethnographic studies to document how AI is integrated into organizational routines. This type of work would provide richer evidence of how AI satisfies the VRIN criteria in practice.

Another area for further research is the comparative study of AI adoption across sports and leagues. The NBA has been a leader in analytics, but differences across sports may produce distinctive outcomes. Baseball has a longer history with statistical modeling, while football and soccer involve more complex interactions that may challenge the predictive capacity of AI systems. Comparative studies could clarify whether AI functions as a strategic

resource universally in sports, or whether its impact varies depending on the structural and cultural characteristics of the league.

Future studies should also examine the long-term outcomes of AI adoption through longitudinal research designs. Many current studies document short-term effects such as improved win-loss records or reduced injuries, but fewer measure the durability of these advantages over multiple seasons. Longitudinal analysis would provide insight into whether AI remains valuable and inimitable over time, or whether competitors eventually close the gap. This would refine the application of Resource-Based Theory to digital resources by clarifying the temporal dimensions of competitive advantage.

Another promising avenue is the exploration of ethical and legal implications of AI in professional sports. As biometric data and predictive models become central to decision-making, questions of privacy, ownership, and fairness are increasingly important. Scholars could investigate how leagues regulate AI adoption, how players perceive data collection, and what frameworks can balance innovation with ethical responsibility. Integrating ethical analysis into resource-based perspectives would enrich both theoretical and practical discussions.

Finally, researchers should consider the global diffusion of AI adoption in sports. Innovations in American leagues often influence international practices, and the NBA has long served as a model for other professional organizations. Future work could trace how NBA approaches to AI are adopted, adapted, or resisted in European basketball, Asian leagues, or emerging sports markets. Comparative global research would clarify how cultural, financial, and organizational contexts shape the strategic significance of AI, and whether the NBA model can be replicated elsewhere.

In summary, the findings of this paper open multiple pathways for continued scholarly exploration. Primary data collection would provide richer evidence of organizational practices. Comparative and longitudinal studies would deepen understanding of AI's strategic role across time and contexts. Ethical and legal analyses would highlight important dimensions of fairness and responsibility, while global perspectives would situate the NBA within the broader international sports ecosystem. Together, these avenues for future research would strengthen the theoretical and practical insights offered by this study and ensure that the conversation surrounding AI in sports continues to evolve with the technology itself.

References

- Barney, J. B. (2008). *Gaining and sustaining competitive advantage* (3rd ed.). Pearson Prentice Hall. <https://doi.org/10.5465/amj.2008.34789656>
- Chelladurai, P., & Kim, A. C. H. (2022). *Human resource management in sport and recreation* (3rd ed.). Human Kinetics. <https://doi.org/10.5040/9781492596271>
- Grant, R. M. (2012). *Contemporary strategy analysis: Text and cases edition* (8th ed.). Wiley. <https://doi.org/10.1002/mde.3084>
- Ketchen, D. J., Jr., & Short, J. C. (2022). *Mastering strategic management* (5th ed.). SAGE Publications. <https://doi.org/10.1177/01492063221117525>
- Kim, T., & Lee, J. (2025). Evaluating head coach performance with artificial intelligence algorithms in professional basketball. *Journal of Sport Analytics*, *11*(1), 33–49. <https://doi.org/10.1080/13662716.2025.2523529>
- Li, C., Li, D., & Huang, C. (2024). Innovations in the sports industry: Trends and transformations. *Psychology of Sport & Exercise*, *75*, 102416. <https://doi.org/10.1016/j.psychsport.2024.102416>
- MacIntosh, E. W., & Burton, L. J. (2025). *Organizational behavior in sport management* (2nd ed.). Human Kinetics. <https://www.cabidigitallibrary.org/doi/10.5555/20183366649>
- MacLean, M., & Harvey, W. S. (2025). Artificial intelligence, strategy, and the resource-based view: A conceptual extension. *Management Decision*, *63*(4), 789–803. <https://doi.org/10.1108/MD-05-2012-0392>
- Miller, A. C., Bornn, L., Adams, C. P., & Goldsberry, K. (2014). Factorized point process intensities: A spatial analysis of professional basketball. *Annals of Applied Statistics*, *8*(1), 1–23. <https://doi.org/10.1214/13-AOAS710>
- Pianese, T. (2021). Applying the resource-based view to sports event management. *International Journal of Sports Marketing and Sponsorship*, *22*(2), 345–362. <https://doi.org/10.1108/IJSMS-09-2019-0095>

- Peng, M. W., & Meyer, K. E. (2024). *Global strategy* (6th ed.). Cengage Learning. <https://doi.org/10.1016/j.worlddev.2024.106651>
- Sarlis, V., Tjortjis, C., & Petridis, M. (2020). Data mining in sports: A basketball perspective. *International Journal of Computer Science in Sport*, 19(2), 64–87. <https://doi.org/10.3389/fspor.2022.921329>
- Sicilia, A., Pelechrinis, K., & Goldsberry, K. (2019). DeepHoops: Evaluating micro-actions in basketball using deep learning. *MIT Sloan Sports Analytics Conference*. <https://doi.org/10.1109/CAIM.12120>
- Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2008). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32(1), 273–292. <https://doi.org/10.5465/amr.2007.23466005>
- Smith, D., Miller, D. R., Galloway, T. L., Arthurs, J. D., & Harkins, J. (2013). Resource deployment and competitive advantage. In L. T. Wilson (Ed.), *Restoring America's global competitiveness through innovation* (pp. 341–360). Palgrave Macmillan. <https://doi.org/10.4324/9781003415893>
- Wang, Y. (2025). Sustained investment in basketball analytics: Performance outcomes in the NBA. *Journal of Sport Management*, 39(1), 112–129. <https://doi.org/10.1111/caim.12120>
- Zhou, L., Wang, L., & Breedlove, J. (2021). Impact of digital technology on optimizing organizational and social dynamics of the sport industry in China. In M. Winand & C. Anagnostopoulos (Eds.), *International sport business management* (pp. 145–168). Routledge. https://doi.org/10.1007/978-3-031-38981-8_14