

Paying to Play: How Digital Technologies Are Rewriting Sports Commercialization

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

The overall global sports market, consisting of the sales of sports services and related goods, was estimated at \$440.77 billion in 2021 and is projected to reach \$599.9 billion in 2025 (Kumar and Bhalla, 2021). In accordance with this industry growth, the cost of following and being engaged with sports has also grown alongside new technologies in the past 25 years. For the 2024 NFL season, it would have cost viewers between \$1,700 and \$2,500 to watch every NFL game between paying for services such as cable networks, YouTube TV, and streaming services such as Amazon Prime, NFL+, ESPN+, and Netflix (Blasi, 2024). The rise of sports gambling has also been increasingly prevalent. On certain mobile apps, users can typically place bets on sporting events in under 5 clicks. The rise of mobile sports gambling has negatively impacted many households' financial health by exposing them to financial risks, especially in already financially constrained households (Baker, Balthrop, Johnson, Kotter, & Pisciotta, 2024). Ultimately, the work below seeks to answer the following question: How have new technologies in sports broadcasting and sports gambling affected the commercialization of sports? This paper aims to better understand the growth of these industries through the lens of the Technological Momentum framework to identify and align stages of development along a timeline of events.

Methodology

The goal of this research is to assess the true impact of live sports broadcasting and sports gambling on the commercialization of sports by utilizing the framework of technological momentum. The content of the research focuses on the timeline of development of these two

technologies from the year 2000 to 2024. To gather resources and data, this paper utilizes a literary review of case studies, journals, articles, and legislation regarding the development of technologies within the sports broadcasting and sports gambling industries. Examples of literary works used as sources for the analysis of sports broadcasting include articles that describe significant media broadcasting agreements and case studies which investigate the sports broadcasting industry in the current century with respect to the growth of streaming platforms. Similarly, for the analysis of the sports gambling industry, the research focuses on major societal impacts and legislation related to sports betting, particularly investigating the eras before and after the repeal of PASPA in 2018. Examples include case studies that describe the state of the industry, technology, and consumer prior to and following PASPA's repeal in 2018 as well as legislative documents including PASPA, Murphy v. NCAA, and the Federal Wire Act. To fully analyze the findings of the research, this paper aligns stages of development within these two industries with the stages of Technological Momentum to gain a better understanding of how technological development has tied into the growth of these industries.

A Brief History of Sports Broadcasting and Sports Gambling

Sports and athletics have long been an important source of entertainment for people across the globe, from the first Olympic games in Greece to the massive sporting events we know today, such as the Super Bowl. Both sports broadcasting and sports gambling have existed long before the timeframe of this study. Sporting events such as the Olympics, Super Bowls, World Cups, and more have been broadcast on national television channels since the mid-1900s. Media giants such as CBS, NBC, FOX, TNT, and ESPN historically have been home to these major broadcasts. In addition, almost as long as sport has been around, so has sports gambling in

some shape or form. However, legalized sports gambling as we know today began in Nevada, which became the first and, for many years, the only state in the USA to allow sports betting. To gain a better understanding of the industries and technologies of interest, further background context is needed.

In the early-to-mid-1900s, the primary way to engage with sporting events was either to attend the game or to consume media such as radio or print media to hear the latest updates. However, as live cable television became common in households around the world, sports broadcasting followed. As large cable television companies began to broadcast sports across the country, significant financial deals were worked out between sports leagues, players, and media conglomerates to gain the rights to broadcast events. These contracts often allow the media company to gain exclusive access to the television rights of events. There are two types of markets for sports broadcasting companies: downstream and upstream. Downstream markets focus on consumers, where media companies focus on competing for viewership and consumer engagement. Upstream markets, however, involve broadcasting companies negotiating and competing for contracts with sporting agencies for the rights to air events (Evens & Smith, 2022). Historically, major sports leagues such as the NBA, NFL, MLB, and NHL, as well as their respective players' associations, enter media rights contracts with several broadcasting companies to sell the exclusive rights to their events. For example, in 2021, the NFL signed media agreements with five major media partners for the distribution of their games (NFL, 2021). Focusing on the downstream market, major media companies prior to 2000 primarily relied on cable television for distribution. Sports fans and consumers engaged with live broadcasts of events through purchasing cable television packages and tuning into each of the major media companies' respective channels.

Sports gambling has much less documented development in comparison to that of sports broadcasting. Throughout the 20th century, sports gambling was not nearly as prevalent as it is today, and much less accessible. The state of Nevada first legalized gambling in 1931, becoming the only state in the United States where legalized gambling was legal. In 1961, President John F. Kennedy passed the Federal Wire Act, which disallowed the use of communications for interstate sports gambling. Henceforth, a bettor in one state may not place a bet with a sports book regulated in a different state. As a result of this act, sports gambling is regulated by the state rather than federally (Bonesteel, 2022). In 1992, President George H. W. Bush passed the Professional and Amateur Sports Protection Act, or PASPA, which prohibited sports gambling in states that did not previously have legislation allowing sports gambling (Professional and Amateur Sports Protection Act, 1992). As a result, Nevada once again became the only state where sports betting was legal. However, illegal sports betting was still a rampant industry. Betting on sports using a middleman, or bookie, to collect and pay out wagers is a known method of circumventing legal standardizations on gambling. Several infamous events surrounding sports betting in professional sports also gave a bad name to sports betting. Many scandals broke out regarding illegal sports gambling, such as Baseball legend Pete Rose's gambling on MLB games, the Chicago White Sox purposefully losing the 1919 World Series, and NBA referee Tim Donaghy's betting and tipping on NBA games. Sports gambling has been historically seen in a negative light due to events such as these scandals, though legislation and industry developments in the modern century have altered its perception.

Technological Momentum and Sports Technologies

As industries created for and by people, both sports broadcasting and sports gambling exist within a larger social context. To further investigate how technologies in sports

broadcasting and sports gambling have affected the commercialization of sports through these industries, this paper will utilize the framework of Technological Momentum. This framework illustrates that the growth of technology systems consists of stages, which Hughes states are invention, development, innovation, transfer, technological style, growth, competition, and consolidation (Hughes, 1987). Hughes' framework also elaborates on the theories that earlier in the stages of a given technology's development, it is more liable to the social and cultural impacts that shape it, as opposed to further in its development when a technology is established and instead exerts influence on society and cultures.

Technological momentum is often seen as a middle ground between two differing frameworks, social construction of technology (SCOT), and technological determinism. SCOT focuses on the theory that development of technology is shaped by social groups and processes rather than being solely derived from technical advancement (Bijker, Hughes, & Pinch, 1987). Contrastingly, technological determinism focuses on the theory that the development of technology pushes its own influence on society and culture. A common criticism of the technological momentum framework suggests that it is composed of elements from both SCOT and technological determinism. Although Hughes' technological momentum framework does incorporate similarities with both, it also incorporates an element of time dependency that allows technologies to be flexible throughout their lifespan of development.

Technological momentum as a framework has been applied to several different technologies across multiple fields to analyze the development of these emerging technologies. An example of the application of technological momentum to an emerging technology is Hudson Burke's application of technological momentum to the development of robotic technology and its impact on historically marginalized groups (Burke, 2023). The author is able to successfully

apply the concepts of technological momentum to the development of robotics, a relatively young technology, by identifying connections between the social and cultural groups involved and the development of the robotic field. Though unrelated to the topics of emerging digital technologies in sports broadcasting and sports gambling, Burke's work provides an example of how the framework of technological momentum can be applied to young technologies with rapid development in the past 10 years and foreseeable growth in the future.

Results and Discussion

Digital technologies such as live sports streaming platforms and digital sports betting applications have transformed the respective industries of live sports broadcasting and sports betting by playing important roles in the technological momentum of these technologies and industries. The analysis below aims to use these examples as case studies to investigate how digital technologies impact the commercialization of sports. Live sports streaming platforms have changed digital sports media broadcasting by shifting how media companies compete for, produce, and distribute media content to consumers, resulting in industry changes for both media providers and consumers alike. Similarly, digital sports betting applications have impacted the sports gambling industry by creating an accessible, engaging, and addicting way for average consumers to place wagers quickly, easily, and often.

Digital Sports Media Broadcasting

At the turn of the century in 2000, sports broadcasting was emerging as a massive global industry worth billions of dollars. However, the broadcasting of sports was mostly reliant on

cable or network television and major media outlets such as CBS, Fox, ESPN, and ABC. Major media conglomerates such as these would broadcast the biggest sports events in the country by cable television, which customers usually paid for, or by broadcast via free over-the-air network transmissions. These media outlets would compete for the exclusive rights to televise sporting events, usually with major sports league offices such as the NBA, NFL, MLB, and NHL. However, this system limited viewers' access to sports broadcasts, giving customers access to only the events which media companies chose to broadcast to viewers in respective regions. A 2005 case study from Brett Hutchins and David Rowe investigates how the rise of internet at the time provides an opportunity for a market shift from traditional broadcast television to distribution methods supported by broadband internet (Hutchins & Rowe, 2009). As the capabilities of the internet grow, the study hypothesizes that new production, distribution, and consumption of content methods will be available to consumers, which will impact the sports media market in the future. This study foreshadows the developments to come in the sports media broadcasting industry, as the expansion of widely available internet results in changes in broadcasting technologies that transform the sports broadcasting market.

Platformization and Technology Transfer

As access to high-speed internet in most households became increasingly common, streaming platforms such as Netflix, Amazon Prime Video, and Hulu also became widely known and used platforms for on-demand streaming of content. In 2018, ESPN joined the movement and released ESPN+, their direct-to-consumer streaming platform to offer live sports content alongside original on-demand programming (Adler, 2018). The release of ESPN+ signified a new era in sports media distribution and consumption. Soon after, other major media companies released similar platforms, including Peacock representing NBC and Paramount+ representing

CBS. One of the major advantages proposed by the companies launching these platforms was that platforms would allow customers to gain access to a multitude of added content that was previously less accessible. For example, ESPN+ allows users to choose what they want to watch from a list of sporting events from all over the globe, which includes events that would otherwise not be accessible by cable subscription or network broadcast. College sports are common examples, as collegiate sporting events most often do not draw a large enough market to deserve national broadcasting slots but are accessible to watch to those with ESPN+ subscriptions. Johan Lindholm referred to this transformation of the sports broadcasting industry as ‘Netflix-ication’ and investigates the impact of this market shift towards subscription-based sports streaming services (Lindholm, 2019). The case study explains how several companies, in a race to become the ‘Netflix of sports’ and control the market for subscription-based online sports streaming, are competing for the rights to broadcast sporting events on their platform. For example, Amazon Prime Video has chased market share of the sports broadcasting platform industry by entering agreements with the NFL to broadcast several games exclusively on Amazon Prime Video. The growth of accessible high-speed internet and the proliferation of sports streaming platforms aligns with the technological momentum development stage of technology transfer. The sports broadcasting industry was required to adapt to a new time and place to survive and compete with other media companies who were able to deliver content via on-demand streaming platforms. Just as companies like Netflix and Hulu delivered media content such as movies and tv shows to customers at the tap of a button, platforms like ESPN+ and Peacock aimed to do the same by transferring the technology to use in a live sports industry.

Increased Consumer Costs and Technological Style

However, with the rise of online streaming platforms for live sports broadcasts, the cost of watching sports and being engaged with games became increasingly costly for consumers. As opposed to years past, when consumers could access live sports events with a single cable subscription or by network broadcasts, consumers were now forced to subscribe to multiple different platforms or services to access those same events. With broadcasting agreements spreading the rights to certain events across different media companies, each with their own exclusive streaming platforms, consumers became forced to purchase subscriptions to each different platform to gain access to legally watch live sports. As a result of these increasing costs, more consumers turned to free illegal live streaming services which similarly broadcast live sports events over the internet, though doing so illegally without the copyright to broadcast the event. Hudson Ayers and Like Hsiao of Stanford University investigated the increasing presence of these illegal streaming sites in 2019. The study found that the free illegal sports streaming ecosystem is rapidly expanding, using deceptive advertisements and malicious data collection to monetarily benefit from consumers looking for more financially viable alternatives to legal streaming services (Hsiao & Ayers, 2019). This adaptation of live streaming services as a technology aligns with the technological momentum development stage of technological style, as the technology of live streaming services has adapted in response to an environmental and culture shift of consumers who want to avoid the rising costs of watching live sports using legal methods.

The Future of the Media Industry and Growth, Consolidation, and Competition

Although the presence of free illegal live streaming services posed a threat to legal broadcasting platforms, companies and leagues still embraced the development of streaming

platforms and services to deliver live sports broadcasts. In 2021, the NFL completed a media distribution agreement for the broadcasting rights of NFL games through the 2033 season, which allocated the rights to broadcast their games across 6 different media distributors (NFL, 2021). Through this agreement, Amazon Prime Video, CBS, ESPN, FOX, NBC, and NFL Network all gained rights to broadcast NFL games, each with their own respective streaming platform. Tom Evens and Paul Smith investigated the effects of these ‘over-the-top’ (OTT) delivery platforms, in terms of competition for broadcasting rights and the effect on consumers (Evens & Smith, 2022). The study argues that OTT platforms has created changes in the competitive space of sports broadcasting deals and requires evolution in policy and regulation regarding live sports broadcasting to address competitive market issues raised by the proliferation of OTT services. The study also argues that increased competition in the sports broadcasting rights market because of OTT services has resulted in increased prices passed on to the consumer, referencing that for a consumer to follow their favorite team, they would have to subscribe to multiple different platforms, increasing their household expenditure on sports viewing. These findings align with the technological momentum development stage of growth, consolidation, and competition. As the technology of OTT live streaming services has developed, the technology has grown laterally to reach larger audiences, which has resulted in increased levels of competition in the market. Looking forward, consolidation is the next stage of technological momentum for the technology of live sports broadcasting. As variations in streaming platforms result in increased competition, one or several of these large players in the market will rise to the top by solving the problems associated with growth and momentum.

Digital Sports Gambling

Evidence of digital technologies transforming sports commercialization can also be found in the industry of sports gambling. In the early 2000s, sports gambling had a negative reputation amongst the sports community. In 2007, NFL Commissioner Roger Goodell stated in a press conference that he wanted to keep a strong line between the NFL and sports betting and that he believed that it was in the best interest of the NFL to have no association with sports betting (ESPN.com news services, 2007). Sports betting was viewed negatively in the public eye, especially thanks to legislation that had outlawed sports gambling in most of the United States alongside gambling scandals that had plagued professional sports. However, some saw the opportunity for growth. Andrew Vacca wrote about why the United States should legalize sports betting in 2013, citing Canada as a case study, where citizens can wager money on sports under several federal and provincial regulations (Vacca, 2013). The study states that sports betting related criminal activity generates between 80 and 380 billion USD of wagers each year in the United States, and that the United States would benefit from creating a new market to regulate, tax, and profit from. Vacca's work continues to examine the effect of sports betting on the integrity of sport, though argues that means such as anti-gambling clauses in collective bargaining agreements in major sports leagues would sufficiently address this issue. Although sports betting itself was not fully legalized, Americans could still gamble money online in the form of wagering and gaming through internet-enabled devices. Gainsbury writes about the impact of online gambling addiction because of the accessibility and availability of gambling to users through the internet, particularly through mobile devices (Gainsbury, 2015). This journal discusses the relationship between online gambling and the addictive nature of gambling, specifically focusing on the heightened risk of disordered gambling because of a shift towards

internet-based gambling, particularly in younger generations who are much more familiar with technology. The journal continues to explain how although the availability of online gambling might not cause gambling problems, it may contribute to worsening problems for those already involved in gambling, though this issue is moderated by many other variables. These findings align with the technological momentum phase of development. During this period, both sports gambling and digital gambling have already been invented, though it is during this period in which these ideas culminate. Social standards such as the public perception of gambling or the addictive nature of gambling are beginning to shape how society perceives digital sports gambling.

The Repeal of PASPA and Innovation

As the concepts of digital sports gambling begin to take shape, the biggest event in the development of digital sports gambling occurred in 2018. In the supreme court case *Murphy v. the National Collegiate Athletic Association*, the Professional and Amateur Sports Protection Act of 1992 was declared unconstitutional and therefore granted states the power to allow sports gambling once again (“*Murphy v. NCAA*”, 2018). This legislation was a massive change in the regulation of legal sports betting that once again allowed legal sports betting in the United States and resulted in the growth of a billion-dollar industry around sports betting in a digital era. The perception of sports betting also slowly began to change as social standards began to accept the normalization of sports betting. In 2019, the NFL announced that they would partner with Caesar’s Sportsbook as the official casino sponsor of the league, although they claimed that the partnership did not encompass sports betting and only applied to ‘casino’ gaming (Gouker, 2019). However, two years later in 2021, both the NBA and NFL partnered with sportsbooks to allow users in states which have legalized digital sports gambling to place wagers on their games

using official data and copyrighted marks and logos. The NFL partnered with Caesar's Sportsbook, DraftKings, and FanDuel in April of 2021 (NFL, 2021). Similarly, the NBA partnered with DraftKings and FanDuel in November of 2021 (NBA, 2021). After many years, sports betting was finally legal again and had done so at a time when digital technology enabled sports betting to become an even bigger industry than it ever was. This stage in development best aligns with the technological momentum stage of innovation, as digital sports betting becomes widely available to most Americans. The combination of invention from digital sports betting and development of integration with the country's biggest professional sports leagues resulted in an advanced system that allowed the development of sports betting to rapidly expand.

Industry Expansion and the Growth Stage

After the repeal of the PASPA in 2018, digital sports gambling grew exponentially. Users could place bets live from their mobile devices with extreme ease. With just a few clicks, any registered bettor could place any amount of money deposited into the account on a wager in seconds. Companies such as DraftKings, FanDuel, and MGM all began rolling out mobile apps that enabled customers to access sports gambling from anywhere. According to the American Gaming Association, in January of 2025, sports betting revenue across the United States expanded by 10.4 percent year-over-year to reach \$1.6 billion in revenue (AGA Commercial Gaming Revenue Tracker, 2025). Sports gambling has become a massive industry thanks to the presence of digital sports betting. Christopher Goodin's work in 2024 used data from major sports betting platforms from 2019-2023 and a survey of 1,000 active bettors to show the growth of the industry and user base from 2019-2023 as well as to illustrate the success of mobile applications and live betting to impact that growth (Goodin, 2024). These examples are

illustrative of the technological momentum stage of growth, as the technology of digital sports betting has spread rapidly over this period to reach a larger audience of consumers.

What's Next for Sports Gambling and the Reverse Saliency Aspect

Although digital sports betting has created a massive impact on its industry, the implementation of this technology did not come without repercussions. Digital sports betting made it easy for common consumers to wager large sums of money, and to do so from devices riddled with advertisements, applications, and marketing to keep them spending. Baker et al. writes about the household financial impact of the legalization of sports betting with a focus on financially constrained households, arguing that the legalization of sports betting has resulted in significant exposure of many households to threatening financial risks such as increased credit debt and decreased investments (Baker et al., 2024). The proliferation of digital sports betting has resulted in increased rates of negative financial habits in many households, even more so for those who are already financially constrained. In addition, a study published in the *International Journal of Mental Health and Addiction* in 2024 writes about how the use of a smartphone for digital sports gambling increases harmful betting behaviors due to factors such as the portability of the device or the speed of transactions within applications (Hing et al., 2024). The study argues that factors such as increased marketing and advertisements, promotions for riskier bets such as multi-bets or parlays, and notifications all contribute toward pushing young consumers towards unhealthy betting habits that can lead to addiction. In the most recent period, the social standards of sports betting have once again changed as people begin to become more cognizant of the financial and mental risks that digital sports betting applications pose. An important characteristic of technological momentum is reverse saliency, in which a part of a technological system is held back by one aspect. The sports betting industry is held back by the fact that

society has a better understanding of the dangers that digital sports betting raises towards our society, and particularly towards financially constrained households and younger consumers. Looking forward, the development of the sports betting industry is dependent on how social standards view sports betting and how betting companies, sports leagues, and government regulators act in response.

Limitations and Future Work

Limitations to the results, discussion, and analysis provided include those regarding scope and application. As the analysis provided focuses specifically on the period from 2000-2025, the analysis does not fully encompass the development of both industries examined, as they have existed for many years prior to the period of interest and will exist long beyond it. In addition, the analysis also focuses primarily on these industries as represented in the United States and with respect to major sports leagues in the US, particularly the NFL and NBA. Though many conclusions will be similar for other countries around the world or for various levels of sports, changes in regulations or applications because of different international legislature or league rulings limit the application of this analysis.

The timelines formed throughout the analysis above can inform further and more in-depth research on either of the two industries examined. Although this research aimed to provide a broad analysis of both industries to examine the effect of digital technologies, both digital sports media broadcasting and digital sports gambling are massive industries that will continue to develop for many years to come. In addition, further research can build upon these findings to examine subjects such as commonalities between these digital technologies which enable them to

be successful in the sports environment. Further research could also include the intersection between digital media broadcasting and sports betting, as is evidenced by the prevalence of betting advertisements in media broadcasts, the availability and accessibility of live streams of sports available to bet on, the proliferation of sports gambling commentary during live events, and more.

Conclusion

This study utilizes a literature review and the framework of technological momentum to investigate how the digital technologies of live sports streaming platforms and digital sports gambling applications have impacted the industries of sports media broadcasting and sports betting alongside the overall commercialization of sports. Live streaming platforms such as ESPN+, Paramount+, Peacock, and others have reshaped how sports leagues and media distributors deliver live and on-demand content to consumers, resulting in increased costs for consumers and the proliferation of illegal live streaming services. Digital sports gambling applications have exploded the sports betting industry by creating easily accessible and highly addictive methods to place wagers, resulting in profound industry growth at the expense of consumers' financial and mental wellbeing. Through the lens of technological momentum, the innovation of digital technologies, technology transfer of technologies to applications in sports commercialization, and the growth of these digital technologies have enabled live sports streaming platforms and digital sports gambling applications to greatly impact the commercialization of sports through the respective industries of sports broadcasting and sports gambling.

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