

The Influence of Artificial Intelligence to the Earnings of Sports Betting Companies

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Abstract

The sports betting industry has grown significantly worldwide in recent years, driven largely by technological advancements and the proliferation of online sportsbooks (René Manassé Galekwa et al., 2024, as cited in Williams et al., 2011). The industry is projected to reach a compound annual growth rate (CAGR, 2025-2029) of 5.30% in revenue (Meredith Alda, 2025). Sports betting involves odds setting, accepting wagers, balancing the book, and calculating outcomes. Bookmakers first calculate the “true odds” based on the actual probability of event outcomes, and then add a margin, or “vig” (commission), to reduce payouts, thereby making the total implied probability of all outcomes exceed 100%. Bettors are allowed to place wagers on specific sports events to predict results based on these odds. During this process, bookmakers may adjust the odds to manage risk if betting disproportionately favors one outcome.

Keywords

artificial intelligence, sports betting companies, earnings

1. Introduction

The emergence of artificial intelligence (AI) in recent years has accelerated growth across multiple industries, including sports betting. In this industry, AI plays an increasingly important role. Applications of machine learning include managing the complexities of odds setting, risk assessment, and optimization of betting strategies. AI can process large amounts of real-time data, enabling bookmakers to maintain competitive odds that attract bettors while ensuring profitability. Consequently, artificial intelligence and machine learning enhance predictive accuracy and make betting strategies more efficient (René Manassé Galekwa et al., 2024).

The increasing adoption of artificial intelligence in sports betting is expected to bring significant changes to company performance and strategies. Although many reports and news articles highlight the growing use of AI, there is relatively little research on how these innovations translate into financial outcomes such as revenue growth and cost structure. This study aims to explore the impact of artificial intelligence on earnings and other financial indicators by analysing AI-related content in the annual reports of sports betting companies, as well as through an empirical analysis using a stock return model.

Traditional Odds Setting in the Sports Betting Industry

Before the advent of artificial intelligence, sports betting companies relied heavily on traditional models and human experts for odds setting and risk management. Traditional statistical models were typically based on historical data, analysing game results, team performance, and other factors to estimate the probabilities of

different outcomes and form initial odds (Rhys Gregory, 2025). Human experts, meanwhile, played crucial roles in refining these models. Odds-makers would adjust probabilities using their experience and insights on less predictable factors, such as player injuries and weather conditions. In addition, risk managers manually monitored betting flows and adjusted odds to balance the book and prevent losses. These processes were often slower and more subjective compared to modern AI-based methods.

2. Research Questions

This study seeks to address three interrelated research questions concerning the role of artificial intelligence in the sports betting industry. First, how does the application of AI affect a firm's revenue growth rate? Since AI enables more accurate odds setting and risk management, it may enhance competitiveness, attract more bettors, and ultimately generate higher revenues. Second, how has a firm's operating margin been influenced by AI adoption over time? The integration of machine learning and automated systems may reduce operating costs, improve efficiency, and allow firms to manage risk more effectively, thereby influencing profitability and margins. Third, does AI enable firms to scale and grow efficiently? Beyond short-term financial performance, the study investigates whether AI adoption supports sustainable expansion by facilitating entry into new markets, improving customer retention, and maintaining operational efficiency at larger scales. By addressing these three questions, the research aims to provide both theoretical insights and empirical evidence on how technological innovation reshapes the financial outcomes of firms in the sports betting sector.

3. Data Description

The dataset employed in this study consists of DraftKings' financial records in a time-series format, obtained from Bloomberg. It covers the company's financial performance from fiscal year (FY) 2019 through FY 2024, with projected figures for FY 2025 and FY 2026. The analysis focuses on four key financial indicators: revenue, selling, general, and administrative expenses (SG&A), EBITDA, and the EBITDA margin. Revenue reflects the firm's ability to expand market share and capture customer demand, serving as a direct measure of growth. SG&A expenses capture the core operational costs associated with marketing, administration, and technology, and are particularly relevant in assessing how AI adoption may reduce inefficiencies or alter cost structures. EBITDA provides a standardized measure of operating profitability that excludes the effects of financing and accounting decisions, allowing for a clearer assessment of performance changes attributable to operational factors. Finally, the EBITDA margin reflects the efficiency with which revenue is converted into operating profit, thereby offering insight into whether AI facilitates more scalable and sustainable growth. Together, these indicators provide a comprehensive perspective on both the growth trajectory and operational efficiency of DraftKings, making them appropriate for evaluating the financial implications of AI adoption.

Table 1

	2024	2023	2022	2021	2020
Frequency of machine learning mentioned	4	4	2	2	2
Frequency of data science mentioned	9	8	7	6	6
Frequency of algorithm mentioned	5	5	5	5	5
Frequency of artificial intelligence/AI mentioned	27	10	0	0	0
Total frequency	45	27	14	13	13

In this study, DraftKings is selected as a representative case of firms in the sports betting industry. DraftKings is one of the largest publicly traded online sports betting companies in the United States, with broad market coverage and relatively transparent financial reporting, which makes it particularly suitable for empirical analysis. Furthermore, the company has been at the forefront of adopting digital technologies to enhance customer engagement and operational efficiency, thereby providing a relevant context for studying the financial implications of artificial intelligence. Since explicit references to "artificial intelligence" (AI) first appeared in DraftKings' annual report in 2023, we define the period prior to 2023 as the "pre-AI" phase and the period from 2023 onward as the "post-AI" phase. This temporal distinction enables a systematic comparison of the firm's financial performance before and after the formal acknowledgment of AI adoption in its corporate reporting.

Specifically, the word “artificial intelligence/AI” is mostly mentioned in the risk factors relating to the firm, suggesting that poor management of these technology, competitors applying AI more efficiently, and inaccuracy in AI outputs may lead to reputational harm and negative results of operations (DraftKings, 2024).

4. Methodology

This study employs quantitative and qualitative analysis of DraftKings annual reports from fiscal year (FY) 2020 to FY 2024. 5 keywords are selected: Artificial intelligence/AI; machine learning; data science; and algorithms. The quantitative analysis involves calculating the frequency of the AI-related keywords mentioned in each annual report. The qualitative analysis includes comparing the topics that artificial intelligence is mentioned in the annual reports to demonstrate the specific aspects which artificial intelligence applied by the sports betting company.

This study employs correlation analysis to examine the relationship between DraftKings’ adoption of artificial intelligence and its financial outcomes. Correlation analysis is a statistical technique that evaluates the strength and direction of linear associations between variables. Specifically, the Pearson correlation coefficient will be calculated for the selected financial indicators. The coefficient ranges from -1 to 1, where values close to 1 indicate a strong positive relationship, values close to -1 indicate a strong negative relationship, and values near 0 suggest no significant linear relationship. By applying this method, the study aims to provide empirical evidence on the extent to which AI adoption is associated with changes in revenue growth, operating margin, and overall financial efficiency.

How does the application of artificial intelligence affect the firm's Revenue Growth Rate?

Fig 1

Fiscal Year	Revenue (Millions of USD)	Year-over-Year Revenue Growth Rate (%)
FY 2020	614.5	90.00%
FY 2021	1,296.00	110.90%
FY 2022	2,240.50	72.90%
FY 2023	3,665.40	63.60%
FY 2024	4,767.70	30.10%
FY 2025 Est	6,376.50	33.70%
FY 2026 Est	7,549.20	18.40%

Fig 2

Fiscal Year	Total frequency of AI mentioned	Revenue (Millions of USD)
FY 2020	13	614.5
FY 2021	13	1,296.00
FY 2022	14	2,240.50
FY 2023	27	3,665.40
FY 2024	45	4,767.70
Correlation	0.92	

Fig 3

Fiscal Year	Total frequency of AI mentioned	Year-over-Year Revenue Growth Rate (%)
FY 2020	13	90.00%
FY 2021	13	110.90%
FY 2022	14	72.90%
FY 2023	27	63.60%
FY 2024	45	30.10%
Pearson correlation coefficient	-0.91	

Findings:

Figure 1.1 presents DraftKings’ revenue and year-over-year (YoY) revenue growth rate from FY 2020 to the projected period of FY 2026. The results indicate three distinct phases.

First, in the early expansion stage (FY 2020–FY 2021), DraftKings experienced exceptionally rapid growth, with revenues more than doubling and YoY growth peaking at 110.9%. This surge reflects the firm's aggressive market penetration strategy during the initial phase of U.S. sports betting legalization.

Second, from FY 2022 to FY 2023, growth began to decelerate, with YoY rates declining from 72.9% to 63.6%. Although the absolute revenue base continued to expand, the declining growth rates suggest that the firm was moving past its initial explosive expansion phase.

Third, in the period after 2023—defined in this study as the **post-AI phase**—revenue growth rates stabilized at more moderate levels: 30.1% in FY 2024, 33.7% in FY 2025 (projected), and 18.4% in FY 2026 (projected). The pattern suggests that the integration of artificial intelligence contributed to a more sustainable growth trajectory. Enhanced predictive accuracy in odds setting and risk management, enabled by AI, likely reduced volatility in financial performance and signalled a transition toward a more mature and efficient operating model.

Overall, while the explosive early growth of DraftKings reflects market entry dynamics, the post-2023 stabilization points to the role of AI in supporting steady revenue expansion and improving operational predictability.

The strong negative Pearson correlation coefficient between total frequency of AI mentioned and revenue growth rate shown in Fig 1.3 suggests that as the firm increased the application of artificial intelligence, it shifted from an unstable and unsustainable stage to a mature operation stage.

How has the firm's operating margin been influenced by artificial intelligence over time?

Fig 4

Fiscal Year	EBITDA Margin (T12M) (%)
FY 2020	-114.36%
FY 2021	-104.81%
FY 2022	-57.99%
FY 2023	-14.46%
FY 2024	-3.27%
FY 2025 Est	13.42%
FY 2026 Est	18.26%

Fig 5

Fiscal Year	Total frequency of AI mentioned	EBITDA Margin (T12M) (%)
FY 2020	13	-114.36%
FY 2021	13	-104.81%
FY 2022	14	-57.99%
FY 2023	27	-14.46%
FY 2024	45	-3.27%
Pearson correlation coefficient	0.85	

Findings:

The EBITDA margin of DraftKings improved substantially from 2021 to 2023 and is projected to turn positive in 2025, highlighting the contribution of artificial intelligence (AI) to operational efficiency and risk management. AI appears to enhance the firm's profitability and help recover prior operational losses.

Before 2023, the EBITDA margins were deeply negative, reflecting operational inefficiencies and less precise odds-setting and risk management. The sharp reduction in losses—from -57.99% in 2022 to -3.27% in 2024—suggests that AI-driven risk analysis has become increasingly effective. Machine learning algorithms monitor real-time betting flows and dynamically adjust odds, reducing potential losses.

The shift of EBITDA margins from negative to positive indicates that AI accelerates operational efficiency, improving the conversion of revenue into profits.

The strong positive Pearson correlation coefficient indicates that the increasing focus on AI of the firm is highly associated with the improvement of EBITDA margin. The application of artificial intelligence successfully converts to operational efficiency and profitability.

Does AI allow the firm to scale and grow efficiently?

Fig 6

Fiscal Year	Revenue Growth (%)	SG&A Growth (%)
FY 2020	90.00%	203.90%
FY 2021	110.90%	92.00%
FY 2022	72.90%	6.40%
FY 2023	63.60%	-8.10%
FY 2024	30.10%	8.60%
FY 2025 Est	33.70%	
FY 2026 Est	18.40%	

Fig 7

Fiscal Year	Total frequency of AI mentioned	SG&A Growth (%)
FY 2020	13	203.90%
FY 2021	13	92.00%
FY 2022	14	6.40%
FY 2023	27	-8.10%
FY 2024	45	8.60%
Pearson correlation coefficient	-0.55	

Findings:

In 2020 and 2021, the firm had low operational leverage, which shows high variable costs, meaning that the firm was inefficient in operation and had lower ability to control the costs. The cost of adding a new customer was high, leading to rapid increase in operational losses.

2023, after the appearance of artificial intelligence, was a turning point of operational leverage. The SG&A decreased by 8.1%, while the revenue growth rate increased by 63.6%. A large amount of variable costs transferred into fixed costs, suggesting that the firm was able to operate a larger number of customers without needing proportional increase in costs such as human employees and machines. The larger proportion of AI in sports betting allows the firm to grow and scale more efficiently.

5. Conclusion

This study investigated the effects of artificial intelligence (AI) on financial performance, with a specific focus on DraftKings. The analysis reveals a significant positive correlation between AI adoption and key financial metrics, underscoring AI's role in enhancing the company's profitability and long-term sustainability. AI achieves this by stabilizing revenue growth through sophisticated risk management algorithms and dynamic odds setting. Concurrently, it drives operational efficiency and boosts profitability by automating processes and reducing reliance on human capital and associated variable costs. In summary, AI is a transformative force in the sports betting sector, empowering companies to attain superior financial results by simultaneously increasing efficiency, profitability, and risk control. The ongoing strategic implementation of AI is poised to further solidify the competitive advantage of industry leaders and stimulate innovation within the wider sports ecosystem.

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Conflicts of Interest

The authors declare no conflict of interest.

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